Kathir College of Engineering

Wisdom Tree, Avinashi Road, Neelambur, Coimbatore 641062

Criteria-6

Governance, Leadership and Management

Sub Criteria 6.2
Strategy Development and Deployment

6.2.1: The institutional Strategic / Perspective plan is effectively deployed

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Criterion – 6 Governance, Leadership and Management

Key Indicator- 6.2 Strategic Planning and Deployment

6.2.1 The Institutional Strategic / Perspective plan is effectively deployed

INDEX SHEET

Kathir College of Engineering

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Strategic Planning and Deployment (2020-2021)

About KCE

Kathir College of Engineering (KCE) is a prominent Institution with a vision to be in the forefront of Technical Education as an Orbit Shifter.We at KCE strive to develop competent and committed professionals driven by values, who aim to take over the corporate and industrial world with a strong zeal and passion. KCE intends to change the lives of young students by developing knowledge and accelerating careers under the roof of the wisdom tree.

We focus on imparting skill in niche areas to our students with an emphasis on the basic engineering concepts. All our faculty members are having vast experience and expertise in Practice Oriented Teaching Learning Process. In addition to the core faculty team, we strongly get connected to experts from IT and core industries to enrich students' knowledge with their industrial and corporate experience.

Preface

For an organization, strategic planning is very essential to accomplish the Vision and Mission, which it dreams of. Strategic planning is a continuous process with a specific focus on accomplishing institutional goals in this competitive world. Strategic Planning and deployment document is based on analysis of current obstacles and future opportunities and envisages the direction towards which the organization should move to achieve its set goals and objectives.

The first part of it addresses the vision, mission which the institute dreams along with core values. These are defined and guided by the stake holders (management, leadership, HODs, faculty, staff, industry, students, alumni and parents) through SWOC analysis. After analysing the internal and external environment, the institutional goals were set up in all possible growth domains through continuous thought process and discussion with HODs and faculty members. The strategies with action plans were decided to achieve institutional strategic goals.

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While formulating the strategic plan and deployment document, care has been taken to involve all stakeholders to help contribute their part which is vital for the success of every organization. Effort has been taken to identify clearly the implementation processes and monitoring by identifying measurable targets in line with the desired outcomes. This will emerge to be the guiding force to achieve its goal to become an institution of Academic Excellence and providing professional by skilled young Engineers and Managers to the society.

Vision

Strive to promote Excellence in Engineering Education and Research bydeveloping our students as Real-Time Problem solvers thereby contributing tothe societal needs.

Mission

- Promote excellence in Core and allied studies through Technology enabledTeaching and active learning practices
- Develop multi-talented and committed human resources by providing research and development environment to innovate and find solutions forReal-Time Problems.
- Create socially responsible engineers with team-spirit / entrepreneurs withnecessary leadership skills thus contributing towards a better world

Our Core Values

- Our motto is to serve the society through producing responsible citizens byimparting integrity and ethics
- We strongly believe in inclusivity and consider every stake holder as responsible to set benchmark in each of our activities
- Our faculty members exhibit excellent team-spirit and achieve excellence in each of our curricular, co-curricular and extra-curricular activities.
- We see every student of our Institution as a problem solver and our start-upstudios help them to become entrepreneurs and provide solutions for thesocietal needs
- We promote the sense of social responsibilities in students by providingample opportunities to participate in various social activities
- We create an eco-system where every faculty member and student acceptsresponsibility for personal and professional growth and development

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Strength, Weakness, Opportunity and Challenges (SWOC)

Strengths

- Physical Location of the Institution which is well connected through all modes of transport
- Supportive Management to encourage upskilling of faculty members and students
- Well defined Standard Operating Procedures (SOP), policies and practices are in place.
- Well-developed infrastructure with excellent academic ambience
- Well established IT infrastructure with 677 latest computers
- Participation in co-curricular and extra-curricular activities by students
- Training and Placement for students to support life-long learning
- Industry – Institution Interaction to remove any knowledge and skill gaps
- Committed and self-motivated faculty members
- Technology Enabled and Practice oriented Teaching Learning Processes through AI driven Edu-Tech Platform
- Library with adequate number of books and other resources
- Un-interrupted internet connectivity with 40 Mbps bandwidth and 24x7 Wi-Fi connectivity for the entire campus.
- In-house start-up studios for developing entrepreneurs
- Recognized by UGC under 2f and 12B
- Installation of bio-gas, solar water heaters, solar street light and rainwater harvesting to help nation through adapting renewable energy sources

Weaknesses

- Number of faculty members with doctorate degree
- Drop in students admission into Engineering Programs across state
- Weak in receiving funding assistance from Government agencies for Research and Development

Opportunities

- Contributing to green energy initiatives for sustainable development of nation and society.
- Industry 4.0 provide space for employability to more skill full engineers.
- Leveraging the strong links with distinguished alumni to develop the industrial relations for development projects, consultancy works etc.
- Collaboration with foreign Universities for exchange programmes.
- Developing students to become entrepreneurs through entrepreneurship development cell in helping our Nation through establishing more start-ups.

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Kalaignar Karunanidhi Institute of Engineering

Challenges

- Drop in National level Gross Enrolment Ratio
- Diminishing interest among students towards Engineering Education across nation
- Matching international standards while maintaining the requirements/norms of statutory/regulatory bodies.
- Migration of faculty members in high demand areas to industry/other institutes/foreign Universities
- Introduction of Virtual University Programs by leading Industries and availability of online courses

Strategic goals

The team of KCE after several discussion and planning, guided by the vision and mission of the institute, Core values, stake holder's expectations and SWOC analysis have framed the institutions strategic goals.

Institution Strategic Goals:

1. Following effective teaching learning process
2. Developing and following leadership and participative management
3. Establishing continuous internal quality assurance system
4. Ensuring student development and participation
5. Ensuring staff development and welfare
6. Developing financial management
7. Ensuring good governance
8. Put emphasize on Institute and Industry interaction and partnership
9. Development entrepreneurship
10. Encouraging research and development work
11. Increasing internal revenue generation
12. Physical infrastructure
13. Increasing Alumni interaction and participation
14. Engagement in Community services and activities
15. Getting memberships of professional bodies

Strategic Planning

1. Teaching learning process
    a. Academic planning and preparation of Academic Calendar
    b. Development of teaching plan as per OBE
    c. Preparation of Lesson Plan based on CO & PO mapping

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d. Use of more teaching aids and adopt more ICT
e. Development of e- learning resources
f. Promote research culture & facilities
g. Provide mentoring and personal support
h. Follow a transparent and fair feedback system
i. Conduct training based on need analysis
j. Evaluation parameters and benchmarking
k. Continuous assessment to measure outcomes
l. Performance development through various courses/workshop/talk

2. Leadership and participative management
   a. To follow reporting structure
   b. Decentralize the academic, administration and student related authorities & responsibilities
   c. Prescribe duties, responsibilities and accountability
   d. Establishment of functional committees

3. Internal Quality Assurance System
   a. Formation of Quality Monitoring Committee & functioning
   b. Periodic check & guidance for quality improvement
   c. Establishment of academic & administrative process
   d. Academic Audit
   e. Annual report preparation & submission

4. Student's development and participation
   a. Budget allocation for student development programmes and activities
   b. Students Trainings & Placement Activities
   c. Formation of student council
   d. Student's representation in various committee and cell
   e. Organizing & Participation in technical competitions
   f. Rewards & recognitions of achievers
   g. Participation in extracurricular, social and welfare activities

5. Staff development & welfare
   a. Recruitment Policy formation & implementation
   b. Staff performance evaluation system
   c. Staff Training for quality improvement
   d. Best possible work facilities & infrastructure facilities
   e. Code of conduct, service rules, leave rules and Staff welfare policy implementation
   f. Rewards, recognitions and incentives
   g. Deputation for seminars, conferences and workshops etc

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h. Sponsorship/ Motivation for qualification/learning improvement

i. Support for research, consultancy, innovations

6. Financial management

a. Framing & implementation of Purchase and financial policies

b. Budget planning and allocation

c. Forecasting income & expenditure

d. Budget formulation & approval through Finance Committee

e. Periodic Audit

7. Good governance

a. Vision, Mission development & their articulation in every key position

b. Inclusion of industrialists & academicians in the Governing Council

c. Evaluation of Institute's performance and benchmarking

d. Institutional strategic goals setting

e. Institutional Strategic development plan

f. Monitoring and Implementing the Quality Management Systems

g. Following organization structure

h. Smooth Working of statutory committees

i. Establishing E governance

j. Leadership development through decentralization

k. Establishing internal audit committee

l. Code of conduct and policy formulation, approval and implementation

m. Establishing fair and transparent performance appraisal system

8. Entrepreneurship

a. Establishment of Entrepreneurship Development Cell

b. Effective functioning of entrepreneurship development Cell

c. MoUs with organizations for entrepreneurship development

d. Providing training & guidance for entrepreneurship development

e. Bringing more experts of the field for seminar, lecture, workshop for entrepreneurship development

f. Establishing incubation centres

g. Promoting & facilitating entrepreneurship development

9. Research and innovation

a. Establish and develop Laboratories with more research facility

b. Fund generation through Project proposals

c. Apply for Government/Non Government industry sponsored funds

d. Collaborations with Government & Private Institutes, Universities and Research Organizations

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10. Alumni Interaction

a. Formation of Alumni association, participation and registration
b. Regular interactions with alumni and networking
c. Leverage for guest lecturers/internships/placements/training/ entrepreneurship
d. Exploring Contributions

11. Community Services

a. Identify community and social development work
b. Identify challenges of society for development work
c. Conducting awareness camps

12. Physical infrastructure

a. Infrastructure building development & modification
b. Smart Class rooms, Tutorials, Seminar halls
c. Modernization of Laboratory & equipment
d. More ICT enabled classrooms
e. Library infrastructure up gradation
f. System up gradation
g. Functional facilities for e-learning
h. Safety & Security management
i. Water facility
j. Sports (indoor/outdoor) facilities
k. Plantations
l. Rain water harvesting
m. Renewable Energy usage
n. Hygiene, zero plastic & green campus

Strategy Implementation and Monitoring

After approval of Strategic development plan, the next step is its implementation. During implementation the progress of strategy shall be measured from time to time. Principal along with the other members of IQAC periodically review the strategic plan and its deployment.

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Responsibility & Accountability Matrix for various activities at institute level

Governance & Administration	Chairman, Governing Council members & Administrative office
Infrastructure (Physical & Academics)	Governing Council members, Trust Board, Principal & HOD's
Teaching- Learning	Principal, HODs, Faculty and Staff
Departmental Activities	HODs and Faculty
Students Development	Principal, HODs and Faculty
Research & Development	Principal, HODs
Training & Placement	Principal, Training and Placement Officer and HODs
Quality Assurance	Principal and IQAC

Key Result Areas to be measured during implementation

1. Effective teaching learning process
    a. Syllabus completion
    b. Mini projects, Projects, Seminars
    c. No. of learning resources
    d. No. of student counselling/mentoring/training sessions conducted
    e. Result of examinations (Pass, First classes, Distinctions)
    f. Course File
    g. Student feedback
    h. No. of teaching aids
2. Leadership and participative management
    a. Reporting structure in place
    b. Decentralization in various domains - academic, administration, staff welfare, student development, infrastructure management
    c. Code of conduct - duties, responsibilities and accountability
    d. Functional of various committees – no. of meetings/ semester, minutes of meetings
    e. Committee planning& implementation
3. Internal Quality Assurance Cell
    a. Number of IQAC initiatives/ semester
    b. Academic audits reports
    c. Strategic Planning and Deployment of committees
    4. Good governance
        a. No. of Governing Council meetings

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b. Vision, Mission& Review

c. Organization structure in place

d. Degree of decentralization

e. Resource mobilization

f. Staff appraisal & career advancement scheme in place

g. Service rules & benefits

5. Students development & participation

a. Number of sports, technical, cultural events organized

b. Regional, National & International competitions participated

c. Regional, National & International recognitions received

d. Sports infrastructure provided

6. Staff development & participation

a. Number of Staff attending training programs

b. Staff training programs organized

c. Sponsorships for higher education

d. Number of staff welfare programs

e. Staff awards/ recognitions/ incentives

7. Financial management

a. Annual Budget forecasting income & expenditure

b. Utilization / Allocation of funds

c. Internal & External Audit

8. Institute – Industry Interaction

a. No. of active MOUs

b. No. of Initiatives/activities through MOUs

9. Training & Placement

a. Number of placement drives organized

b. Number of placements

c. Number of skill development & career guidance programmes

10. Entrepreneurship

a. No. of entrepreneurship trainings organized/participated

b. No. of graduates becoming entrepreneurs

11. Revenue Generation

a. Funding raised through sponsored Projects

b. Consultancy Services

c. Funding raised through infrastructure utilization

12. Alumni Association

a. Number of alumni interactions/meet/talk

b. Support for internships/placements/ projects/ consultancy

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13. Community Services

    a. Number of trainings/ awareness camps

    b. Number of social projects undertaken

14. Infrastructure (Physical & Academic)

    a. Number of buildings, class rooms added

    b. New Laboratories & equipments added

    c. Annual budget allocated & utilized

    d. Green initiatives

    e. Number of Volumes & Titles in library

    f. Number of National& International journals

    g. Digital Library

    h. ICT enabled classrooms

Monitoring Strategic Plan

The implementation of strategic plan will be monitored time to time by Principal, IQAC through periodic review. The heads & committee coordinators will prepare the detailed progress report and present it in the review meetings. The benchmarking of quality standards and its monitoring, evaluation of attainment will be carried out by the IQAC independently. The IQAC will report the findings to the principal. With thorough analysis of outcomes and based on IQAC report, the principal will recommend the corrective actions, need of further processes and deployment of resources. All these reports will be forwarded for further discussions and approval to management & Governing Council members.

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Strategic Planning and Road Map for 5 Years (2022-2026)

For any institute to grow and develop, it should have a strategic planning system in place. Strategic planning is an organization's process of defining its strategy, or direction, and making decisions on allocating its resources to pursue this strategy. It may also extend to control mechanisms for guiding the implementation of the strategy.

The long term plans have been laid down in the strategic plan in consultation with Department committees, joint workshops of senior professors for strategy formulation. Kathir College of Engineering will sustain its excellence and distinctiveness by following a strategic plan that is built upon six sub areas namely

- Academic Process
- Self-Learning
- Employability
- Industry Connect
- Research and
- Personality development

5 Year Strategic Plan for 2022-2026

Kathir College Of Engineering's Five Year Strategic Planning aims towards reaching the following milestones for which the action plans in the previously mentioned sub areasare aptly mapped to following activities based on 6 E's which are planned for effective implementation and monitoringare detailed:

- Excelling in Teaching Learning Process
- Empowering students in PRIDE(Projects, Research, Innovation, Design & Entrepreneurship) activities
- Enhancing research capacities and Outcomes
- Enabling Inclusive and sustainable growth
- Extending collaborations and capacity building efforts
- Expanding opportunities for societal services

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Mile stones

- Autonomous status
- Starting an in-house incubator with atleast 10 start-up firms
- Enhancing Research Capabilities and Outcomes
- Strengthening collaboration with Industry in Research, Consultancy, Training & Internships
- Global Initiatives through Foreign University Tie - Ups
- UG in Emerging Areas & PG in Niche Areas
- To improve Core Placements
- Enhanced Community Engagement
- Faculty Competency Building in areas of New Age Technologies & Research
- Increasing Industry Linkage
- Patent Commercialization
- 50% of Faculty Members with Doctoral Degree

Excelling in Teaching Learning Process

Plan	Implementation	Monitoring
Curriculum Design (after obtaining autonomous status)	▪ Implementation of Outcome Based Education ▪ Choice Based Credit System ▪ Benchmarking with Curriculum and Syllabi of Premier institutions ▪ Industry driven	▪ Program Advisor Committee ▪ Board of Studies meeting twice a year ▪ Academic Council ▪ Session on OBE ▪ Attainment calculation & Conduct of remedial action to fill the identified gaps
Classroom Delivery using Education 4.0	▪ Introduction of Smart classroom ▪ Usage of Google Classroom ▪ Flipped Classroom ▪ Active Learning by following andragogy	▪ Standard of Power Point Presentations, online materials and videos ▪ Course Related Articles, Faculty Lectures, Educational Videos, Visual Presentations, Instructor Notes and question bank will be uploaded on Google classroom

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Principal

		▪ Internal mark will be awarded for flipped classroom sessions and class room participation
Strong Work Ethic	▪ Practicing of time management by staff and student ▪ Developing Ethical practices among staff and student	▪ Monitoring of students for adhering to Time line in submission of assignments ▪ Plagiarism check in submitted responses ▪ Rubrics for precise assessment of individual's contribution in a team
Attainment of Learning Outcomes	▪ HOTS, GATE Questions ▪ Assessments-pattern ▪ Practical learning, Internships, Assessments	▪ Conduct of bridging classes for the needy students through impact analysis
Diversifying our faculty and enhancing faculty excellence	▪ Special Interest Groups (SIG), attending FDPs of premiere institutions, mandatory Industry Training etc.,	▪ Department Target based on APA scheme

Empowering students in PRIDE (Projects, Research, Innovation, Design & Entrepreneurship) activities

Plan	Implementation	Monitoring
Training	▪ Technical training and Aptitude training by experts ▪ Boot camp training ▪ Industry Specific Training	• Every day online Assessment and Attendance is maintained • Feedback is collected from the students as well as the trainers • Separate portal will be maintained for training students
Addition of Companies	▪ Industrial interaction by faculty members	twice in a year

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Maximizing the count of placed students	▪ Technical training ▪ Communication skills training ▪ Boot camp training ▪ Aptitude training ▪ Mock interviews ▪ Company Specific test	▪ Assessment for boot camp students ▪ Assessment is done by Alumni. ▪ Feedback is collected from alumni based on the mock interview
MoUs	▪ MoU with reputed organizations	▪ Programs were organized in coordination with the organizations.
Student driven, alumni and industry person mentored, faculty guided initiative to establish an ecosystem for students, alumni, faculty and staff of College to nurtureProjects (patents, products, publications), **Research, Innovation** (Ideation, incubation), **Design** and **Entrepreneurship** competency	▪ Problem statements to be scrutinized and approved by **industry experts** preferably **alumni of KCE**	▪ Evaluation Team should comprise of academicians and Industry experts
Pivotal role in promoting inter-disciplinary projects among the students from various departments and also keen in converting the projects in to Product	▪ Problem statements to be chosen for Projects from Hackathon competitions, Tamilnadu and India Start-up ideas	▪ Department level Project co-ordinators to ensure that all problem statements are reflecting societal values
Focused guidance and networking of interested students to disseminate and participate in National and Global level competitions	▪ Encouraging to participate in national/state level design contests and prototype building	▪ Each student either as individual or as group to participate in atleast two events in each semester

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Enhancing research capacities and Outcomes

Plan	Implementation	Monitoring
Strengthen our research capacities ▪ Interdisciplinary research centres—research clusters ▪ Student participation in research activities, STARTUPS, INCUBATIONS Organizing research conference ▪ Increased resources & plagiarism awareness ▪ Expand Funding base, Incentivize faculty PRIDE ▪ Establish new initiatives and grow existing ones to attract and maintain "high performing" research faculty	▪ Encouraging all faculty members to register for PhD ▪ Applying Proposals for Funding agencies ▪ All departments to become recognized research centres for pursuing PhD	▪ API to include relevant weightage for Research outcomes
Promote research on thrust areas and public issues ▪ Faculty engagement in consultancy projects ▪ Projects for public issues in technology areas security, agricultural growth, technology for challenged, water purification, sewage treatment, energy management, waste recycling, grand challenges of	▪ Each faculty member shall be assigned a task of carrying out atleast one consultancy work for relevant industry to solve industrial problems	▪ API to include relevant weightage for Problem statement worthiness and consultancy

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engineering, e-governance and urban poverty etc		
Make our research accessible to the wider public through Newsletters, Website, SCOPUS / PUBLONS / Researchgate/ORCID etc	▪ Publications in Scopus /WOS indexed journal by faculty as well as students ▪	▪ Faculty API to include relevant weightage for Joint Publications and Citation index

Enabling inclusive & sustainable institutional growth

Plan	Implementation	Monitoring
Establishment of new UG in interdisciplinary emerging branches and PG in niche areas ▪ Artificial intelligence, block chain, robotics, quantum computing, data sciences, cyber Security and 3D printing and design	▪ Introducing UG courses in emerging areas and PG courses in niche areas proposed by AICTE	• At least one course is introduced every year for next three years
Expanding career opportunities for our students ▪ 450 hours of skill development training ▪ Core company placements through CoE	▪ Mandatory skilling for all students to become eligible for placement opportunities without any skill gaps	• Skill mapping for individual students by departments to identify the gaps
Strengthen institutional governance and leadership ▪ Enable timely decision-making and optimal utilization of institutional resources for a large and fast growing	▪ By having a productive and powerful Governing Council to take policy decisions to keep the institution as promising and futuristic	• Statutory committees to recommend policy changes for the betterment of institution and adhering to the recommendations

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institution ▪ Good governance		
Strengthening the role of our students as stakeholders ▪ Robust and responsive support system for students ▪ Mentoring, Grievance redressal	▪ Keeping students and alumni as part of all committees involved in policy framing and implementation for the betterment of students and society.	▪ Adhering to the Policy documents
Strengthening alumni relations ▪ Alumni interactions ▪ Alumni referral schemes ▪ Incubation ▪ Entrepreneurship	▪ Inducting alumni chapters in all big cities where alumni presence exist. ▪ Having alumni representation during all policy decisions ▪ More concessions for alumni to use KCE incubators	▪ Adhering to the Policy documents

Extending collaborations & capacity building efforts

Plan	Implementation	Monitoring
Promoting interdisciplinary and industry collaboration ▪ Industry driven Skill Development Centres	▪ Introducing makers space in college for students to discuss and try their ideas converted to prototypes	▪ Active usage of proposed makers space by interdisciplinary students as a team
Expanding capacity building programmes ▪ Increase language training programmes ▪ capacity building efforts that bridge the gap between the world of theory and practice	▪ Inviting more fresh and experienced entrepreneurs to address the prospective students to understand the reasons for failures and success in start-ups	▪ Through calendar of activities by KCE Entrepreneurship Development Cell

Expanding opportunities for Societal service

Plan	Implementation	Monitoring
Engaging with our local community Centre for Social and Community Services ▪ Enhance institutional support, encouragement and participation for student-led socially relevant activities ▪ Strengthen Inter-College collaborative activities to promote science and technology, IGNITE, BIG GENIUS, DHRONACHARYA, GURUKUL ▪ Skill development Programmes for local community	▪ DDUGKY & PMKVY Scheme	▪ Through fixing a target and reaching the goal at institution level
Strengthening our contribution to national and global policymaking ▪ Establishing good partnerships with Central and State government ministry and agencies, and other leading institutions within the country	▪ Participation in all surveys proposed by government/ industries related to academics and society related to Policy changes such as AICTE approval process handbook preparation/National education Policy etc.,	▪ Through circulars to all faculty members to encourage their active participation. ▪ Having weightage in API for societal contributions

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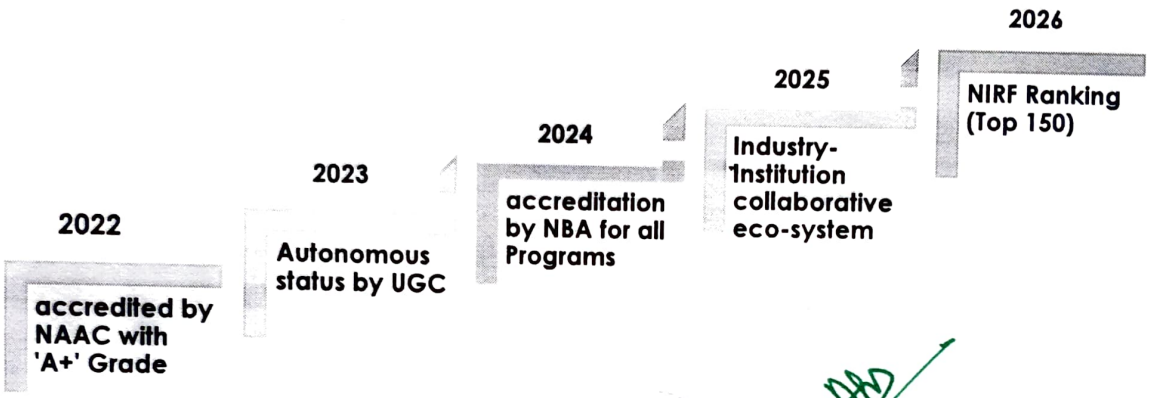
Roadmap for 5 Years (2022-2026)



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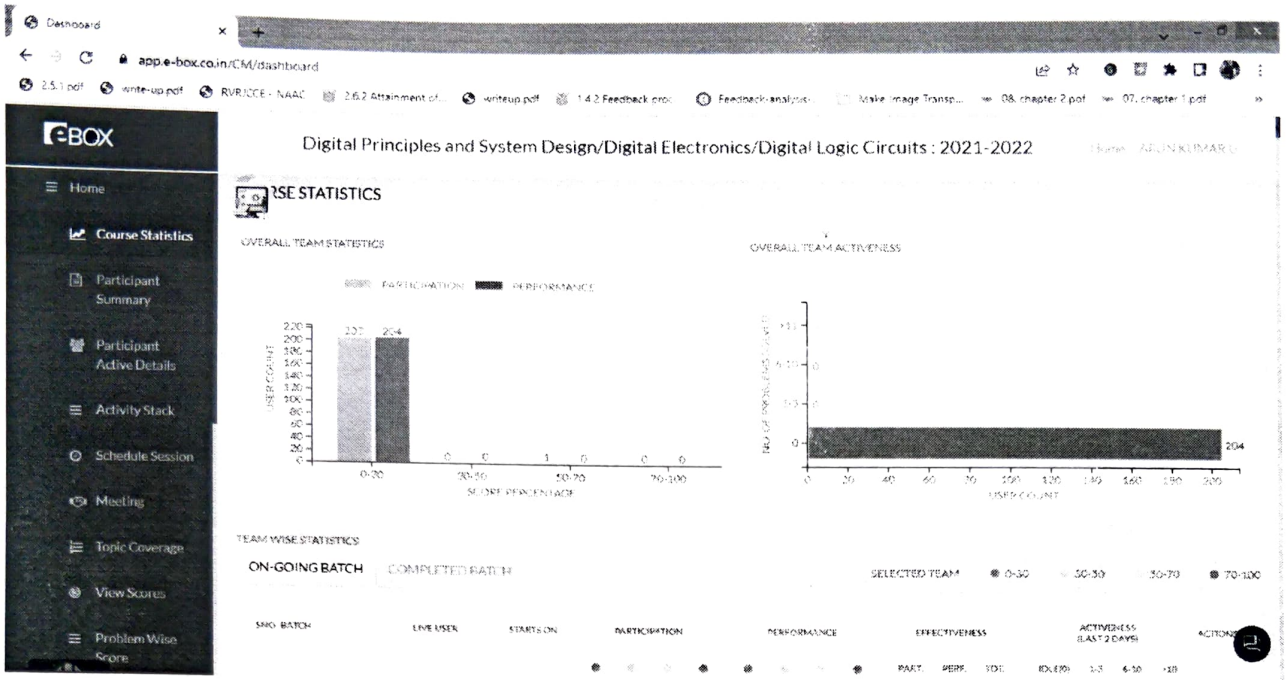
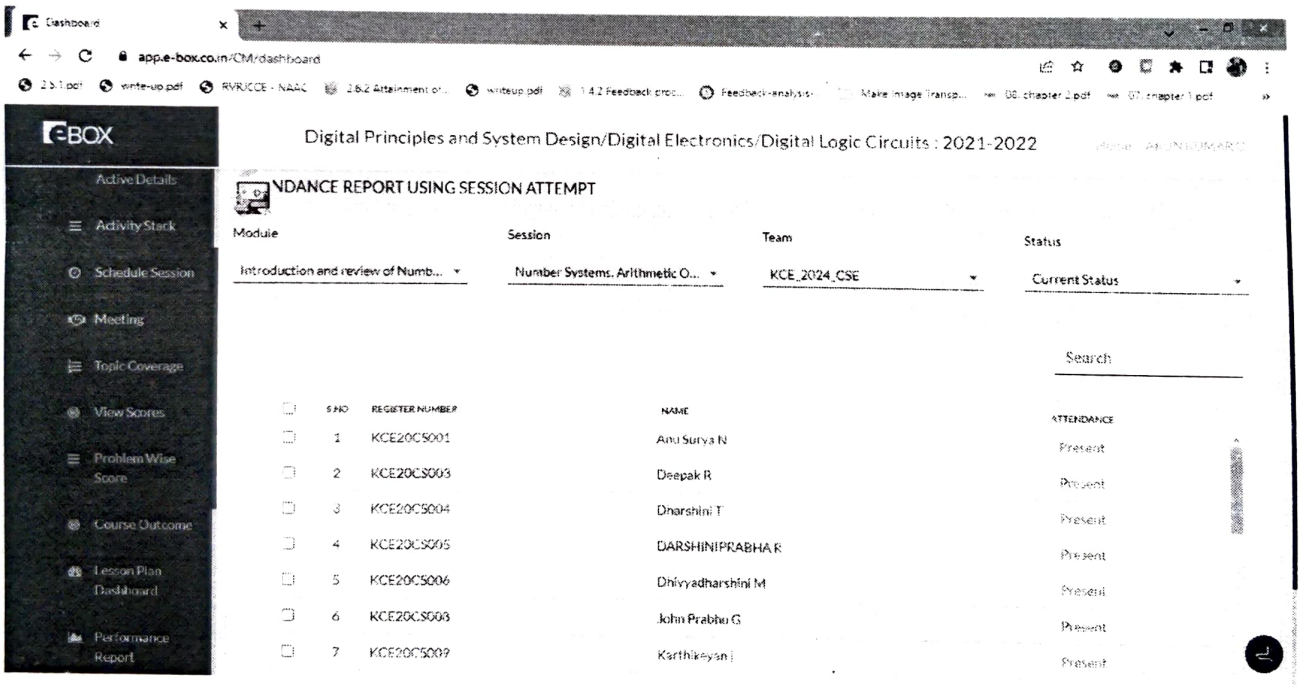
Examination –ScreenShot of Tech Enabled Assessment:





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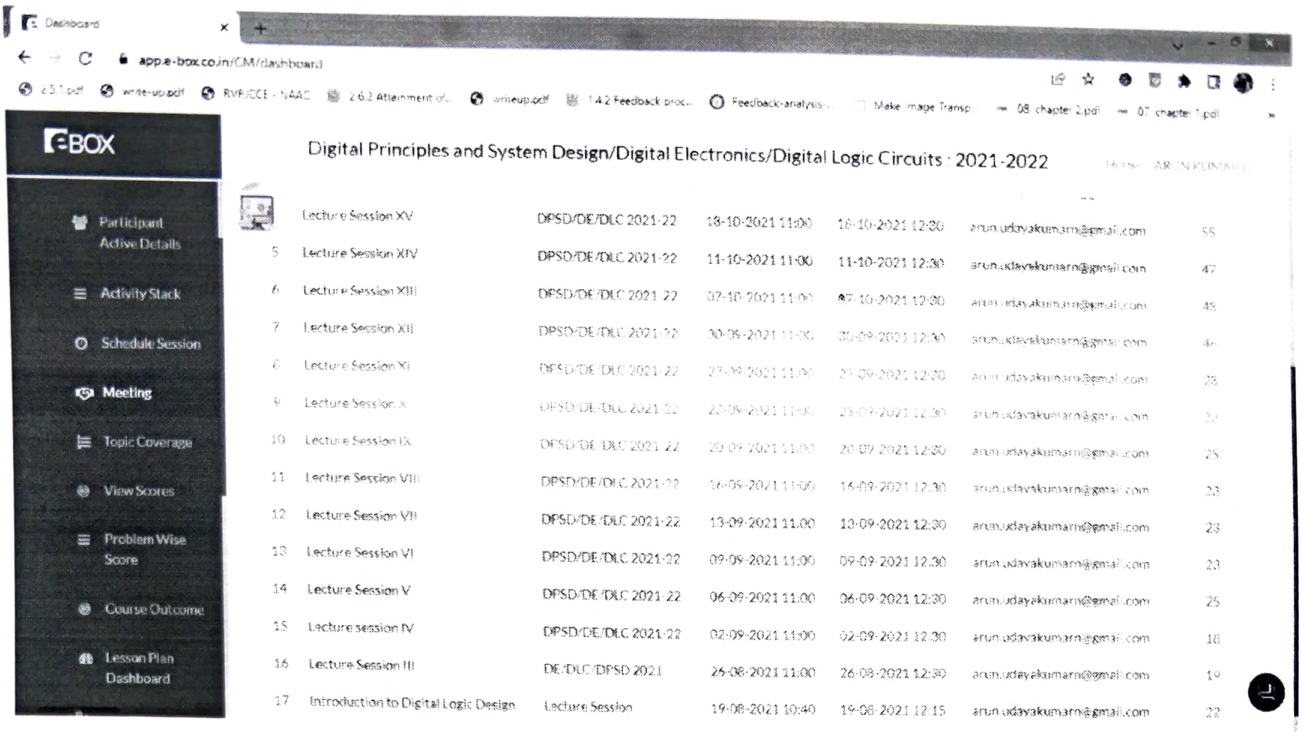

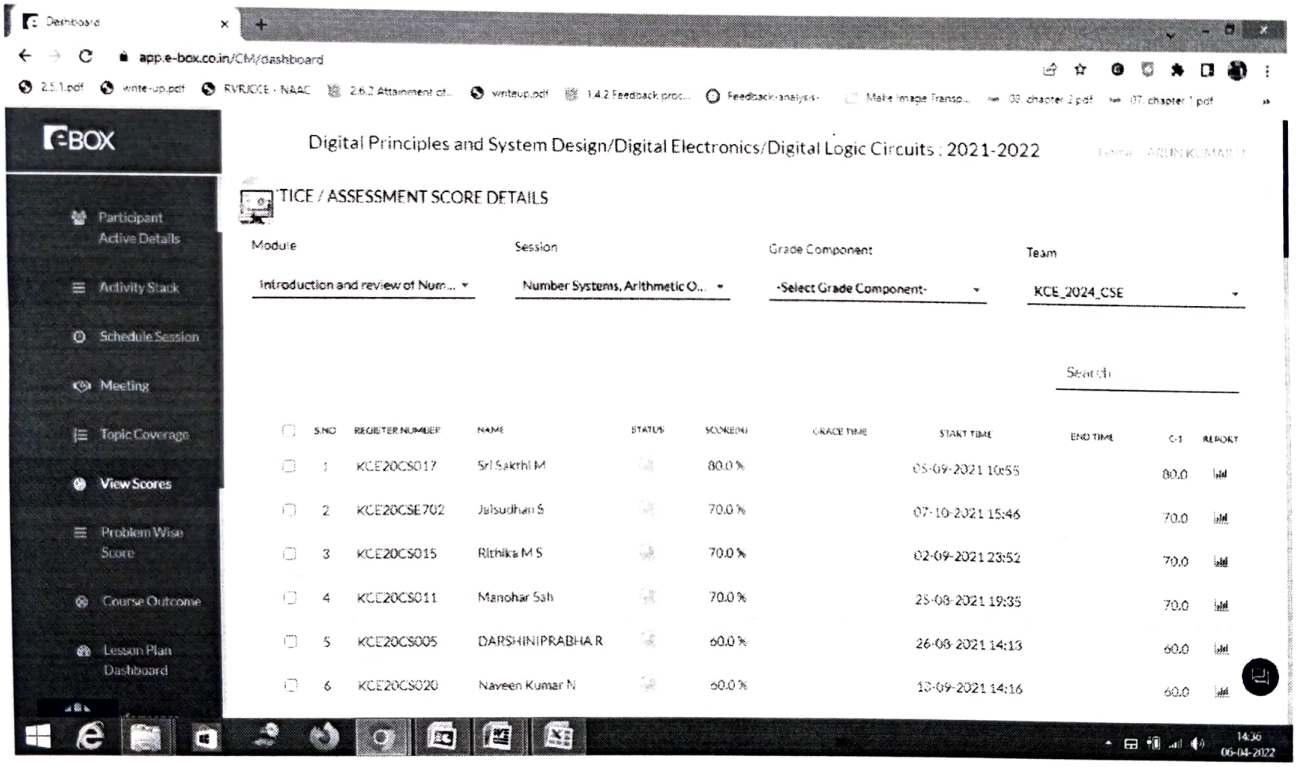

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Sri Sakthi M

KCE20CS017

Kathir College of Engineering

Outliers

1/28 BATCH RANK

71 TOTAL HOURS SPENT

7/53 TOPICS COMPLETED

0/56 SKILL PROBLEMS

3024/1398 KNOWLEDGE PROBLEMS

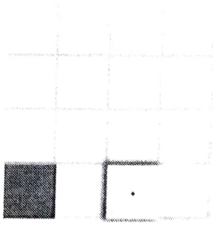
Participation

65%
Attended 178 of 199 Sessions

Performance

0%
Attended 2 of 54 Assessments

Quadrant Summary



QUADRANT 14

Low Calibre, Consistent Learner

OUTLIERS

SUITABILITY

You are qualified for job roles offering 3L+ Salary.

AIM FOR:

You can aim to become part of the Standard+ Group (4L+ salary)..

HOW TO IMPROVE YOUR METRICS?

1) Have confidence in your abilities and avoid solving problems as a group.
2) Solve them individually. Attend all nugget assessments to improve your confidence level.
3) Rework on the topics/exercises in which you lack confidence by which your completion will improve.

Practice Session Score Details

SNO	TOPIC	I-LEARN	I-EXPLORE	I-ANALYSE	I-DESIGN
1	Introduction and review of Number systems, Arithmetic operations and Binary Codes	100.0% 2/2	80.0%	0.0%	AB
2	Boolean Algebra and Logic Gates - Theorems and Properties - I	100.0% 2/2	0.0%	AB	AB
3	Boolean Algebra and Logic Gates - Theorems and Properties - II	100.0% 2/2	0.0%	0.0%	AB
4	Boolean Functions - Canonical and Standard Forms - I	100.0% 2/2	0.0%	AB	AB
5	Boolean Functions - Canonical and Standard Forms - II	100.0% 2/2	20.0%	AB	AB
6	Simplification of Boolean Functions using Karnaugh Map - I	100.0% 2/2	80.0%	13.33%	68.75%
7	Simplification of Boolean Functions using Karnaugh Map - II	100.0% 2/2	100.0%	46.67%	81.25%
8	Simplification of Boolean Functions using Karnaugh Map - III	100.0% 2/2	100.0%	100.0%	80.42%
9	Simplification of Boolean Functions using Karnaugh Map -Example Problems - 1	100.0% 2/2	80.0%	100.0%	93.75%
10	Simplification of Boolean Functions using Karnaugh Map - Example Problems - 2	100.0%	100.0%	87.5%	93.75%
11	NAND and NOR Implementation	100.0% 2/2	100.0%	100.0%	68.75%
12	NAND and NOR Implementation - Example Problems	100.0%	100.0%	100.0%	87.5%
13	Combinational Circuits –Analysis and Design Procedures	100.0%	20.0%	AB	AB
14	Combinational Circuit Design - Example Problems - 1	100.0%	100.0%	50.0%	12.5%
15	Combinational Circuit Design - Example Problems - 2	100.0%	75.0%	50.0%	56.25%

16	Binary Adder-Subtractor -Decimal Adder-Binary Multiplier	100.0%	0.0%	0.0%	AB
17	Magnitude Comparator-Code converter	100.0%	100.0%	No Session	31.25%
18	Code Converters - Example Problems	100.0%	No Session	25.0%	[illegible]
19	Decoder and Encoder	100.0%	100.0%	80.0%	[illegible]
20	Multiplexer and Demultiplexer	80.0%	100.0%	100.0%	[illegible]
21	MUX and DeMUX - Example Problems	100.0%	100.0%	100.0%	No Session
22	Logical Circuit Design - Example Problems	100.0%	100.0%	100.0%	[illegible]
23	Introduction to HDL and HDL Models of Combinational circuits	AB	AB	AB	AB
24	Combinational and Logical Circuit Design - Example Programs	0.0%	0.0%	0.0%	0.0%
25	Sequential Circuits - SR,JK, T and D Flipflops and Latches, Types of Triggering	100.0%	2.38%	[illegible]	0.0%
26	Analysis of Clocked Sequential Circuits	100.0%	0.0%	100.0%	0.0%
27	Flipflops, Sequential Circuit Analysis and Design - Example Problems - 1	100.0%	100.0%	100.0%	12.5%
28	Sequential Circuit Analysis and Design - Example Problems - 2	100.0%	100.0%	100.0%	No Session
9	State diagram, Reduction and Assignment	100.0%	100.0%	100.0%	No Session
30	State Reduction and Assignment - Example Problems	100.0%	100.0%	100.0%	No Session
31	Synchronous and Asynchronous Counters - Design Procedure	100.0%	40.0%	100.0%	25.0%
32	Synchronous and Asynchronous Counters - Example Problems and Shift Registers	100.0%	40.0%	100.0%	15.0%
33	Counters - Example Problems - 1	100.0%	20.0%	100.0%	23.33%
34	Counters and Shift Registers - Example Problems - 2	100.0%	20.0%	100.0%	8.33%
35	HDL Models of Sequential circuits	100.0%	100.0%	No Session	0.0%
36	Sequential Circuit Design - Example Programs	100.0%	100.0%	No Session	0.0%
37	Asynchronous sequential logic circuits-Transition stability, flow stability, PFT	100.0%	100.0%	33.33%	12.5% 2/2
38	Analysis of asynchronous sequential logic circuits - I	100.0%	100.0%	40.0%	25.0%
	Analysis of asynchronous sequential logic circuits - II	100.0%	100.0%	No Session	12.5%
40	Asynchronous sequential Circuit Analysis and Design - Example Problems - 1	100.0%	100.0%	No Session	16.67%
41	Flow diagram and Table - Reduction and Assignment	100.0%	100.0%	25.0%	0.0%
42	Flow diagram and Table - Reduction and Assignment - Example Problems	100.0%	100.0%	No Session	72.73%
43	Races, Cycles and Hazards	100.0%	100.0%	100.0%	No Session
44	Races, Cycles and Hazards - Example Problems	100.0%	100.0%	100.0%	No Session
45	RAM –Memory Decoding	100.0%	100.0%	[illegible]	95.19%
46	Error Detection and Correction -ROM	100.0%	100.0%	82.5%	100.0%
47	Programmable Logic Array	100.0%	[illegible]	0.0%	0.0%
48	Programmable Array Logic	100.0%	100.0%	No Session	100.0%
49	Digital Logic Families	100.0%	100.0%	100.0%	100.0%
50	Test	AB 0/2	AB	AB	AB 0/2

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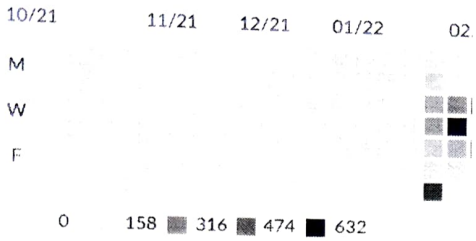
Problem Solved Metrics



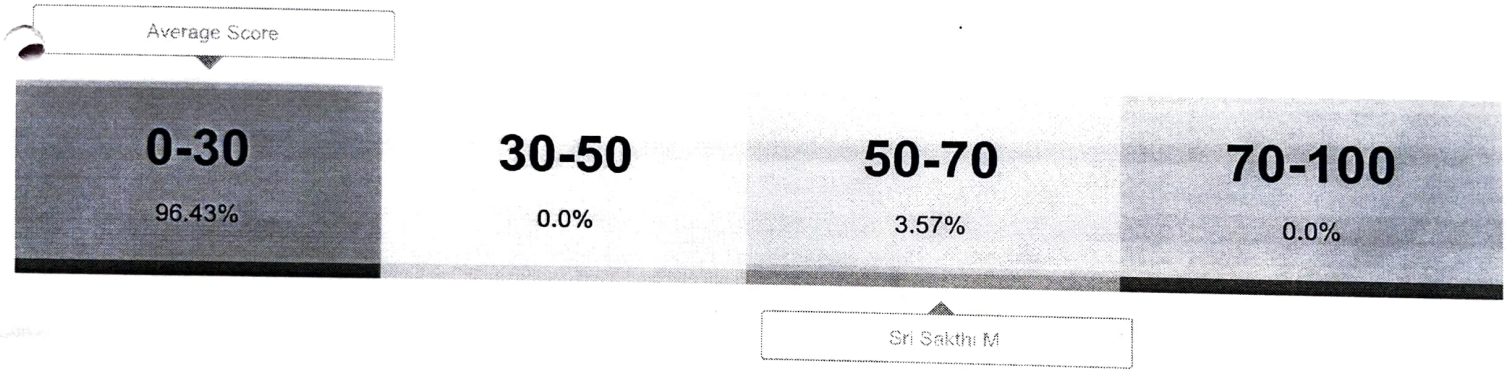
Time Spent Metrics

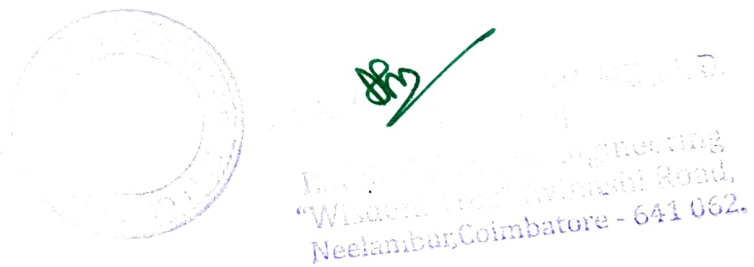
Total Hour Spent:	71 Hrs
Total Day Spent:	34 Days
Average Time Spent:	2 Hrs

Assessment Score Details

SNO	TOPIC	SESSION	ASSESSMENT DATE	SCORE
1	Error Detection and Correction -ROM	Error Detection and Correction -ROM	16-02-2022 03:02 PM	0.0
2	Programmable Array Logic	Programmable Array Logic	24-02-2022 11:02 AM	0.0

User Score Status





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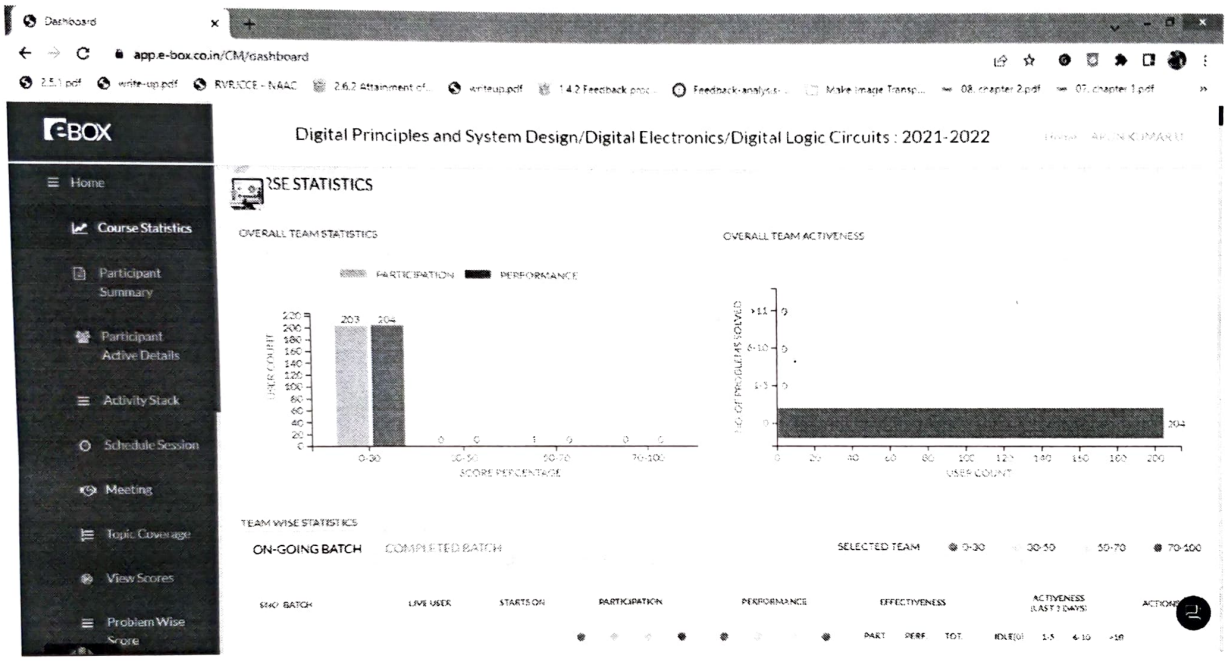
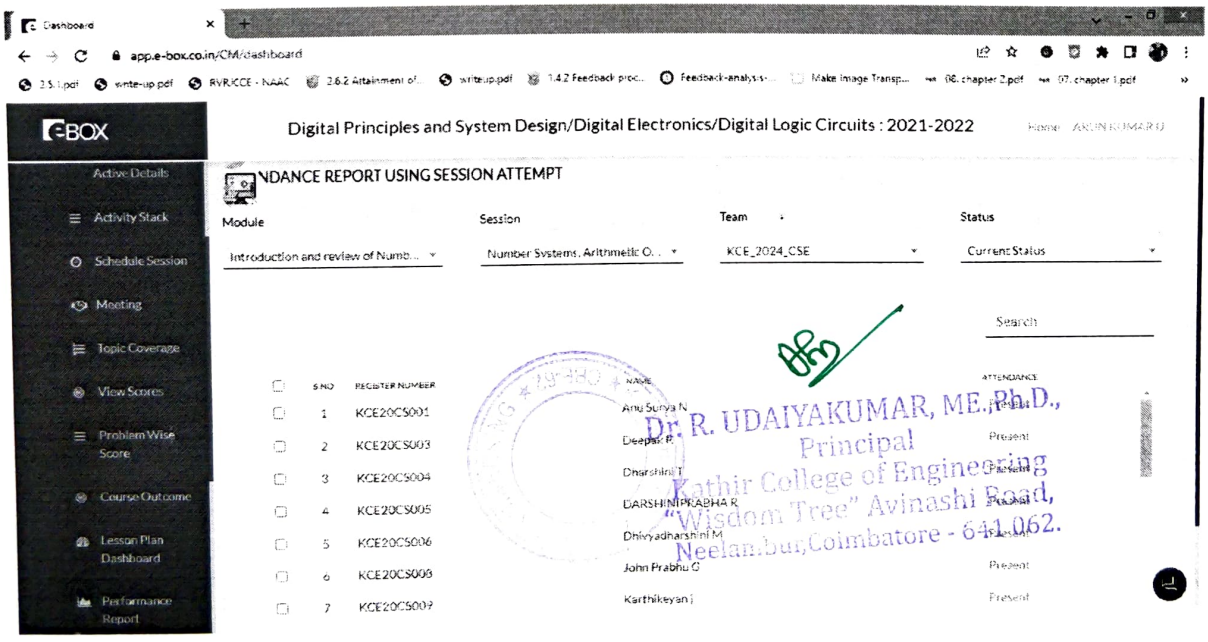
Activities Implemented Based on Strategic Planning

Following Effective Teaching – Learning Process (Tech Enabled Teaching and Learning)





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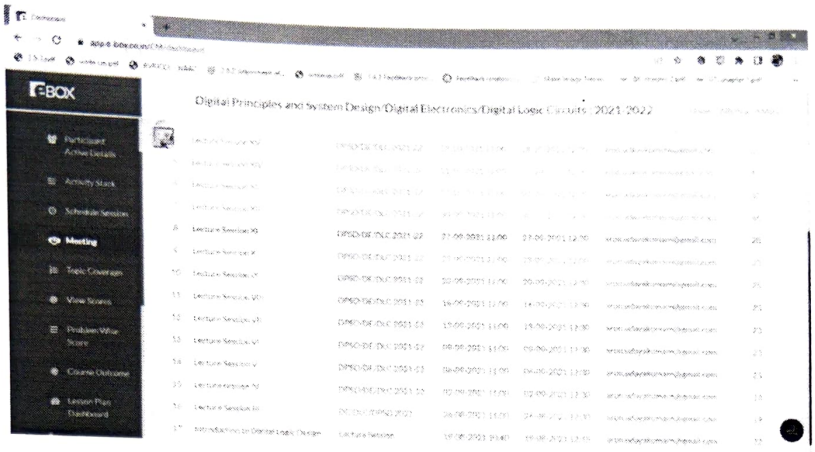

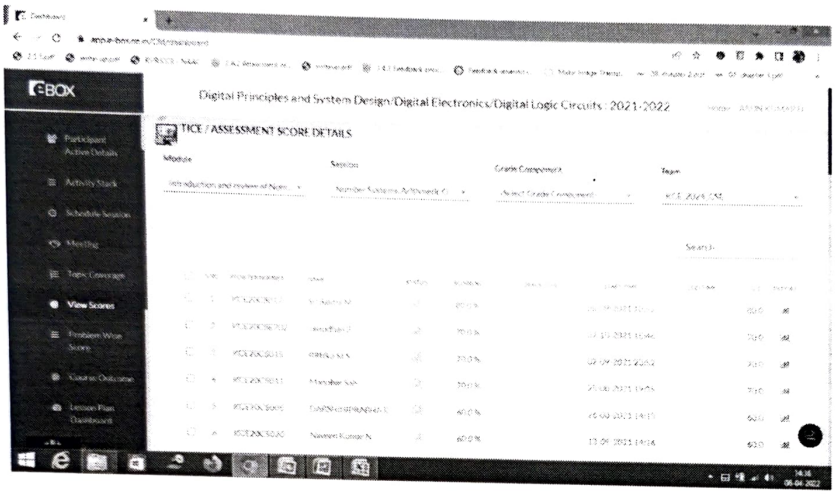

Following Effective Teaching – Learning Process (Smart Board Usage)

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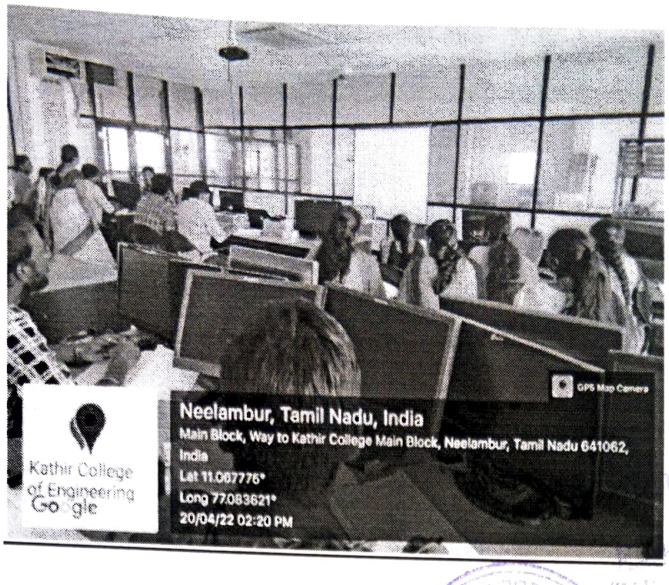

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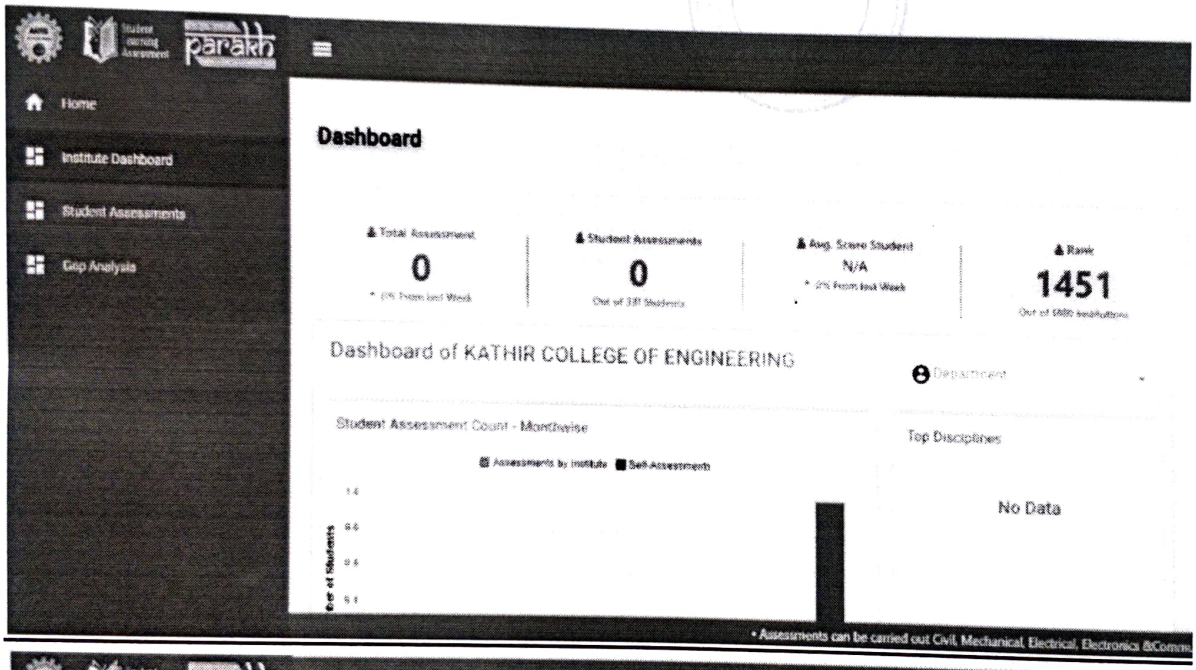
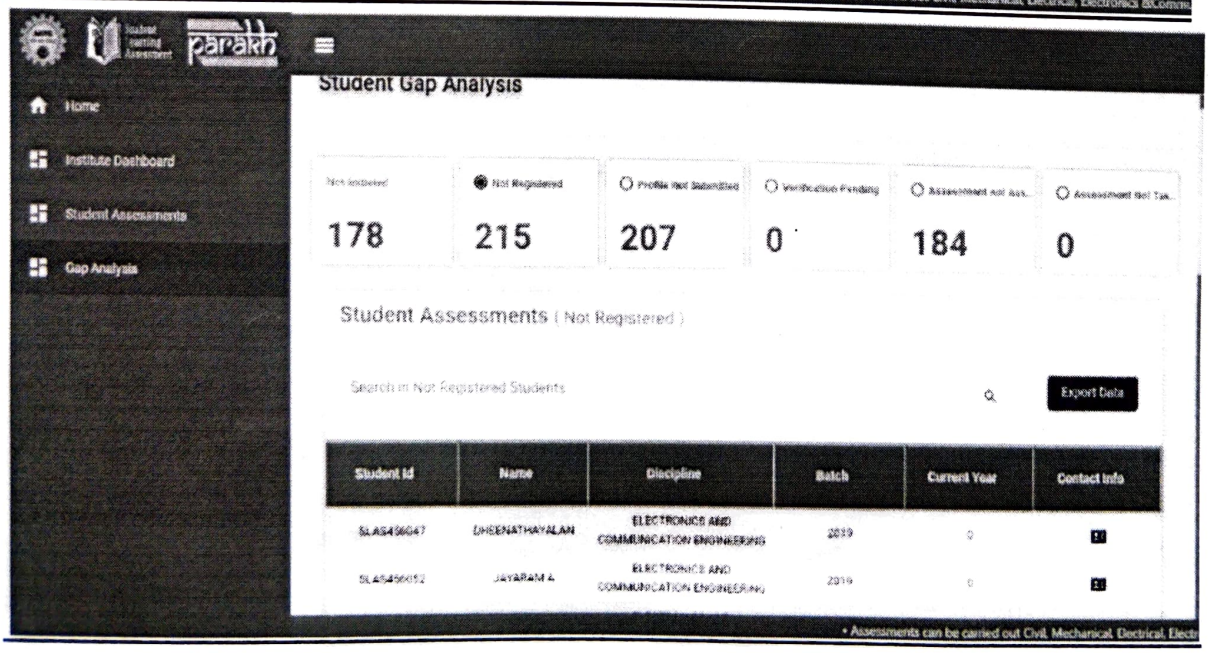
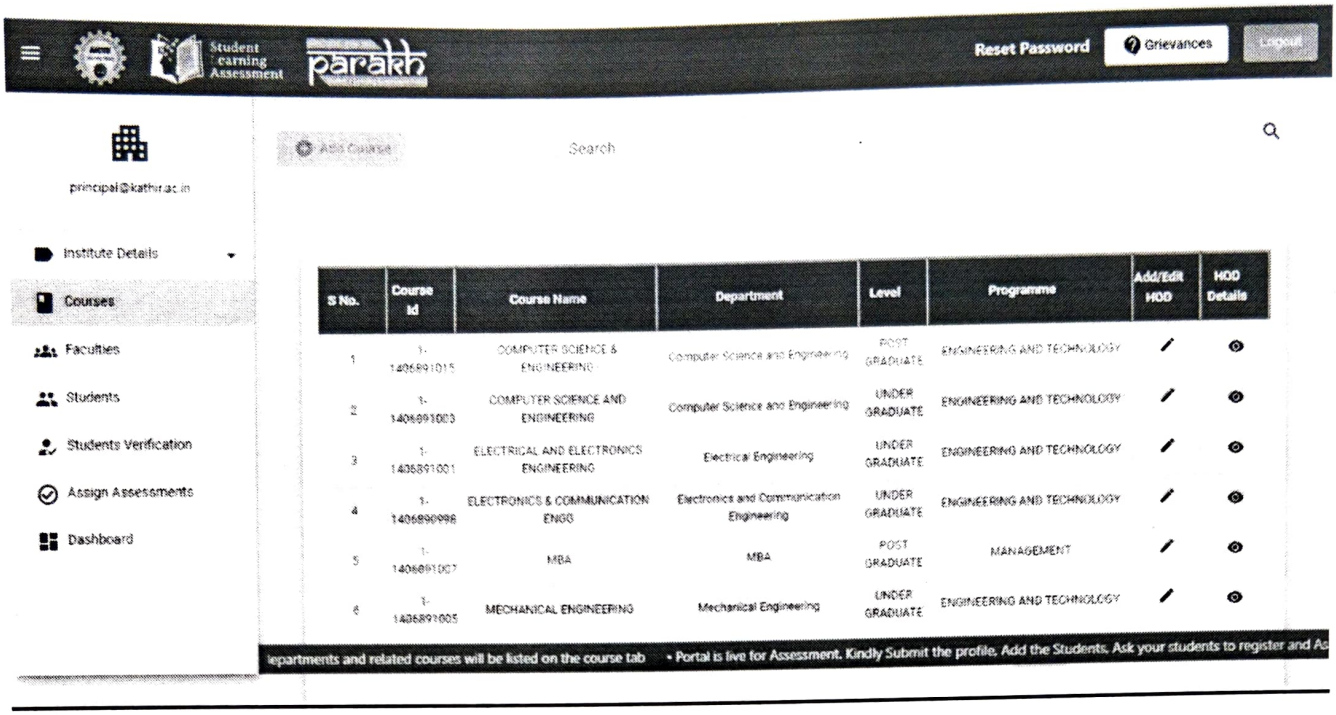
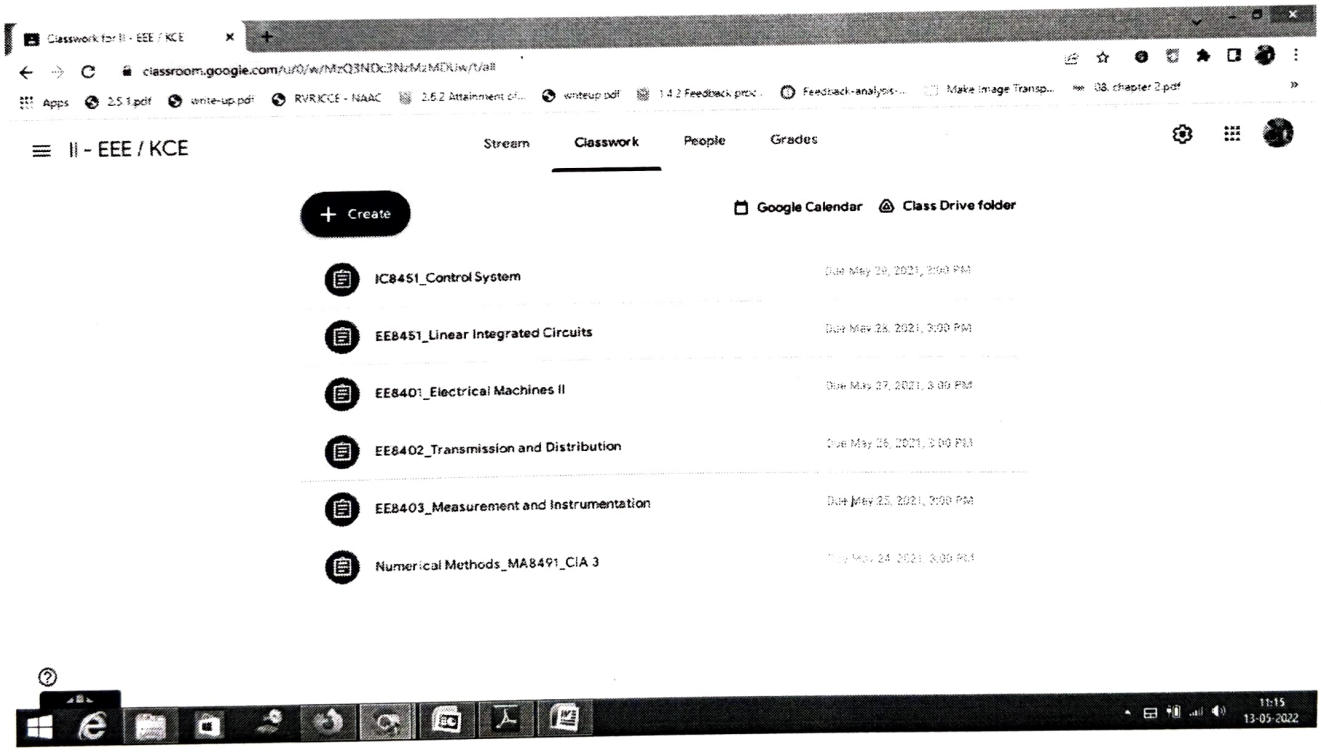
AICTE – PARAKH FOR TEACHING AND LEARNING







Usage of Google Classroom



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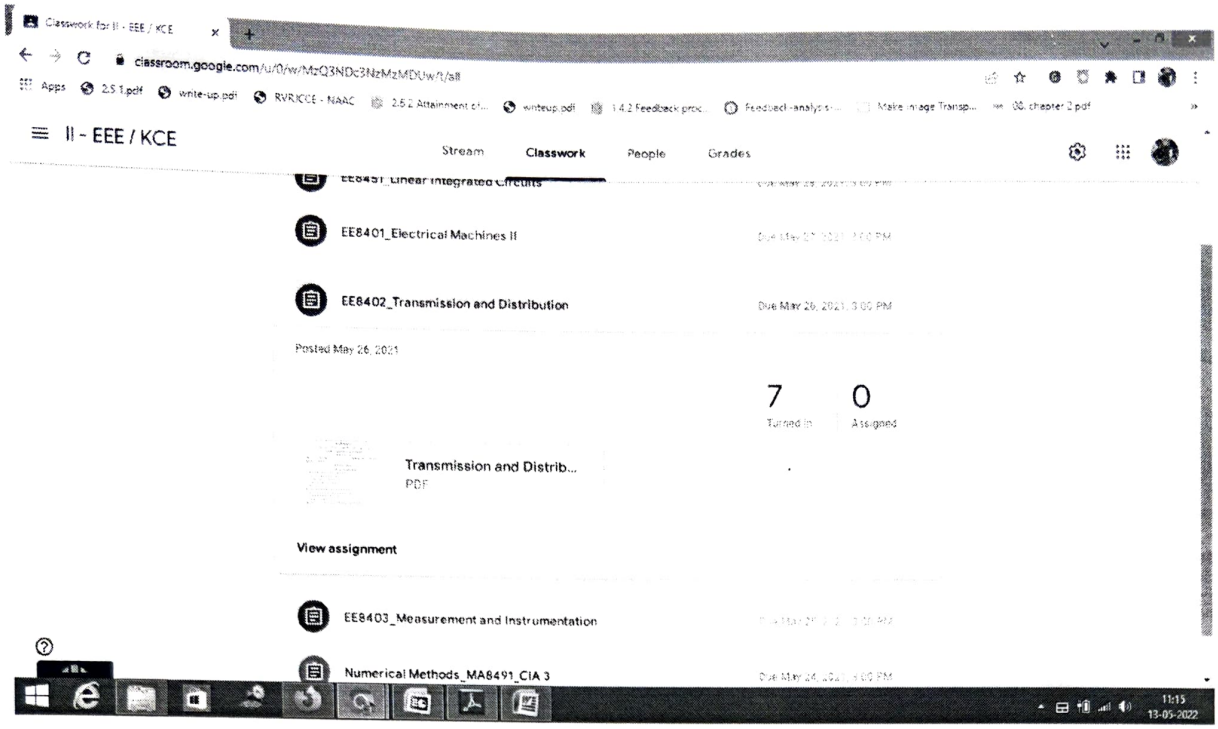
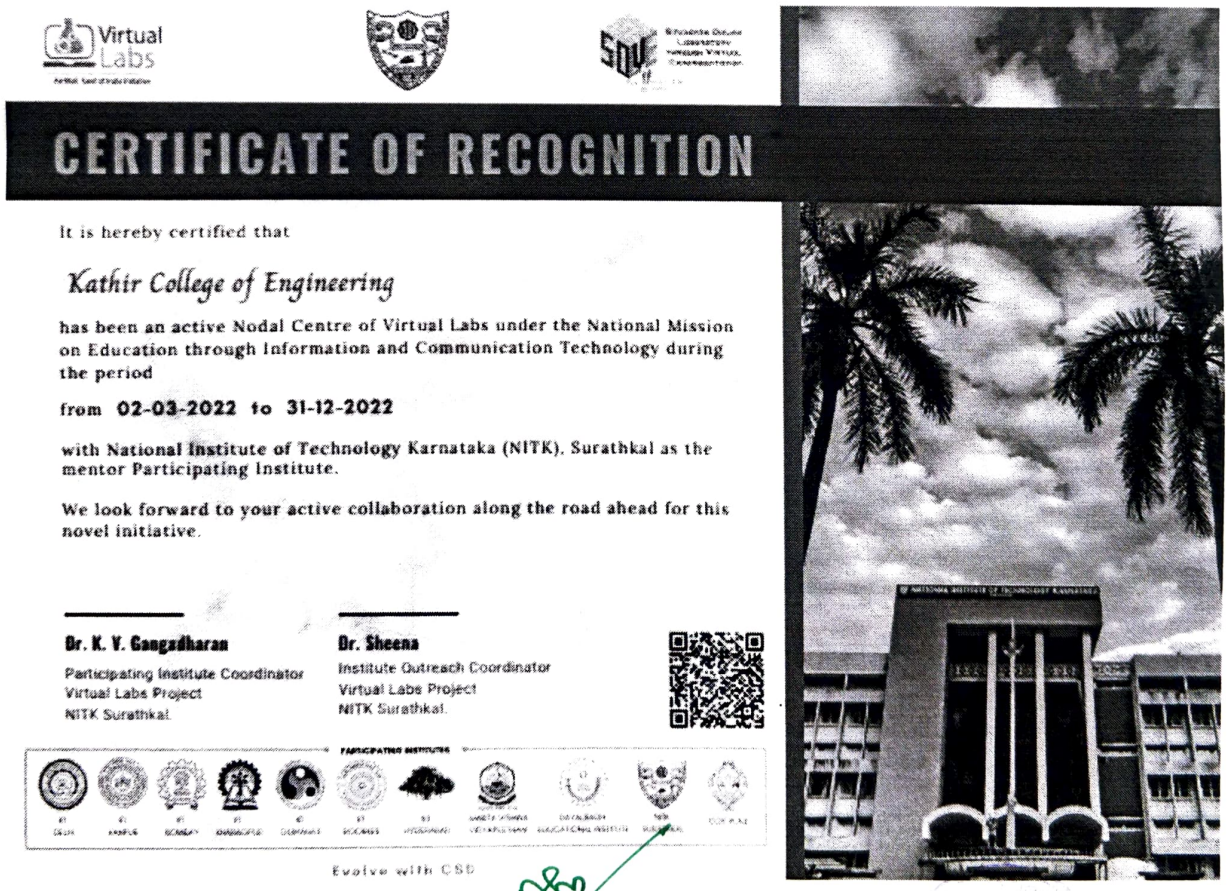


Virtual Labs for Teaching and Learning with NITK Surathkal



CERTIFICATE OF RECOGNITION

It is hereby certified that

Kathir College of Engineering

has been an active Nodal Centre of Virtual Labs under the National Mission on Education through Information and Communication Technology during the period

from **02-03-2022** to **31-12-2022**

with National Institute of Technology Karnataka (NITK), Surathkal as the mentor Participating Institute.

We look forward to your active collaboration along the road ahead for this novel initiative.

Dr. K. V. Gangadharan
Participating Institute Coordinator
Virtual Labs Project
NITK Surathkal.

Dr. Sheena
Institute Outreach Coordinator
Virtual Labs Project
NITK Surathkal.

Evolve with CSD

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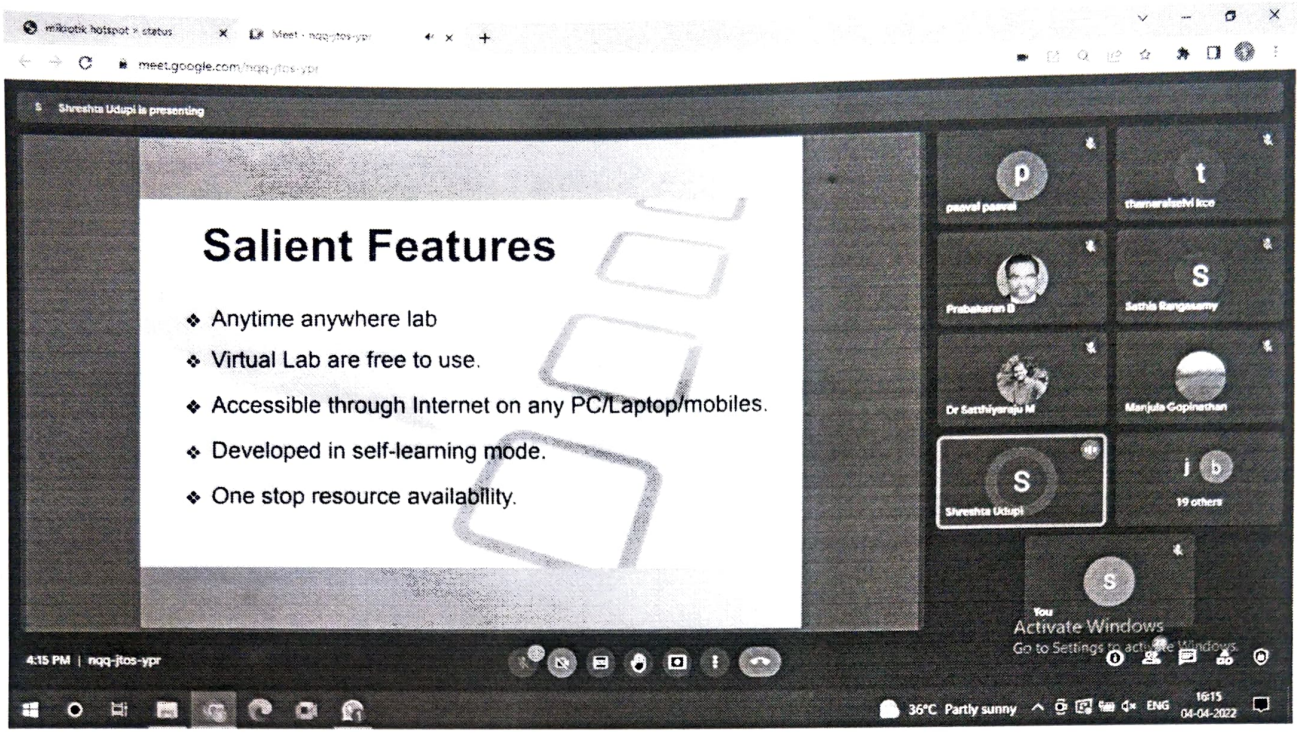

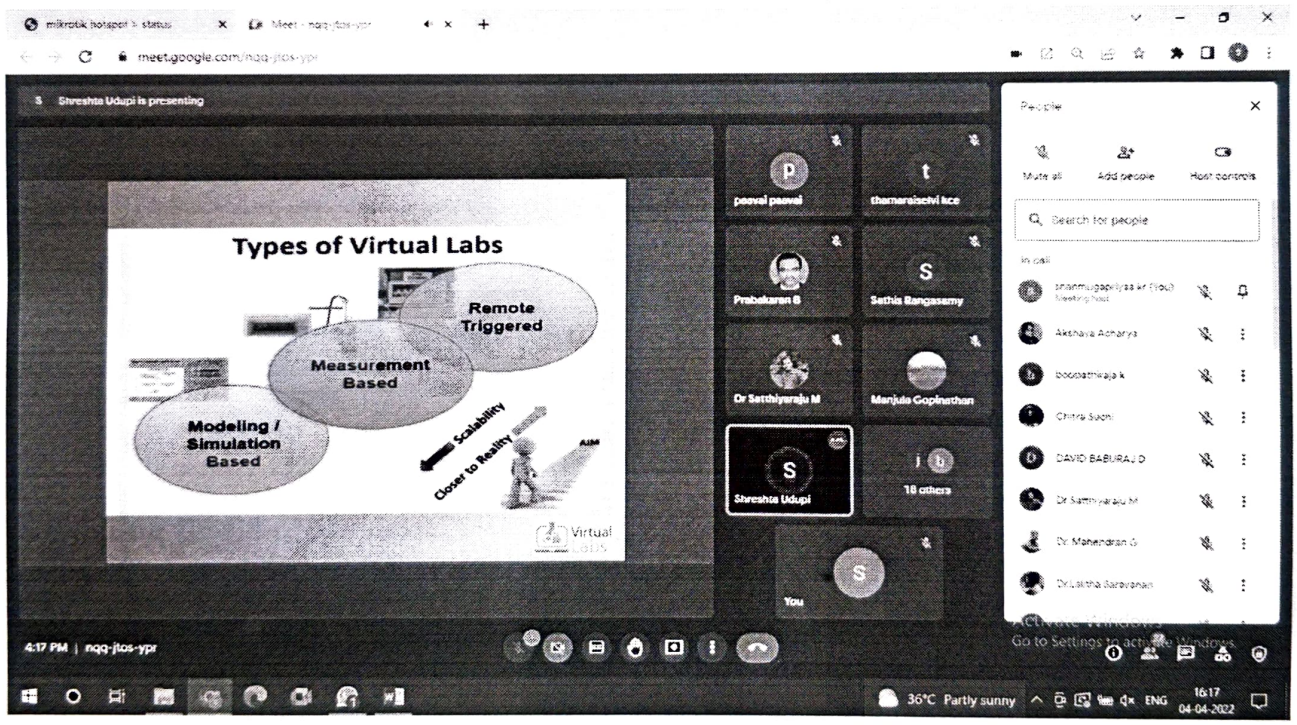

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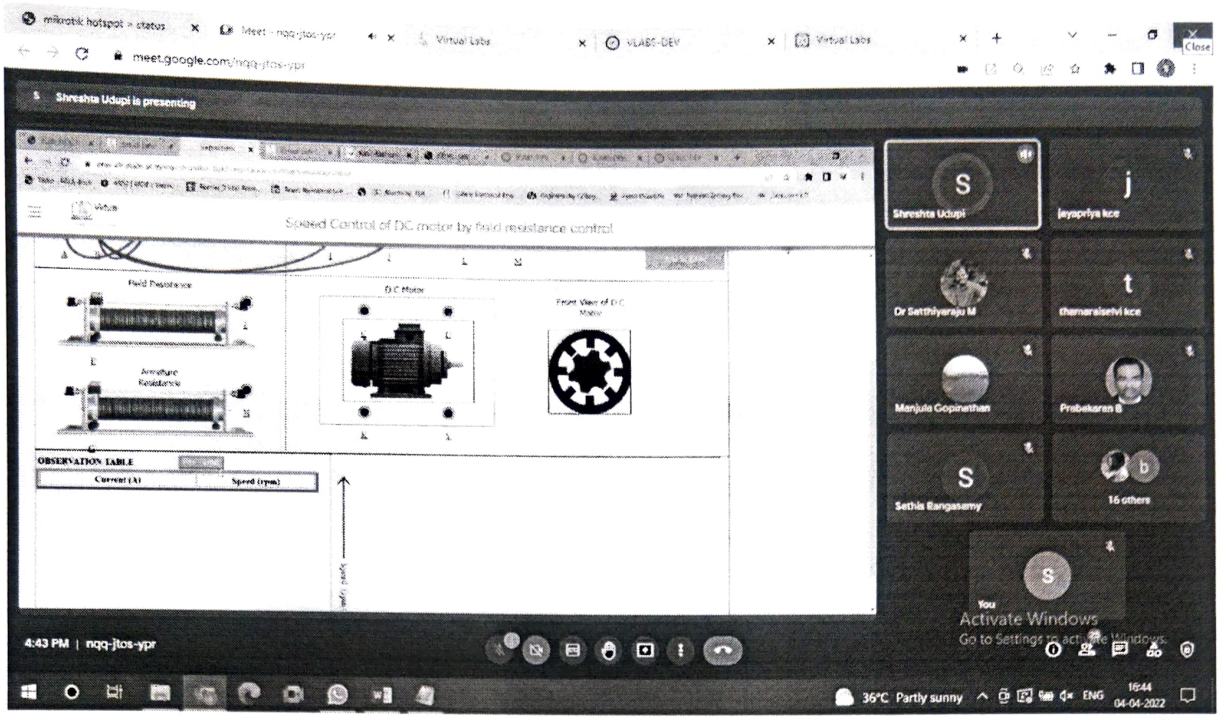

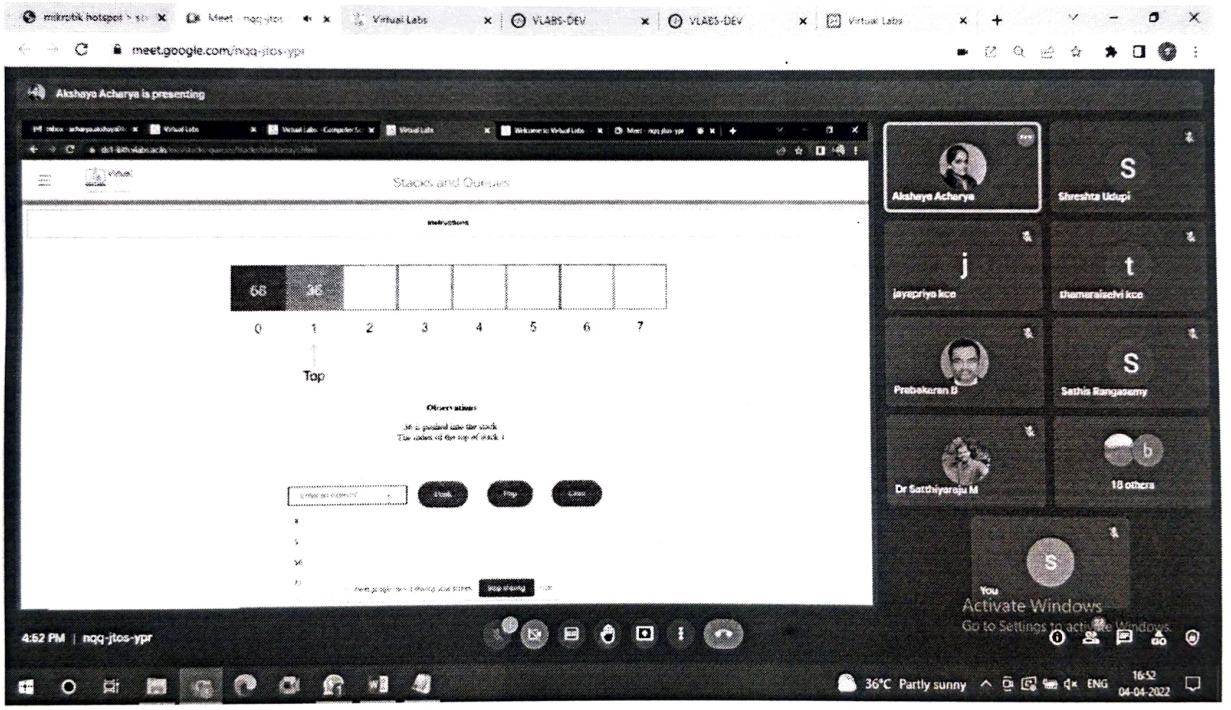

Developing and Following Leadership and Participative Management

Establishing Continuous Internal Quality Assurance System

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Principal
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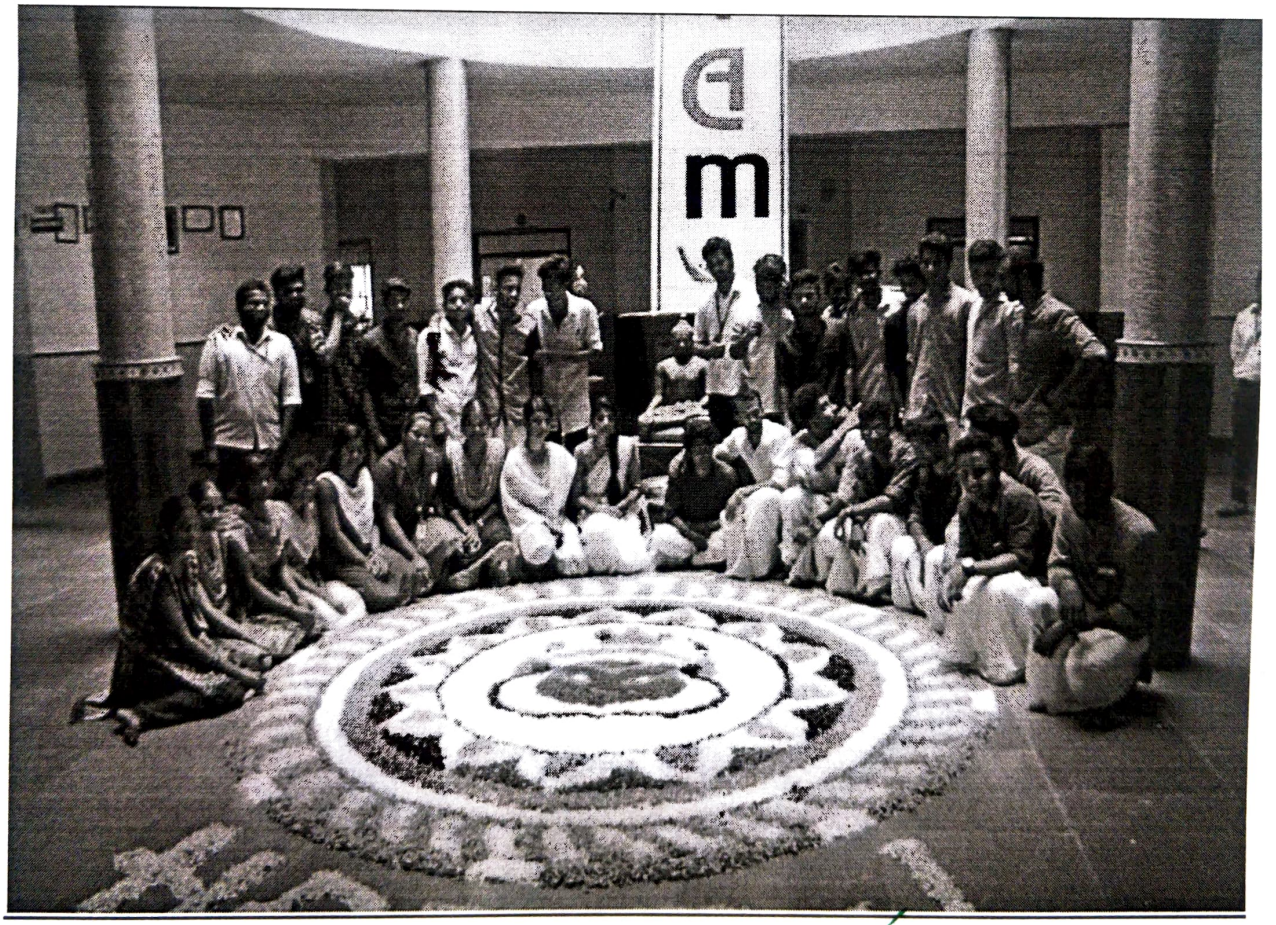
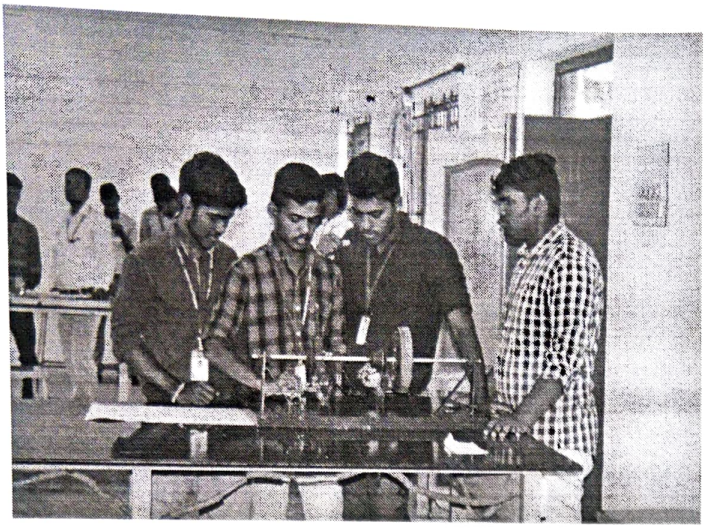
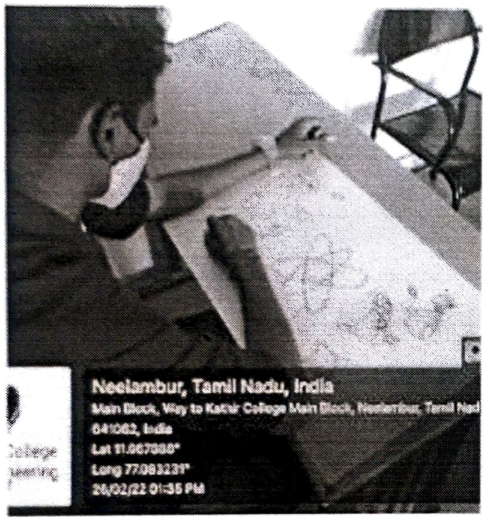
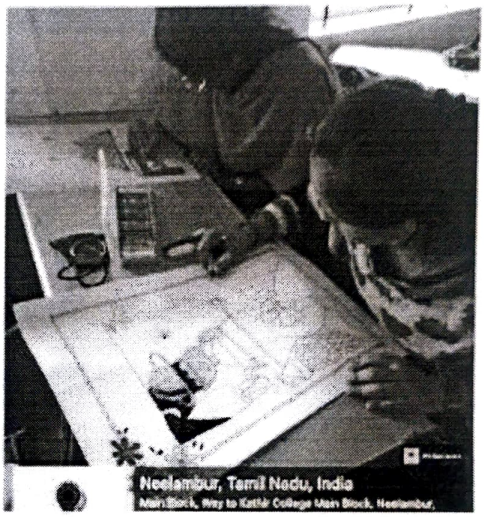
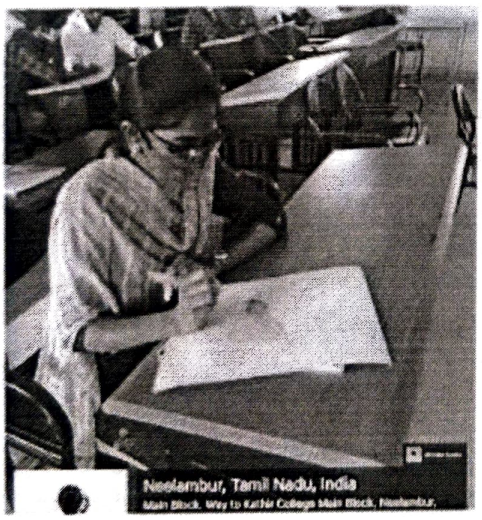
Ensuring Student Development and Participation

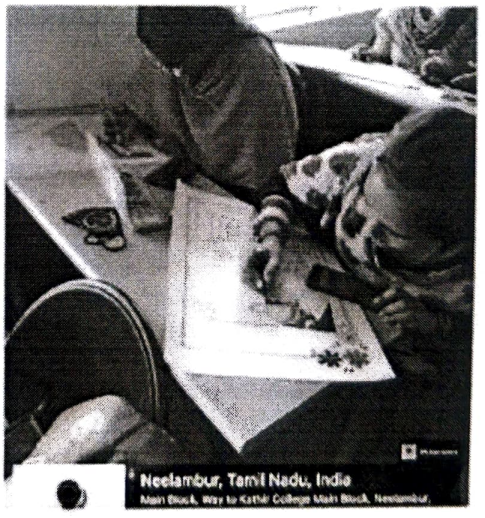












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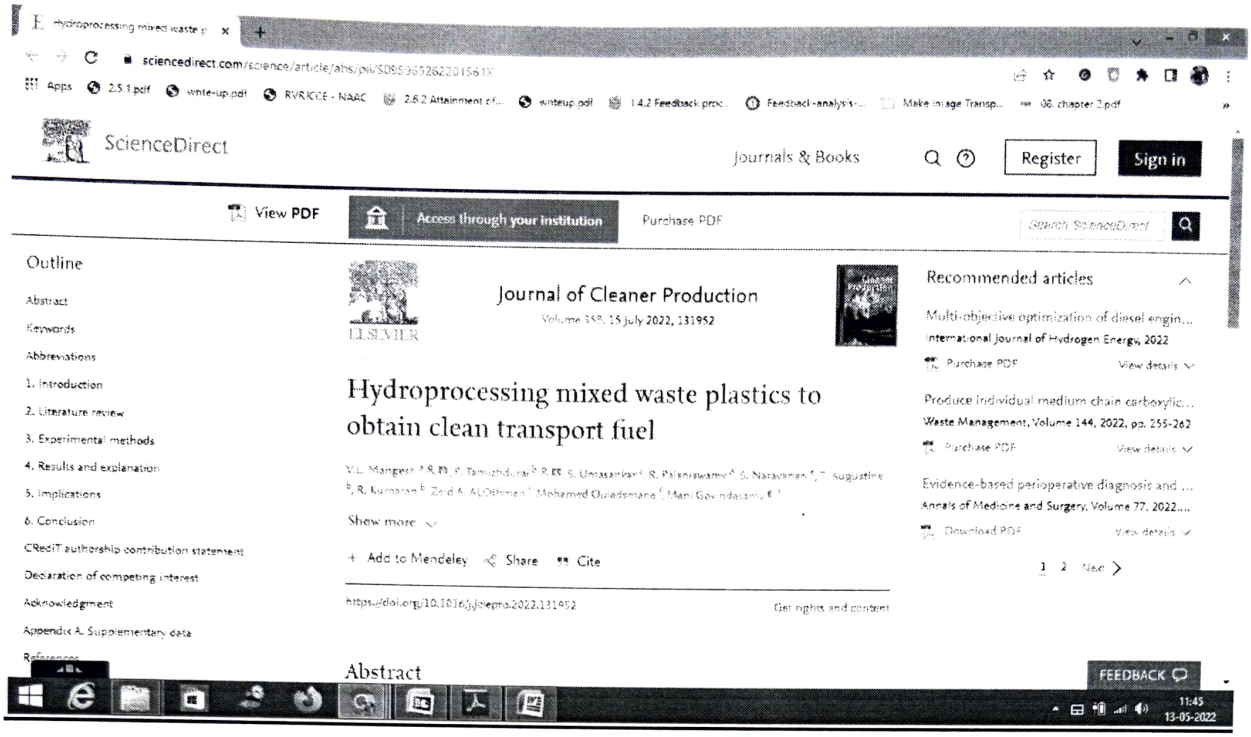
Ensuring Staff Development



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Outline

Abstract
Keywords
Abbreviations
1. Introduction
2. Literature review
3. Experimental methods
4. Results and explanation
5. Implications
6. Conclusion
CRediT authorship contribution statement
Declaration of competing interest
Acknowledgment
Appendix A. Supplementary data
References

Journal of Cleaner Production
Volume 359, 15 July 2022, 131952

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Abstract

FEEDBACK

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Email : dirresearch@annauniv.edu
dirresearch@gmail.com

Lr.No.CFR/Ph.D./Admn/JUL/2021 Date : 20.09.2021

To
Dr.S.Jayanthy
Professor
Department of Electronics and Communication Engineering
Sri Ramakrishna Engineering College
Coimbatore - 641 022

Sub : Ph.D. Programme - Provisional Registration - Order - Issued.

Ref : Res. No. 37.06 of the 37th Research Board Meeting held on 16.08.2021

....

I am to inform that **Ms.Ramya R S** is permitted to register provisionally for Ph.D. programme as **Part-Time** scholar in the Faculty of **Information and Communication Engineering** of Anna University, Chennai during **JULY 2021** session under your guidance.

Topic of Research: **ANAMLOY DETECTION OF IOT CYBER ATTACKS USING MACHINE LEARNING ALGORITHMS**

The Research Scholar may be instructed to submit the Enrolment Form (**accessed through the website https://cfr.annauniv.edu/scholars/**) within a period of 15 days from the date of issue of this order. The research scholar should submit the Semester Progress Report and Registration Renewal Form in the prescribed format at the time of payment of regular semester fee, every semester.

The 50% of the programme fee paid will be refunded, if the candidate withdraws his/her admission within 30 days from the date of payment of fee and thereafter caution deposit only will be refunded in full, subject to conditions.

The Registration Number of the research scholar is **21254697176.**

In all future correspondence quote **"21254697176/Ph.D./AR12"** as reference. The research scholar will be governed by the **"Regulations for Ph.D. Programme"** of this University and any amendments are made to the Regulations from time to time.

DIRECTOR

To
1. Individual.
2. The Head of the Department / Director of the Centre.
3. The Head of the Institution of the scholar.

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International Conference on

Advanced Technologies in Chemical, Construction and Mechanical Sciences(iCATCHCOME 2022)

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This certificate is presented to

Dr. U. Arunkumar
Assistant Professor,
Department of Electrical and Electronics Engineering,
Kathir College of Engineering, Coimbatore- 641062, Tamil Nadu, India

for presenting the research paper entitled "**PFC S^4 Boost – Zeta Converter Fed SBLDC Motor Drive**" in the International Conference on Advanced Technologies in Chemical, Construction and Mechanical Sciences (iCATCHCOME 2022) held at KPR Institute of Engineering & Technology, Coimbatore, Tamil Nadu, India during 24 - 25, March 2022. The Conference has been organized in ONLINE MODE.

Dr. L. Rajeshkumar
Coordinator

Dr. P. Thangaraj
Conference Chair

Dr. Akila M
General Chair

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Certificate

This is certified that **Arun Kumar U, Assistant Professor of Kathir College of Engineering participated & completed successfully** AICTE Training And Learning (ATAL) Academy Online Elementary FDP on "Innovative Technical Educational Practices and academic Leadership" from 07/02/2022 to 11/02/2022 at Shri Shankaracharya Technical Campus, Bhilai.

Advisor-I, ATAL Academy
Mamta Rani Agarwal

Coordinator

Dr. R. G[illegible], M.E., Ph.D.,
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Ensuring Staff Welfare

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Bus Incharge - M. Arunkumar (8667010226)			Fee/ Month
S.NO	STAGE NAME	TIMINGS	
1	SELVAPURAM	7.30	3000
2	CHETTI SREET /RAJA STREET	7.35	3000
3	MARAKKADAI	7.40	3000
4	GANDHIPURAM BUS STAND	7.45	2500
5	LAKSHMI MILLS	7.55	2500
6	PEELAMEDU / PSG TECH	8.04	2500
7	HOPES	8.14	2500
8	SITRA /KMCH	8.24	2000
9	GOLD WINS / THOTTIPALAYAM	8.29	1500
10	CHINNIYAMPALAYAM	8.34	1500
11	NEELAMBUR	8.39	500
12	KCE	8.41	0

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Driver - Mr. Mohamed Yusuf		SEAT-32	
Bus Incharge - Mr. Devic Baburaj (9790751257)			Fee/ Month
S.NO	STAGE NAME	TIMINGS	
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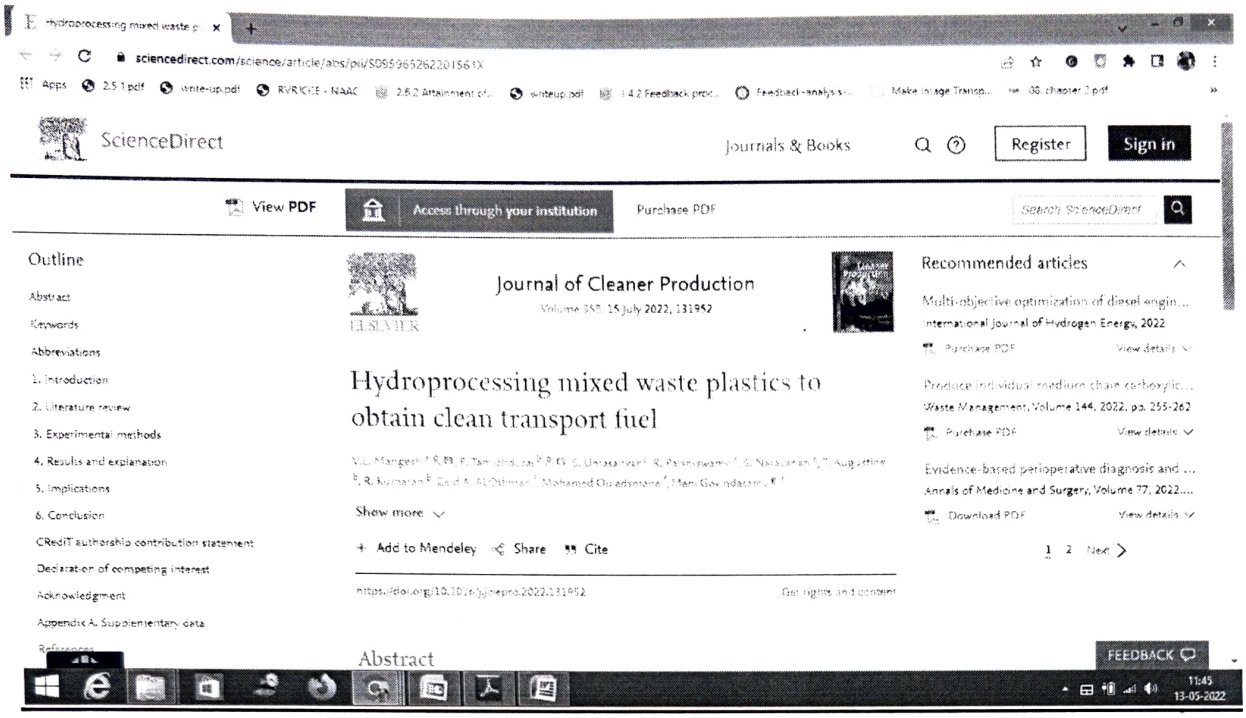
2	KOVAIPUDUR PIRIVU	7.11	3500
3	KUNIYAMUTHUR	7.19	3500
4	ATTHUPALAM	7.25	3000
5	UKKADAM	7.35	3000
6	RAMANATHAPURAM/ NANJUNDAPURAM	7.45	2500
7	SOWRIPALAYAM PIRIVU	7.49	2500
8	SINGANALLUR	8.01	2500
9	VASANTHA MILL	8.05	2500
10	JAI SANTHI	8.11	2500
11	ONDIPUDUR	8.15	2000
12	KATHIRI MILLS	8.21	2000
13	IRUGUR	8.25	2000
14	NEELAMBUR	8.36	500
15	KCE	8.41	0

BUS NO: TN21AV5599 ROUTE NAME: TIRUPPUR/AVINASHI/SEVUR			
Driver -		SEAT-55	
Bus Incharge - Mr. Abhilash (9345966588)			Fee/ Month
S.NO	STAGE NAME	TIMINGS	
1	THIRUPPUR NEW BUSTAND	7.10	4000
2	SOYAMPALAYAM	7.14	4000
3	POOLUVAPATTI/AMMAN NAGAR	7.17	4000
4	NERUPERIDHAL	7.23	4000
5	PERUMANALLUR	7.35	4000
6	AVINASHI NEW /OLD BUSTAND	7.50	3000
7	SEVUR (NAMBIYUR/SAVAYATUPALYAM)	8.00	3500
8	THEKKALUR	8.20	2500
9	KARUMATHAMPATTI	8.30	2000
10	THENNAMPALAYAM	8.37	1500
11	SULUR PIRIVU	8.42	1500
12	MUDALIPALAYAM	8.45	1500
13	NEELAMBUR	8.48	500
14	KCE	8.50	0

BUS NO: TN37CD3855 ROUTE NAME: POONDI/TIRUPPUR/MANGALAM			
Driver- Mr. Arumugam		SEAT-41	
Bus Incharge - Mr. S. Sravanan/AP/Maths (9080576690)			Fee/ Month
S.NO	STAGE NAME	TIMINGS	
1	POONDI/AMMA PALAYAM	7.10	3500
2	ANUPAR PALAYAM	7.15	4000
3	GANDHI NAGAR	7.20	4000
4	SAP BUSTOP	7.25	4000
5	MILLER STOP/PUSHPA THEATRE	7.30	4000
6	OLD BUSTAND/VALARMATHY	7.35	4000
7	PAKIAPALAYAM/CTC	7.45	4000
8	TKT MILLS	8.00	4000
9	KARUVAMPALAYAM	8.10	3500
10	MANGALAM	8.20	3500
11	MALAIKOVIL PIRIVU	8.23	3000
12	SOMANUR	8.30	2500
13	MG PUDUR	8.43	1500
14	NEELAMBUR	8.50	500
15	KCE	8.52	0

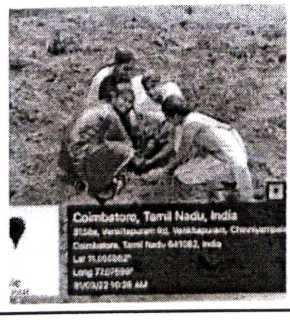
Ph.D.,
Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

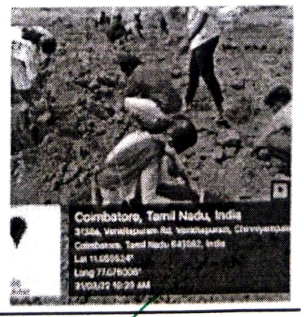
Encouraging Research and Development



Engagement in Community Services and Activities

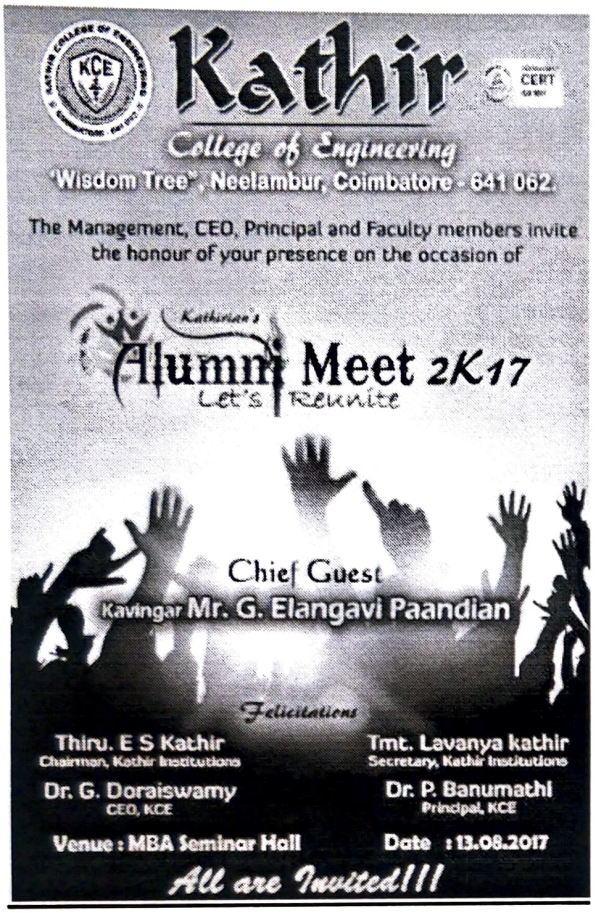
Principal
Kathir College of Engineering,
Neelambur, Coimbatore - 641 062.





Dr. R. [illegible] MAR, ME, Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur, Coimbatore - 641 062.

Increasing Alumni Interaction and Participation



Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

Institutional Information for Quality Assessment(IIQA)

KATHIR COLLEGE OF ENGINEERING,COIMBATORE,TAMIL NADU

	Date of submission	:	26/05/2022
	AISHE ID	:	C-36988
	Institution Track ID	:	TNCOGN24510

1	Application For	Accreditation
	Cycle of Accreditation	Cycle2

Cycle	Date	Grade	Score
1	25/05/2016	B	2.59

2	Name of the College	KATHIR COLLEGE OF ENGINEERING
3	Date of establishment of the Institution	01/09/2008
4	Name of the Head of the Institution	Dr. R.UDAIYAKUMAR
	Designation	Principal
5	Does the college function from Own Campus	Yes
6	Address of the College	Wisdom Tree, Avinashi Road, Near Bye Pass, Neelambur
	State/UT	TAMIL NADU
	District	COIMBATORE
	City	COIMBATORE
	Pin	641062
	Phone No	0422-2203773
	Fax No	-8030723600
	Mobile No	9626273374
	Registered Email	principal@kathir.ac.in
	Alternate Email	kathirce@gmail.com
7	Alternate Faculty Contact Details	Dr. B.PRABAKARAN IQAC /CIQA coordinator
	Address	Kathir College of Engineering, Wisdom tree, Avinashi Road, Near Bye Pass, Neelambur

	State/UT	TAMIL NADU
	City	COIMBATORE
	Pin	641062
	Phone No	0422-2203787
	Fax No	-8030723600
	Mobile No	9894158701
	Email	bp.siet@gmail.com
	Alternate Email	prabakaran@kathir.ac.in
8	Website	https://www.kathir.ac.in
9	Has the Institution completed 6 years of existence / Years of graduation of last two batches	Yes Year1- 2020 Year2- 2021
10	Nature of the college	Private and Self Financing
11	College Affiliation	Affiliated
12	Name of the affiliating University(ies) and the state(s) in which the University(ies) is located	

State	University Name	Documents
Tamil Nadu	Anna University	View Document

13	Is the Institution recognized under section 2(f) of the UGC Act?	Yes 18/12/2014 View Document
14	Is the Institution recognized under section 12B of the UGC Act? If yes, date of recognition by UGC under section 12B along with latest Plan General Development Grant release letter	Yes 11/09/2020 View Document
15	Is the institution recognised as an Autonomous College by the UGC?	No
16	Is the institution recognised as a 'College with Potential for Excellence (CPE)' by the UGC?	No
17	Is the institution recognised as a 'College of Excellence' by the UGC?	No
18	Is the College offering any programmes recognised by any Statutory Regulatory Authority (SRA)	Yes
	Statutory Regulatory Authorities	

SRA program	Document
AICTE	View Document

19	If the institution is not affiliated to a university and is offering programmes recognized by any Statutory	Not Applicable

Dr. R. UDAYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

	Regulatory Authorities (SRA), are the programmes recognized by Association of Indian Universities(AIU) or other appropriate Government authorities as equivalent to UG / PG Programmes of a University

20 Number of programmes offered

Programmes	Number
UG	5
PG	5
Post Master's (DM,Ayurveda Vachaspathi,M.Ch)	0
Pre Doctoral (M.Phil)	0
Doctoral (Ph.D)	0
Post Doctoral (D.Sc , D.Litt , LLD)	0
PG Diploma recognised by statutory authority including university	0
Diploma	0
Certificate / Awareness	0

21 Programme Details

Program	Department	University Affiliation	SRA Recognition	Affiliation Status
BE(Electrical and Electronics Engineering)	Electrical And Electronics Engineering	Anna University	AICTE	Temporary
BE(Electronics and Communication Engineering)	Electronics And Communication Engineering	Anna University	AICTE	Permanent
BE(Computer Science and Engineering)	Computer Science And Engineering	Anna University	AICTE	Permanent
BE(Mechanical Engineering)	Mechanical Engineering	Anna University	AICTE	Permanent
BE(Artificial Intelligence and Data Science)	Artificial Intelligence And Data Science	Anna University	AICTE	Temporary
MBA(Master of Business Administration)	Master Of Business Administration	Anna University	AICTE	Temporary
ME(Power Electronics and Drives)	Electrical And Electronics Engineering	Anna University	AICTE	Temporary
ME(Computer Science and Engineering)	Computer Science And Engineering	Anna University	AICTE	Temporary
ME(Applied	Electronics	Anna	AICTE	Temporary

Electronics)	And Communication Engineering	University		
ME (Manufacturing Engineering)	Mechanical Engineering	Anna University	AICTE	Temporary

View Document

22 Number of Teaching Staff by employment status (permanent / temporary) and by gender

Male	Female	Transgender	Total
46	41	0	87
0	0	0	0

23 Number of Non-Teaching Staff by employment status (permanent / temporary) and by gender

Male	Female	Transgender	Total
18	4	0	22

24 Number of Students on roll by gender

Male	Female	Transgender	Total
591	180	0	771

25 Does the institution have statutory cells / committees

1.Commitee for SC/ST
2.Minority Cell
3.Grievance Redressal Committee
4.Internal Compliant Committee
5.Anti-ragging Committee
6.OBC Cell

26 Date of establishment of IQAC

25/04/2016

The minutes of IQAC meeting and Action Taken Report should be uploaded on the institutional website.

Date	View Document
27/01/2022	https://kathir.ac.in/wp-content/uploads/2022/05/MOM-2021-2022-27.1.22.pdf

27 Date of submission of AQARs of last 4 years to NAAC

Date	View Document
21/01/2019	https://kathir.ac.in/wp-content/uploads/2021/12/2017-2018-2_compressed.pdf
14/05/2021	https://kathir.ac.in/wp-content/uploads/2021/12/2018-2019-1.pdf
22/05/2021	https://kathir.ac.in/

Dr.R.UDAYAKUMAR, ME.,Ph.D.,

			wp-content/uploads/2021/12/AQAR2019-2020-1.pdf
		18/02/2022	https://kathir.ac.in/wp-content/uploads/2022/files/AQAR_2020_2021.pdf
28	Has the institution made statutory declaration on the institution website under Section 4 (1) (b) of the RTI Act 2005 as issued and amended from time to time.	Yes https://kathir.ac.in/wp-content/uploads/2022/05/RTI-Act-2005.pdf	
29	Does the college have an academic MoU with any foreign institution	No	
30	Date of uploading data on MHRD website for All India Survey on Higher Education (AISHE).	28/03/2022 View Document	
	Attach Certification by the Head of the Institution for having complied with Rules & Regulations of Central Government, UGC and other Statutory Bodies, State Government and Affiliating University in the prescribed format enclosed herewith.	View Document	
32	Registration Fee paid details.	Online Receipt No: 45827 Transaction ID:WSBI1169090264 Transaction Date:25/05/2022 Amount:29500.00 Bank ID :SBI Bank Reference No :CHJ5140282 Status :Received	

Dr.R.UDAYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
Neelambur, Coimbatore-641 062.

सत्यमेव जयते

विश्वविद्यालय अनुदान आयोग
University Grants Commission
मानव संसाधन विकास मंत्रालय, भारत सरकार
(Ministry of Human Resource Development, Govt. of India)
बहादुर शाह जफर मार्ग, नई दिल्ली – 110 002
Bahadur Shah Zafar Marg, New Delhi – 110 002

ज्ञान-विज्ञान विमुक्तये

September, 2020

F. No. 8-216/2020 (CPP-I/C)

11 SEP 2020

The Registrar,
Anna University
Sardar Patel Road, Chennai – 600 025
Tamil Nadu

Sub: - Declaring a College fit to receive Central Assistance under Section 12 (B) of the UGC Act, 1956.

Sir,

I am directed to refer to your letter no. 179/CAI/AU/2020 dated 27.02.2020 on the above subject and to say that it is noted that the following college is **un-aided/self-financed** and **permanently** affiliated to **Anna University, Chennai**. The college is already included under Section 2 (f) of the UGC Act, 1956 vide this office letter no. F.No.8-327/2011 (CPP-I/C) dated 18.12.2014. I am further to say that the name of the following college has been included in the list of colleges prepared under Section 12 (B) of the UGC Act, 1956 under the head **'Non-Government, self-financed** College teaching upto **Bachelor's** Degree':-

Name of the College	Year of Establishment	Remarks
Kathir College of Engineering, Wisdom Tree, Avinashi Road, Neelambur, Coimbatore - 641 062, Tamil Nadu.	2008	The College is now declared fit to receive Central assistance in terms of Rules framed under Section 12 (B) of the UGC Act, 1956. However, the College, being a self-financing & unaided, would be eligible to receive UGC's support only in respect of teachers & students related schemes as per the decision of the Commission dated 8th July 2011.

The documents submitted in respect of the above College have been accepted by the University Grants Commission.

Yours faithfully,

(Anita Gogna)
Under Secretary

Copy to:-

1. The Principal,
Kathir College of Engineering
Wisdom Tree, Avinashi Road
Neelambur, Coimbatore - 641 062
Tamil Nadu.

(Madan Lal)
Section Officer

(Continued at page 2)

From pre-page

2. The Secretary,
   Government of India
   Ministry of Human Resource Development
   Department of Higher Education
   Shastri Bhawan
   New Delhi - 110 001.

3. The Secretary,
   Higher Education Deptt
   Government of Tamilnadu, Secretariat
   Chennai - 600 009, (Tamil Nadu).

4. The Joint Secretary, UGC
   South Eastern Regional Office (SERO)
   P.B. No. 152, A.P.S.F.C. Building
   IV Floor, 5-9-194, Chirag Ali Lane
   Hyderabad - 500 001, Telangana.

5. Section Officer (F.D.-III Section) U.G.C., New Delhi.

6. Guard file.

(Madan Lal)
Section Officer

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelam.../Coimbatore - 641 062.

ANNA UNIVERSITY
CHENNAI - 600 025, INDIA

REGISTRAR

Phone : (O) 22352161, 22357004
Fax : 91-44-2235 1956
Gram : ANNATECH
E-mail : registrar@annauniv.edu

Lr. No. 011 / CAI / Permanent Affln. / 2019-20 / 7116 Dated: 07.01.2020

To

The Principal,
Kathir College of Engineering,
WISDOM TREE, Avinashi Road,
Neelambur, Coimbatore-641062.

Sir,

Sub: **Permanent Affiliation** - Granting of Permanent Affiliation for the existing programmes – 2019-20 – Reg.

Ref: 1. Minutes of 255th Syndicate dated 30.10.2019
2. Minutes of 89th SCA dated 09.12.2019

******

I am to inform that under the provisions of section 7.6.2 of the Anna University statutes for affiliation, **Permanent Affiliation** for the existing programme(s) is granted for the following B.E. / B.Tech. / B.Arch. / M.E. / M.Tech. / M.B.A / M.C.A programme(s) with the sanctioned intake indicated against each from the academic year 2019-20 at **Kathir College of Engineering,** WISDOM TREE, Avinashi Road, Neelambur, Coimbatore-641062.

Sl. No.	Degree	Programme(s)	Sanctioned intake	Year from which Permanent Affiliation is granted
1.	B.E.	Computer Science and Engineering	60	2019-20
2.	B.E.	Electronics and Communication Engineering	60	
3.	B.E.	Mechanical Engineering	120	

The above said status of Permanent Affiliation is granted subject to the following conditions:

1. The college should obtain extension of approval by the UGC / AICTE / COA / DGS as applicable for every academic year for the above mentioned programmes with the corresponding sanctioned intake. In the absence of extension of approval from the appropriate authority, the Permanent Affiliation now granted will not be valid.

2. In case of increase in intake granted by the appropriate authority for a permanently affiliated programme, the college should apply to the University for the grant of affiliation for the increased intake and orders of the University should be obtained for increasing the intake of the permanently affiliated programme.

3. The college should continue to fulfill the requirements for the above mentioned programmes as per the norms and standards of the University and the laboratory requirements as per the curricula and syllabi of Anna University, Chennai for these programmes.

4. The college should strictly adhere to and comply with the provisions of Anna University Act / Statutes / Regulations norms and standards / guidelines or any other law time being in force.

5. The permanent affiliation granted may be suspended / withdrawn after adopting the procedures laid down in the Regulations, if the college fails to comply with the provisions made in this behalf or the college has failed to observe / implement any of the conditions of affiliation or the college has conducted in a manner which is prejudicial to the interests of University education and/or students.

6. Notwithstanding the granting of Permanent Affiliation, the University reserves its right to inspect the college to verify the continued fulfillment of the affiliation requirements as prescribed by the University for the Programmes concerned.

7. The Permanent Affiliation is granted without prejudice to the right of the University of requiring production of certificate required under Section 37-B of Tamil Nadu Land Reforms (LC) Act 1961 subject to the decision of the Hon'ble High Court of Madras in W.A.No. 3454 / 2002 batch and W.A.No. 3482 / 2002 batch.

Centre for Affiliation of Institutions
ANNA UNIVERSITY
CHENNAI

Yours sincerely

07/01/2020

07/01/2020

REGISTRAR

REGISTRAR
ANNA UNIVERSITY
CHENNAI 600 025

Copy to:

1. The Commissioner of Technical Education, DOTE Campus, Chennai – 600 025.
2. The Chairman, All India Council for Technical Education, Nelson Mandela Marg, Vasant Kunj, New Delhi-110070.
3. Master File.

R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree", Avinashi Road,
Neelambur, Coimbatore - 641 062.

National Institutional Ranking Framework
Ministry of Human Resource Development
Government of India

nirf (/NIRFIndia/Home)

Welcome to Data Capturing System: ENGINEERING

Institute ID: IR-1-E-E-C-36988
Institute Name: KATHIR COLLEGE OF ENGINEERING

Full Report

Sanctioned (Approved) Intake

Academic Year	2016-17	2015-16	2014-15	2013-14	2012-13	2011-12
UG [4 Years Program(s)]	540	540	540	660	---	---
PG [2 Years Program(s)]	216	216	---	---	---	---

Total Actual Student Strength (Program(s) Offered by Your Institution)

(All programs of all years)	No. of Male Students	No. of Female Students	Total Students	Within State (Including male & female)	Outside State (Including male & female)	Outside Country (Including male & female)	Economically Backward (Including male & female)	Socially Challenged (SC+ST+OBC Including male & female)	No. of students receiving Freeships / Scholarships from the State and Central Government	No. of students receiving Freeships / Scholarships from Institution Funds	No. of students receiving Freeships / Scholarships from the Private Bodies	No. of students who are not receiving any Freeships / Scholarships
UG [4 Years Program(s)]	1103	260	1363	1333	30	0	1179	184	765	50	0	548
PG [2 Years Program(s)]	92	37	129	119	10	0	84	45	23	0	0	106

Placement & Higher Studies

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

UG [4 Years Program(s)]: Placement & higher studies for previous 3 years

Academic Year	No. of first year students intake in the year	No. of first year students admitted in the year	Academic Year	No. of students admitted through Lateral entry	Academic Year	No. of students graduating in minimum stipulated time	No. of students placed	Median salary of placed graduates (Amount in Rs.)	No. of students selected for Higher Studies
(2011-12)	420	364	(2012-13)	61	(2014-15)	249	228	168000 (ONE LAKHS SIXTY EIGHT THOUSAND)	21
(2012-13)	540	428	(2013-14)	61	(2015-16)	408	234	192000 (ONE LAKH NINTY TWO THOUSAND)	1
(2013-14)	660	442	(2014-15)	69	(2016-17)	304	271	192000 (ONE LAKH NINTY TWO THOUSAND)	5

PG [2 Years Program(s)]: Placement & higher studies for previous 3 years

Academic Year	No. of first year students intake in the year	No. of first year students admitted in the year	Academic Year	No. of students graduating in minimum stipulated time	No. of students placed	Median salary of placed graduates (Amount in Rs.)	No. of students selected for Higher Studies
(2013-14)	216	153	(2014-15)	106	25	192000 (ONE LAKH NINTY TWO THOUSAND)	0
(2014-15)	216	87	(2015-16)	54	10	204000 (TWO LAKH FOUR THOUSAND)	0
(2015-16)	216	75	(2016-17)	39	28	192000 (ONE LAKH NINTY TWO THOUSAND)	0

Dr. R. UDAYAKUMAR, ME.,Ph.D.,
Principal
"Wisdom Tree" ... Neelambur, Coimbatore - 641 062.

Ph.D Student Details

Ph.D (Student pursuing doctoral program till 2016-17; Students admitted in the academic year 2017-18 should no be entered here).

	Total Students
Full Time	0
Part Time	0

No. of Ph.D students graduated (including Integrated Ph.D)

	2016-17	2015-16	2014-15
Full Time	0	0	0
Part Time	0	0	0

Financial Resources: Utilised Amount for the Capital & Operational expenditure for previous 3 years

Financial Year	2016-17	2015-16	2014-15

Financial Year	2016-17 Utilised Amount	2015-16 Utilised Amount	2014-15 Utilised Amount
Annual Capital Expenditure on Academic Activities and Resources (excluding expenditure on buildings)	Utilised Amount	Utilised Amount	Utilised Amount
Library	218605 (Two Lakh Eighteen Thousand Six Hundred and Five)	1179587 (ELEVEN LAKH SEVENTY NINE THOUSAMS FIVE HUNDRED AND EIGHTY SEVEN)	702227 (SEVEN LAKH TWO THOUSAND TWO HUNDRED AND TWENTY SEVEN)
New Equipment for Laboratories	679730 (Six Lakh Seventy Nine Thousand Seven Hundred And Thirty)	1126318 (ELEVEN LAKH TWENTY SIX THOUSAND THREE HUNDRED AND EIGHTEEN)	1738180 (SEVENTEEN LAKH THIRTY EIGHT THOUSAND ONE HUNDRED AND EIGHTY)
Engineering Workshops	0 (Zero)	0 (Zero)	0 (Zero)
Studios	0 (Zero)	0 (Zero)	0 (Zero)
Other expenditure on creation of Capital Assets (excluding expenditure on Land and Building)	661700 (Six Lakh Sixty One Thousand and Seven Hundred)	150350 (ONE LAKH FIFTY THOUSAND THREE HUNDRED AND FIFTY)	149864 (ONE LKAH FOURTY NINE THOUSAND EIGHT HUNDRED AND SIXTY FOUR)
Annual Operational Expenditure			
Salaries (Teaching and Non Teaching staff)	44592067 (Four Croce Fourtyy Five Lakh Ninty Two Thousand And Sixty Seven)	59903102 (FIVE CROCE NINTY NINE LAKH THREE THOUSAND ONE HUNDRED AND TWO)	55774700 (FIVE CROCE FIFTY SEVEN LAKHSEVENTY FOUR THOUSAND AND SEVEN HUNDRED)
Maintenance of Academic Infrastructure or consumables, other running expenditures etc. (excluding maintenance of hostels and allied services)	39832063 (Three Croce NInty Eight Lakh Thiry Two Thousand and Sixty Three)	3828502 (THIRTY EIGHT LAKH TWENTY EIGHT THOUSAND FIVE HUNDRED AND TWO)	27684948 (TWO CROCE SEVENTY SIX LAKH EIGHTY FOUR THOUSAND NINE HUNDRED AND FOURTY EIGHT)
Seminars/Conferences/Workshops	275718 (Two Lakh Seventy FIve Seven Hundred and Eighteen)	489483 (FOUR LAKH EIGHTY NINE THOUSAND FOUR HUNDRED AND EIGHTY THREE)	861250 (EIGHT LAKH SIXTY ONE THOUSAND TWO HUNDRED AND FIFTY)

Earning From Patents(IPR)

Financial Year	2016-17	2015-16	2014-15
Earning From Patents (Amount in Rupees)	0	0	0
Enter Amount in Words	Zero	Zero	Zero

Sponsored Research Details

Financial Year	2016-17	2015-16	2014-15
Total no. of Sponsored Projects	0	0	2
Total no. of Funding Agencies	0	0	2
Total Amount Received (Amount in Rupees)	0	0	137000
Amount Received in Words	Zero	Zero	One Lakh Thirty Seven Thousand

Consultancy Project Details

Financial Year	2016-17	2015-16	2014-15

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Easwari Engineering College
Ramapuram, Chennai - 600 089.

Financial Year	2016-17	2015-16	2014-15
Total no. of Consultancy Projects	62	38	57
Total no. of Client Organizations	38	21	19
Total Amount Received (Amount in Rupees)	983080	552930	1237455
Amount Received in Words	NINE LAKH EIGHTY THREE THOUSAND AND EIGHTY	FIVE LAKH FIFTY TWO THOUSAND NINE HUNDRED AND THIRTY	TWELE LAKH THIRTY SEVEN THOUSAND FOUR HUNDRED AND FIFTY FIVE

PCS Facilties: Facilities of physically challenged students

1. Do your institution buildings have Lifts/Ramps?	Yes, in all the buildings
2. Do your institution have provision for walking aids, includingwheelchairs and transportation from one building to another for handicapped students?	Yes, in all the buildings
3. Do your institution buildings have specially designed toilets for handicapped students?	Yes, in some of the buildings

Faculty Details

Srno	Name	Age	Designation	Gender	Qualification	Experience (In Months)	Is Associated Last Year	Currently working with institution?	Joining Date	Leaving Date	Association type
1	A ASHOTHAMAN	27	Assistant Professor	Male	M.E.	49	No	Yes	19-06-2017	---	Regular
2	A GOKULAKRISHNAN	27	Assistant Professor	Male	M.E.	49	Yes	Yes	14-06-2013	---	Regular
3	A JESU	33	Assistant Professor	Male	M. Phil	103	Yes	No	18-01-2013	06-07-2017	Regular
4	A KAVIYA	26	Assistant Professor	Female	M.E.	63	Yes	Yes	18-06-2014	---	Regular
5	A KUPPURAJ	28	Assistant Professor	Male	M.E.	52	Yes	Yes	02-06-2015	---	Regular
6	A MUTHU KUMAR	31	Assistant Professor	Male	M.E.	99	Yes	No	12-06-2015	16-03-2017	Regular
7	A NITHYAKALYANI	35	Assistant Professor	Female	M. Phil	107	No	No	01-06-2012	09-05-2016	Regular
8	A R SURESH	51	Professor	Male	Ph.D	359	Yes	Yes	23-05-2016	---	Regular
9	A RADHIKA	35	Assistant Professor	Female	M. Phil	93	No	Yes	21-08-2017	---	Regular
10	A RAJAAMBIKA	25	Assistant Professor	Female	M.E.	27	Yes	Yes	29-06-2015	---	Regular

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11	A RAMESHKUMAR	28	Assistant Professor	Male	M.E.	49	Yes	Yes	14-06-2013	---	Regular
12	A VIJIYAKUMAR	29	Assistant Professor	Male	M.E.	59	Yes	Yes	14-06-2013	---	Regular
13	AKILA T	24	Assistant Professor	Female	M.E.	7	Yes	Yes	05-01-2017	---	Regular
14	ARUN M	26	Assistant Professor	Male	M.E.	13	Yes	Yes	01-07-2016	---	Regular
15	ARUNRAJKUMAR B	29	Assistant Professor	Male	M.E.	41	Yes	No	01-07-2016	03-01-2017	Regular
16	B PRASAD	28	Assistant Professor	Male	M.E.	26	Yes	Yes	02-06-2015	---	Regular
17	B SHANMUGAPRIYA	30	Assistant Professor	Female	M. Phil	71	No	No	14-06-2010	07-05-2016	Regular
18	B VAIKUNDASELVAN	44	Associate Professor	Male	Ph.D	288	Yes	Yes	27-05-2011	---	Regular
19	C KARTHIKEYAN	27	Assistant Professor	Male	M.E.	6	Yes	No	01-07-2016	02-01-2017	Regular
20	C SIVANRAJ	30	Assistant Professor	Male	M.E.	80	Yes	No	04-07-2014	16-03-2017	Regular
21	C VIGNESHWARAN	35	Assistant Professor	Male	M. Phil	113	Yes	Yes	25-08-2015	---	Regular
22	D DAVID BABU RAJ	45	Assistant Professor	Male	MBA	206	Yes	Yes	25-07-2016	---	Regular
23	D GOVINDASAMY	28	Assistant Professor	Male	M. Phil	29	No	Yes	03-07-2017	---	Regular
24	D MOHANA PRIYA	30	Assistant Professor	Female	M. Phil	44	Yes	No	18-01-2013	26-09-2016	Regular
25	D RAVI	41	Associate Professor	Male	M.E.	212	Yes	Yes	09-02-2011	---	Regular
26	DANIELDICKSON JEYAKUMAR	29	Assistant Professor	Male	M.E.	21	Yes	No	01-07-2016	08-05-2017	Regular
27	E DEEPARAJ	27	Assistant Professor	Male	M.E.	49	No	Yes	19-06-2017	---	Regular
28	E KRISHNAKUMAR	30	Assistant Professor	Male	M.E.	66	Yes	Yes	08-06-2015	---	Regular
29	ELDHOSE MATHEW	27	Assistant Professor	Male	M.E.	12	Yes	Yes	01-07-2016	---	Regular
30	G DORAISWAMY	69	Professor	Male	Ph.D	491	Yes	Yes	28-08-2008	---	Regular
31	G MUTHUPRIYA	29	Assistant Professor	Female	M.E.	22	Yes	Yes	23-12-2016	---	Regular
32	G NIVETHA	25	Assistant Professor	Female	M.E.	20	Yes	No	29-01-2016	29-05-2017	Regular
33	G R GNANA KING	32	Assistant Professor	Male	Ph.D	98	Yes	No	27-06-2015	30-11-2016	Regular

34	G shanthi	35	Assistant Professor	Female	M. Phil	96	No	No	20-04-2012	10-05-2016	Regular
35	GANESHAMOORTHY M	24	Lecturer	Male	B.E	13	Yes	No	11-07-2016	29-07-2017	Regular
36	GOPINATH P	27	Lecturer	Male	B.E	72	Yes	No	11-07-2016	29-07-2017	Regular
37	GOWTHAM S	30	Assistant Professor	Male	M.E.	24	Yes	Yes	15-06-2015	---	Regular
38	GUNASEELAN N	65	Assistant Professor	Male	MBA	485	Yes	Yes	02-04-2012	---	Regular
39	HARIPRASAD R S	25	Assistant Professor	Male	M.E.	13	Yes	No	01-07-2016	29-07-2017	Regular
40	HEMAPRIYA M	30	Assistant Professor	Female	M.E.	82	Yes	Yes	03-10-2011	---	Regular
41	I SARLIN	31	Assistant Professor	Male	M. Phil	93	Yes	No	10-08-2015	29-04-2017	Regular
42	[illegible]LLAKKIYA R	26	Assistant Professor	Female	M.E.	24	Yes	Yes	19-06-2015	---	Regular
43	INDUMATHI S	27	Assistant Professor	Female	M.E.	40	Yes	Yes	01-03-2014	---	Regular
44	J BALAJI PRAVEEN	24	Assistant Professor	Male	M.E.	15	Yes	Yes	01-07-2016	---	Regular
45	J DIVYA LAKSHMI	24	Assistant Professor	Female	MBA	28	Yes	Yes	01-06-2015	---	Regular
46	J SANJUNATH	24	Assistant Professor	Male	M.E.	2	No	Yes	19-06-2017	---	Regular
47	JITHIN JOY	25	Assistant Professor	Male	M.E.	13	Yes	No	11-07-2016	29-07-2017	Regular
48	K BRINDHA	26	Assistant Professor	Female	M.E.	27	Yes	No	04-07-2014	16-03-2017	Regular
49	K DEEPA	34	Assistant Professor	Female	MBA	68	Yes	No	01-02-2016	07-06-2017	Regular
50	K DEEPAN RAJ	30	Assistant Professor	Male	M.E.	58	Yes	No	14-06-2013	29-04-2017	Regular
51	K KARTHIKA	28	Assistant Professor	Female	M.E.	21	Yes	No	29-06-2015	16-03-2017	Regular
52	K KOKILAMANI	24	Assistant Professor	Female	M. Phil	4	No	Yes	16-08-2017	---	Regular
53	K KUMAR	35	Assistant Professor	Male	M. Phil	75	Yes	No	02-05-2011	06-07-2017	Regular
54	K R N MANOJ	26	Lecturer	Male	M.E.	49	Yes	No	16-02-2016	10-11-2016	Regular
55	K S RAMESH	37	Assistant Professor	Male	M.E.	152	No	Yes	19-06-2017	---	Regular
56	K T DHIVYA	26	Assistant Professor	Female	M.E.	36	Yes	Yes	15-06-2015	---	Regular

57	K V KANNAN NITHIN	37	Associate Professor	Male	Ph.D	151	Yes	Yes	23-06-2008	---	Regular
58	KARTHIKAI SANKAR T	22	Lecturer	Male	B.E	13	Yes	No	01-07-2016	29-07-2017	Regular
59	KARTHIKEYAN T	27	Assistant Professor	Male	M.E.	47	Yes	Yes	01-07-2016	---	Regular
60	KUMARESAN C	24	Assistant Professor	Male	M.E.	13	Yes	Yes	01-07-2016	---	Regular
61	LOGESH M	26	Assistant Professor	Male	MBA	31	Yes	No	02-01-2015	29-07-2017	Regular
62	M ARUN PRAKASH	26	Assistant Professor	Male	M.E.	39	Yes	Yes	18-06-2014	---	Regular
63	M ARUN PRANESH	27	Assistant Professor	Male	M.E.	39	Yes	Yes	03-07-2014	---	Regular
64	M GOMATHI	25	Assistant Professor	Female	M.E.	27	Yes	Yes	22-06-2015	---	Regular
65	M JEYABHARATHI	28	Assistant Professor	Female	M.E.	38	Yes	Yes	23-12-2016	---	Regular
66	M KANNAN	44	Associate Professor	Male	Ph.D	250	Yes	Yes	01-01-2014	---	Regular
67	M KARTHIKEYAN	33	Assistant Professor	Male	M.E.	51	Yes	No	08-06-2015	29-04-2017	Regular
68	M MARY SHARMILA	37	Assistant Professor	Female	M.E.	96	Yes	Yes	23-12-2016	---	Regular
69	M NAGARAJAN	30	Assistant Professor	Male	M.E.	75	Yes	No	14-06-2013	16-03-2017	Regular
70	M NAVEEN RAJ	27	Assistant Professor	Male	M.E.	48	Yes	No	14-06-2013	05-05-2017	Regular
71	M RAMKUMAR	31	Assistant Professor	Male	M.E.	98	Yes	Yes	16-06-2010	---	Regular
72	M SASIREKA	29	Assistant Professor	Female	M.E.	71	Yes	No	14-06-2013	16-03-2017	Regular
73	M VENGATESH	26	Assistant Professor	Male	M.E.	26	Yes	No	03-06-2015	29-04-2017	Regular
74	MANIBHARATHI M	24	Assistant Professor	Male	M.E.	15	Yes	No	02-06-2015	30-09-2016	Regular
75	MANOJ KUMAR R	29	Assistant Professor	Male	B.E	8	Yes	Yes	05-12-2016	---	Regular
76	MAREESWARAN M	27	Assistant Professor	Male	M.E.	33	Yes	Yes	01-07-2016	---	Regular
77	MOHANAPRIYAA M	27	Assistant Professor	Female	M.E.	1	No	Yes	21-06-2017	---	Regular
78	N KARTHICK	25	Assistant Professor	Male	M.E.	26	Yes	Yes	08-06-2015	---	Regular
79	N MAHESWARI	33	Assistant Professor	Female	M. Phil	63	Yes	Yes	01-07-2013	---	Regular

80	N RAMYA	30	Assistant Professor	Female	Ph.D	49	Yes	Yes	04-05-2015	---	Regular
81	N VIJAYALAKSHMI	33	Assistant Professor	Female	M.E.	124	Yes	Yes	23-05-2012	---	Regular
82	NAREN KUMAR R	22	Lecturer	Male	B.E	13	Yes	Yes	01-07-2016	---	Regular
83	NAVEEN S	27	Assistant Professor	Male	M.E.	8	Yes	Yes	01-12-2016	---	Regular
84	NITHYA G	32	Assistant Professor	Female	M.E.	106	No	Yes	21-06-2017	---	Regular
85	P BANUMATHI	44	Professor	Female	Ph.D	273	Yes	Yes	15-09-2008	---	Regular
86	P DEVIPRIYA	27	Assistant Professor	Female	M. Phil	7	No	Yes	16-08-2017	---	Regular
87	P JANANI	23	Assistant Professor	Female	M.E.	15	Yes	Yes	01-07-2016	---	Regular
88	P MURTHI	53	Dean / Principal / Director / Vice Chancellor	Male	Ph.D	306	Yes	No	28-05-2015	15-06-2017	Regular
89	P RAVI KUMAR	37	Associate Professor	Male	M.E.	199	Yes	Yes	14-06-2013	---	Regular
90	P SATHISH	31	Assistant Professor	Male	M. Phil	94	Yes	No	02-08-2013	06-07-2017	Regular
91	P THANGAMUTHU	26	Assistant Professor	Male	M.E.	38	Yes	No	03-06-2015	29-04-2017	Regular
92	P VIVEK KARTHIK	27	Assistant Professor	Male	M.E.	48	Yes	No	24-06-2013	29-04-2017	Regular
93	PRASHANTHI V	24	Assistant Professor	Female	M.E.	8	Yes	Yes	05-12-2016	---	Regular
94	PRATHAP P	26	Assistant Professor	Male	M.E.	35	Yes	Yes	01-07-2016	---	Regular
95	R ELAKKYA	26	Assistant Professor	Female	M.E.	39	Yes	No	01-07-2016	29-04-2017	Regular
96	R MONICKA GOVINDHINI	24	Assistant Professor	Female	M.E.	15	No	Yes	01-07-2016	---	Regular
97	R POONGOTHAI	31	Assistant Professor	Female	M. Phil	80	Yes	No	23-08-2012	13-06-2017	Regular
98	R PRIYANKA	26	Assistant Professor	Female	M.E.	27	Yes	Yes	19-06-2015	---	Regular
99	R PUNITHA GOWRI	27	Assistant Professor	Female	M.E.	35	Yes	Yes	18-06-2014	---	Regular
100	R RAMU	30	Assistant Professor	Male	M.E.	76	Yes	Yes	14-06-2013	---	Regular
101	R S PRAKASH	29	Assistant Professor	Male	M.E.	75	Yes	No	08-06-2015	29-04-2017	Regular
102	R SARANYA	26	Assistant Professor	Female	M. Phil	18	Yes	No	01-08-2016	13-03-2017	Regular

103	R SHANMUGAM	42	Assistant Professor	Male	M.E.	258	Yes	Yes	19-12-2012	---	Regular
104	RAJENDRAN M	55	Assistant Professor	Male	M.E.	297	Yes	No	08-07-2016	10-05-2017	Regular
105	RAJESH M	26	Lecturer	Male	B.E	13	Yes	Yes	01-07-2016	---	Regular
106	RUBHASHREE M	29	Assistant Professor	Female	M.E.	73	Yes	Yes	21-12-2016	---	Regular
107	S DHIVYA BHARATHI	26	Assistant Professor	Female	M.E.	25	Yes	Yes	14-08-2015	---	Regular
108	S ELANGO	32	Assistant Professor	Male	MBA	79	Yes	No	26-12-2015	03-06-2016	Regular
109	S GANESHKUMAR	24	Assistant Professor	Male	M.E.	15	Yes	Yes	01-07-2016	---	Regular
110	S KALAIVANI	31	Assistant Professor	Female	M.E.	102	Yes	Yes	08-08-2009	---	Regular
111	S KALPANA	26	Assistant Professor	Female	M.E.	23	Yes	Yes	14-08-2015	---	Regular
112	S MAHESH	28	Assistant Professor	Male	M. Phil	60	Yes	Yes	17-04-2013	---	Regular
113	S N SATHYA	39	Assistant Professor	Female	M.E.	164	Yes	Yes	14-06-2013	---	Regular
114	S P VIDHYA PRIYA	27	Assistant Professor	Female	M.E.	51	Yes	Yes	14-06-2013	---	Regular
115	S PRIYANGA	25	Assistant Professor	Female	M.E.	10	Yes	Yes	01-07-2017	---	Regular
116	S R THATCHANADEVI	24	Assistant Professor	Female	M.E.	2	No	Yes	19-06-2017	---	Regular
117	S R VENUPRIYA	26	Assistant Professor	Female	M.E.	11	No	No	15-06-2015	09-07-2016	Regular
118	S RAJKUMAR	29	Assistant Professor	Male	M.E.	80	Yes	Yes	11-01-2011	---	Regular
119	S SARAVANAN	29	Assistant Professor	Male	M. Phil	61	Yes	Yes	21-09-2012	---	Regular
120	S SUMATHI	32	Assistant Professor	Female	M. Phil	24	Yes	No	01-02-2016	05-07-2016	Regular
121	S VIGNESH	27	Lecturer	Male	B.E	47	Yes	No	01-07-2016	07-01-2017	Regular
122	S YASODHARAN	27	Assistant Professor	Male	M.E.	38	Yes	No	18-06-2014	31-01-2017	Regular
123	SANGEETHA D	36	Assistant Professor	Female	M. Phil	122	Yes	No	01-08-2016	20-05-2017	Regular
124	SANGEETHA M	24	Assistant Professor	Female	M.E.	6	Yes	Yes	06-02-2017	---	Regular
125	SARANYA R	27	Assistant Professor	Female	M.E.	30	No	Yes	19-06-2017	---	Regular

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126	SATHEESH KUMAR K	32	Assistant Professor	Male	M. Phil	61	No	Yes	07-07-2017	---	Regular
127	SATHEESHKUMAR N	27	Assistant Professor	Male	M.E.	36	Yes	No	01-07-2016	29-07-2017	Regular
128	SIVACHANDRAN K G	30	Assistant Professor	Male	M.E.	60	Yes	Yes	01-07-2016	---	Regular
129	SIVAKUMAR S	28	Lecturer	Male	B.E	13	Yes	Yes	11-07-2016	---	Regular
130	SIVARAJA S	30	Assistant Professor	Male	M.E.	8	Yes	Yes	05-12-2016	---	Regular
131	SRINIVAASA KUMAR R	33	Assistant Professor	Male	M.E.	115	Yes	No	01-07-2016	03-01-2017	Regular
132	SUGANYA S	26	Assistant Professor	Female	MBA	28	Yes	No	02-03-2015	29-07-2017	Regular
133	SURYA P	25	Assistant Professor	Male	M.E.	8	Yes	Yes	01-12-2016	---	Regular
134	GOKUL	24	Assistant Professor	Male	M.E.	2	No	Yes	19-06-2017	---	Regular
135	T K P RAJAGOPAL	43	Associate Professor	Male	M.E.	225	Yes	Yes	14-06-2010	---	Regular
136	T KARTHICK	27	Assistant Professor	Male	M.E.	32	Yes	Yes	01-05-2015	---	Regular
137	T KAYALVIZHI	27	Assistant Professor	Female	M.E.	28	Yes	No	01-07-2016	29-04-2017	Regular
138	T MAHALINGAM	41	Assistant Professor	Male	M. Phil	204	Yes	No	11-06-2009	06-07-2017	Regular
139	T PRADHEEP	26	Assistant Professor	Male	M.E.	26	Yes	Yes	02-06-2015	---	Regular
140	T SAKTHI SREE	34	Associate Professor	Female	M.E.	108	Yes	Yes	24-08-2011	---	Regular
141	UTHAMARAJAN R	36	Assistant Professor	Male	MBA	8	Yes	No	02-12-2016	29-07-2017	Regular
142	V C NATHIYA	32	Assistant Professor	Female	M.Tech	78	Yes	Yes	24-06-2013	---	Regular
143	V KARPAGAM	38	Assistant Professor	Female	M. Phil	135	Yes	No	03-08-2010	04-07-2017	Regular
144	V RAJESWARI	23	Lecturer	Female	B.E	22	Yes	No	24-06-2015	29-04-2017	Regular
145	V RAMYA SREE	26	Assistant Professor	Female	M.E.	27	Yes	Yes	19-06-2015	---	Regular
146	V S ANGUAKSHMI	35	Assistant Professor	Female	Ph.D	139	Yes	Yes	23-06-2008	---	Regular
147	V SHARMILA	26	Assistant Professor	Female	M.E.	39	Yes	Yes	18-06-2014	---	Regular
148	V VIDHYAPRIYA	28	Assistant Professor	Female	M.E.	40	Yes	Yes	04-07-2014	---	Regular

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149	VARALAKSHIMI A	27	Assistant Professor	Female	M.E.	8	Yes	Yes	05-12-2016	---	Regular
150	VINUTHARANI T	23	Assistant Professor	Female	MBA	8	Yes	No	05-12-2016	29-07-2017	Regular

I agree

Submit

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...neering
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Ministry of Human Resource Development

Government of India

nirf (/dcs17/NIRFIndia/Home)

DCS Full Report ENGINEERING

Print

ID: IR17-ENGG-1-12160

Name: KATHIR COLLEGE OF ENGINEERING

Status: Submitted on [illegible] Edited

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
Neelambur, Coimbatore - 641 062.

Sanctioned (Approved) Intake

Academic Year	2015-16	2014-15	2013-14	2012-13	2011-12
UG [4 Years Program(s)]	540	540	660	540	---
PG [2 Years Program(s)]	216	216	---	---	---

Total Actual Student Strength (Program(s) Offered by Your Institution)

(All programs of all years)	No. of Male Students	No. of Female Students	Total Students	Within State (Including male & female)	Outside State (Including male & female)	Outside Country (Including male & female)	Economically Backward (Including male & female)	Socially Challenged (SC+ST+OBC Including male & female)
UG	1384	370	1754	1722	32	0	118	1636
PG	113	49	162	145	17	0	20	142

Placement & Higher Studies

UG [4 Years Program(s)]: Placement & higher studies for previous 3 years

Academic Year	No. of first year students admitted in the year	Academic Year	No. of students admitted (Lateral Entry)	Academic Year	No. of students graduating in minimum stipulated time	No. of students placed through campus placement	Median salary of placed graduates (Amount in Rs.)	No. of students selected for Higher Studies
(2010-11)	311	(2011-12)	49	(2013-14)	218	195	180000 (ONE LAKH eIGHTY THOUSAND)	7
(2011-12)	364	(2012-13)	61	(2014-15)	249	228	168000 (ONE LAKH SIXTY EIGHT THOUSAND)	21
(2012-13)	428	(2013-14)	61	(2015-16)	408	234	192000 (ONE LAKH NINTY TWO THOUSAND)	1

PG [2 Years Program(s)]: Placement & higher studies for previous 3 years

Academic Year	No. of first year students admitted in the year	Academic Year	No. of students graduating in minimum stipulated time	No. of students placed through campus placement	Median salary of placed graduates (Amount in Rs.)	No. of students selected for Higher Studies
(2012-13)	117	(2013-14)	91	47	180000(ONE LAKH eIGHTY THOUSAND)	0
(2013-14)	153	(2014-15)	106	25	168000(ONE LAKH SIXTY EIGHT THOUSAND)	0
(2014-15)	87	(2015-16)	54	10	192000(ONE LAKH NINTY TWO THOUSAND)	0

Entrepreneurship

No. of sustained spin-off companies set up over the previous 5 years (2011-2016)(Companies started by the Students/Alumni/Faculty in the institutions business incubators): 2

Top University Admission Data

No. of graduating students from your institution who were admitted into Top University/Institution to pursue higher studies in the year 2015-16: 1

No. of PG students admitted into your institutions from Top Institution in the year 2015-16: 0

No. of Ph.D students admitted into your institutions from Top Institution in the year 2015-16: 0

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal

No. 255590

அண்ணாமலைப் பல்கலைக்கழகம்

ANNAMALAI UNIVERSITY

பொறியியற்புலம்
FACULTY OF ENGINEERING & TECHNOLOGY

செப்டம்பர், 2018 இல் இயந்திரப் பொறியியல் பிரிவில் நடத்திய தேர்வினில் சிவகுமார் தி. தேர்ச்சியடைந்து ஆய்வேட்டை மதிப்பிட முறையாக அமைக்கப்பெற்ற தேர்வுக்குழுவினர் பரிந்துரைத்தபடி, **ஆய்வியல் அறிஞர்** பட்டம் பெறுவதற்கு உரியவர் ஆகின்றார் என **அண்ணாமலைப் பல்கலைக்கழக ஆட்சிக் குழு** இதன்வழி அறிவிக்கின்றது.

The Syndicate of the ANNAMALAI UNIVERSITY hereby makes known that **SIVAKUMAR T** *has been admitted to the Degree of* **DOCTOR OF PHILOSOPHY in MECHANICAL ENGINEERING,** *he/she having been certified by duly appointed Board of Examiners who valued his/her thesis to be qualified to receive the same in* **SEPTEMBER, 2018**

TITLE OF THE THESIS

"PERFORMANCE ANALYSIS OF SAVONIUS TYPE VERTICAL AXIS WIND TURBINE"

பல்கலைக்கழக முத்திரை பெறுகின்றது
Given under the seal of the University

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur, Coimbatore - 641 062.

அண்ணாமலைநகர்
Annamalainagar

நாள்

Dr.K.Ramasamy
பதிவாளர் (பொறுப்பு)

Dr.V.Murugesan
துணைவேந்தர்

Anna University

PROGRESS THROUGH KNOWLEDGE

Reg.No. 10910122028/RG

The Syndicate of the Anna University hereby makes known that **ANGULAKSHMI V S** *has been admitted to the* **DEGREE OF DOCTOR OF PHILOSOPHY** *under the Faculty of Science and Humanities, having been certified by the duly appointed examiners to be qualified to receive the same in the year* **2016.** *The degree has been awarded in compliance with the "University Grants Commission, Regulations 2009".*

Title of the Thesis:

OPTIMIZATION OF REACTION CONDITIONS FOR THE GROWTH OF ENTANGLED CARBON NANOTUBES FROM NATURAL RENEWABLE CARBON PRECURSORS BY SPRAY PYROLYSIS

Given under the Seal of the University

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
... College of Engineering
... Avinashi Road,
Neelambur, Coimbatore - 641 062.

Chennai 600 025
India
May 2017

Controller of Examinations *Registrar* *Chairman, Convener Committee*

ANGULAKSHMI V S

Vice-Chancellor

Anna University

Reg.No. 4081052143 RG

The Syndicate of the Anna University hereby makes known that **UDAIYAKUMAR R** *has been admitted to the* **DEGREE OF DOCTOR OF PHILOSOPHY** *under the* ***Faculty of Information and Communication Engineering,*** *having been certified by the duly appointed examiners to be qualified to receive the same in the year* **2014.** *The degree has been awarded in compliance with the "University Grants Commission, Regulations 2009".*

Title of the Thesis:

CERTAIN INVESTIGATIONS ON LOW POWER DESIGN TECHNIQUES FOR BASIC LOGIC ELEMENT ARCHITECTURE OF FIELD PROGRAMMABLE GATE ARRAYS

Given under the Seal of the University

Chennai 600 025
India
November 2014

Controller of Examinations *Registrar* *Vice-Chancellor*

Anna University

PROGRESS THROUGH KNOWLEDGE

Reg.No.11110531003/RG

The Syndicate of the Anna University hereby makes known that **ANUSH KANNAN NEDUMARAN KALAVATHY** *has been admitted to the* **DEGREE OF DOCTOR OF PHILOSOPHY** *under the* **Faculty of Information and Communication Engineering**, *having been certified by the duly appointed examiners to be qualified to receive the same in the year* **2019**. *The degree has been awarded in compliance with the* ***"University Grants Commission, Regulations 2009"***.

Title of the Thesis:

INVESTIGATIONS ON PHASE FREQUENCY DETECTOR AND CHARGE PUMP CIRCUITS

Given under the seal of the University

Chennai 600025
India
December 2019

Controller of Examinations

Registrar

Vice-Chancellor

ANUSH KANNAN NEDUMARAN

KALAVATHY

Sl. No.: D18 014403

Register No. : 2016194102

SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(Deemed to be University Under Section 3 of UGC Act, 1956)

The Board of Management of Sathyabama Institute of Science and Technology hereby makes known that **V.L.MANGESH** *has been conferred the* **DEGREE OF DOCTOR OF PHILOSOPHY** *under the* **FACULTY OF MECHANICAL ENGINEERING**, *having been certified by duly appointed examiners to be qualified to receive the same on* **MARCH 2021** *for the thesis entitled* **COMBUSTION AND EMISSION ANALYSIS OF CATALYTIC HYDROPROCESSED WASTE PLASTIC PYROLYSIS OIL BLENDED WITH DIESEL** *given under the seal of the institution, at Chennai this* **TWENTY FIFTH** *day of* **SEPTEMBER 2021**

Given under the seal of the Institution

Vice Chancellor

Chancellor

SIST

INSTITUTE OF SCIENCE AND TECHNOLOGY

SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY (DEEMED TO BE UNIVERSITY)

Dated : September 25, 2021

Jeppiaar Nagar, Chennai-600119,
Tamil Nadu, INDIA.

Anna University

Reg.No. 7071022206/RG

The Syndicate of the Anna University hereby makes known that **MANJULA G** *has been admitted to the* **DEGREE OF DOCTOR OF PHILOSOPHY** *under the* ***Faculty of Civil Engineering,*** *having been certified by the duly appointed examiners to be qualified to receive the same in the year* **2013.**

Title of the Thesis:

AEROBIC CO-COMPOSTING OF ORGANIC FRACTION OF MUNICIPAL SOLID WASTE WITH INDUSTRIAL WASTES AND EVALUATION OF PRODUCT STABILITY

Given under the Seal of the University

Chennai 600 025
India
November 2013

Controller of Examinations *Registrar* *Vice-Chancellor*

Anna University

PROGRESS THROUGH KNOWLEDGE

Reg.No.1014219727/RG

The Syndicate of the Anna University hereby makes known that **LALITHA SARAVANAN A** *has been admitted to the* **DEGREE OF DOCTOR OF PHILOSOPHY** *under the* **Faculty of Mechanical Engineering**, *having been certified by the duly appointed examiners to be qualified to receive the same in the year* **2018**. *The degree has been awarded in compliance with the* ***"University Grants Commission, Regulations 2009"***.

Title of the Thesis:

STUDIES ON HC290 AS A SUBSTITUTE FOR HCFC22 IN SPLIT AIR CONDITIONERS

Dr. K. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road
Neelambur,Coimbatore-641 062.

Given under the seal of the University

Chennai 600025
India
December 2018
PAR012270

LALITHA SARAVANAN A

Controller of Examinations *Registrar* *Vice-Chancellor*

Sl.No.: 2020/01702

411114006

National Institute of Technology
Tiruchirappalli

hereby confers the degree of

Doctor of Philosophy

of the institute

on

SATTHIYARAJU M

for successfully completing the prescribed programme of study and presenting the thesis entitled

Processing and Characterization of Polyvinylidene Fluoride Based Composite Fibers for Mechanical Energy Harvesting Applications

Given this day the Seventh of November 2020

Under the seal of the Institute

DR. R. UDAIYAKUMAR, ME., Ph.D.,
Principal
Engineering
Road,
621 062.

TIRUCHIRAPPALLI - 620 015, INDIA

Registrar

Director

Chairperson
Board of Governors

தமிழ்நாடு திறந்தநிலைப் பல்கலைக்கழகம்
TAMIL NADU OPEN UNIVERSITY

[A State Open University Established by Government of Tamilnadu, Recognised by UGC & DEB, Member in Asian Association of Open Universities & Association of Commonwealth Universities]

Sl. No. :D0004

PROVISIONAL CERTIFICATE

ENROLMENT NUMBER
13146100004

FOLIO NUMBER	DATED
2021D002	05.01.2022

This is to certify that Ms./Mr. ARUN S V

has qualified for the degree **DOCTOR OF PHILOSOPHY** in MANAGEMENT STUDIES

This comes into effect from the date of Public Viva - Voce Examination held on 03.12.2021

ASSISTANT CONTROLLER OF EXAMINATIONS

CHENNAI – 600 015, TAMILNADU, INDIA

TAMIL NADU OPEN UNIVERSITY CERTIFICATE SECTION CHENNAI-15

CONTROLLER OF EXAMINATIONS i/c

PANDIYAKUMAR, ME.,Ph.D.,

Anna University

Reg.No. 100910122027/RG

The Syndicate of the Anna University hereby makes known that **BANUMATHI P** *has been admitted to the* **DEGREE OF DOCTOR OF PHILOSOPHY** *under the* ***Faculty of Science and Humanities,*** *having been certified by the duly appointed examiners to be qualified to receive the same in the year* **2015.** *The degree has been awarded in compliance with the "**University Grants Commission, Regulations 2009**".*

Title of the Thesis:

NOVEL TEXTILE IMAGING ARTIFICIAL NEURAL NETWORK TECHNIQUES FOR PLAIN-WOVEN FABRIC DEFECT IDENTIFICATION

Given under the Seal of the University

Chennai 600 025
India
January 2016

Controller of Examinations *Registrar* *Vice-Chancellor*

Anna University

Reg.No. 2007469217/RG

The Syndicate of the Anna University hereby makes known that **JAGADEESH KUMAR S J K** *has been admitted to the* **DEGREE OF DOCTOR OF PHILOSOPHY** *under the* ***Faculty of Information and Communication Engineering,*** *having been certified by the duly appointed examiners to be qualified to receive the same in the year* **2013.**

Title of the Thesis:

CERTAIN INVESTIGATIONS OF THE CROSS LAYER DESIGN BASED QoS PROVISIONING TECHNIQUE IN WiMAX NETWORKS

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
Neelam

Given under the Seal of the University

Chennai 600 025
India
November 2013

Controller of Examinations *Registrar* *Vice-Chancellor*

ANNA UNIVERSITY
CHENNAI - 600 025
PROVISIONAL CERTIFICATE

Folio No.: **SAR013163**

This is to certify that the candidate has qualified for the award of ***Degree of Doctor of Philosophy*** in compliance of the UGC Regulations 2016 as detailed below :

Name	:	ARUN KUMAR U
Registration Number	:	17143697101
Degree	:	Ph.D.
Department / Centre / Subject	:	ELECTRICAL AND ELECTRONICS ENGINEERING
Faculty	:	ELECTRICAL ENGINEERING
Date, Month & Year of Viva-Voce Examination held	:	12.01.2022
Title of the Thesis	:	CERTAIN INVESTIGATIONS ON POWER FACTOR CORRECTION CONVERTERS FED SBLDC MOTOR DRIVE

Controller of Examinations
Chennai
600 025
★ Anna University ★

Dr. R. UDAIYAKUMAR, M.E., Ph.D.,
Principal

Controller of Examinations

Chennai - 600 025

Date: 14-FEB-2022

Anna University

Reg.No. 11210431038/RG

The Syndicate of the Anna University hereby makes known that **PRABAKARAN B** *has been admitted to the* **DEGREE OF DOCTOR OF PHILOSOPHY** *under the* ***Faculty of Electrical Engineering,*** *having been certified by the duly appointed examiners to be qualified to receive the same in the year* **2020.** *The degree has been awarded in compliance with the "University Grants Commission, Regulations 2009".*

Title of the Thesis:

DESIGN AND ANALYSIS OF RENEWABLE ENERGY SYSTEMS

Dr.R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
Neelambur, Coimbatore-641 062.

Given under the Seal of the University

Chennai 600 025
India
March 2021

Controller of Examinations *Registrar* *Vice-Chancellor*

ANNA UNIVERSITY
CHENNAI - 600 025

PROGRESS THROUGH KNOWLEDGE

PROVISIONAL CERTIFICATE

Folio No.: **SAR013050**

This is to certify that the candidate has qualified for the award of *Degree of Doctor of Philosophy* in compliance of the UGC Regulations 2009 as detailed below:

Name	:	**MAHENDRAN G**
Registration Number	:	**1412369139**
Degree	:	**Ph.D.**
Department/Centre/Subject	:	**ELECTRICAL AND ELECTRONICS ENGINEERING**
Faculty	:	**ELECTRICAL ENGINEERING**
Date, Month & Year of Viva-Voce Examination held	:	**29.07.2021**
Title of the Thesis	:	**HYBRID FUZZY MOTH FLAME ALGORITHM FOR DISTRIBUTION SYSTEM OPTIMIZATION**

Controller of Examinations Chennai 600 025 Anna University

Dr. R. UDAIYAKUMAR, M.E., Ph.D.,
Principal
... Engineering
... Road,
... 052.

Chennai - 600 025

Date: **18-AUG-2021**

Controller of Examinations

பாரதியார் பல்கலைக் கழகம்
Bharathiar University

சமூக அறிவியல் புலம்
FACULTY OF SOCIAL SCIENCES

பாரதியார் பல்கலைக் கழகத்தால் முறையாக அமைக்கப்பட்ட தேர்வாணைக் குழு வினோதா சி, 2018 ஆம் ஆண்டு மே 26 ஆம் நாளில் மேலாண்மையியல் என்னும் பிரிவில் ஆய்வியல் அறிஞர் எனும் பட்டம் பெற தகுதியான ஆய்வுரையாக சான்றளித்ததை ஏற்று, அவருக்கு அந்தப் பட்டத்தைப் பல்கலைக் கழக இலச்சினையுடன், பாரதியார் பல்கலைக் கழக ஆட்சிக் குழு வழங்குகின்றது

The Syndicate of the Bharathiar University hereby makes known that **VINOTHA C** *has been admitted to the Degree of* **DOCTOR OF PHILOSOPHY** *in* **MANAGEMENT,** *having been certified by duly appointed Examiners to be qualified to receive the same on* **26th MAY 2018.**

CONTROLLER OF EXAMINATIONS Coimbatore 641 046 Bharathiar University

VERIFIED AND FOUND CORRECT

ASST. REGISTRAR / DEPUTY REGISTRAR

Given under the Seal of the University.

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

கோயம்புத்தூர்
Coimbatore
தேதி
Dated: 26th February 2019

Controller of Examinations i/c

Registrar(i/c)

for Vice-Chancellor

பாரதியார் பல்கலைக் கழகம்
Bharathiar University

சமூக அறிவியல் புலம்
FACULTY OF SOCIAL SCIENCES

பாரதியார் பல்கலைக் கழகத்தால் முறையாக அமைக்கப்பட்ட தேர்வாளர் குழு விசாகமூர்த்தி தே, 2010-ஆம் ஆண்டு டிசம்பர் 30-ஆம் நாளில் மேலாண்மையியல் எனும் பிரிவில் ஆய்வியல் அறிஞர் எனும் பட்டம் பெறத் தகுதியடைந்திருப்பதாகச் சான்றளித்ததை ஏற்று, அவருக்கு அந்தப் பட்டத்தைப் பல்கலைக் கழக இலச்சினையுடன் பாரதியார் பல்கலைக் கழக ஆட்சிக் குழு வழங்குகின்றது

The Syndicate of the Bharathiar University hereby makes known that **VISAGAMOORTHI D** *has been admitted to the Degree of* **DOCTOR OF PHILOSOPHY** *in* **MANAGEMENT,** *having been certified by duly appointed Examiners to be qualified to receive the same on* **30th DECEMBER 2010.**

VERIFIED AND FOUND CORRECT

ASST. REGISTRAR / DEPUTY REGISTRAR

Given under the Seal of the University.

Dr. R. UDAYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

கோயம்புத்தூர்
Coimbatore
நாள்
Dated: 24th November 2011

தேர்வாணையர்
Controller of Examinations

பதிவாளர்
Registrar

துணைவேந்தர்
Vice-Chancellor

C.No. 302991

Anna University

Reg.No.71110631028/RG

The Syndicate of the Anna University hereby makes known that **MURALISANKAR K** *has been admitted to the* **DEGREE OF DOCTOR OF PHILOSOPHY** *under the* **Faculty of Information and Communication Engineering**, *having been certified by the duly appointed examiners to be qualified to receive the same in the year* **2018.** *The degree has been awarded in compliance with the* ***"University Grants Commission, Regulations 2009".***

Title of the Thesis:

AN ENHANCED APPROACH FOR PROFIT SCHEDULING WITH MAXIMUM UTILIZATION OF RESOURCES IN CLOUD COMPUTING ENVIRONMENT

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

Given under the seal of the University

6/5/22

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

Chennai 600025
India
December 2018

Controller of Examinations *Registrar* *Vice-Chancellor*

ANNA UNIVERSITY
CHENNAI - 600 025
PROVISIONAL CERTIFICATE

Folio No.: SAR014028

This is to certify that the candidate has qualified for the award of ***Degree of Doctor of Philosophy*** in compliance of the UGC Regulations 2016 as detailed below :

Name	:	**VIGNESWARAN D**
Registration Number	:	**[redacted]7144797657**
Degree	:	**Ph.D.**
Department / Centre / Subject	:	**PHYSICS**
Faculty	:	**INFORMATION AND COMMUNICATION ENGINEERING**
Date, Month & Year of Viva-Voce Examination held	:	**30.03.2021**
Title of the Thesis	:	**DESIGN OF FEW-MODE OPTICAL FIBER AND FEW-MODE OPTICAL SYSTEM FOR SPACE DIVISION MULTIPLEXING APPLICATIONS**

Controller of Examinations
Chennai 600 025
Anna University

6/5/22

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

Chennai - 600 025

Date : 22-APR-2021

Anna University

Reg. No. [illegible]

The Syndicate of the Anna University hereby makes known that

KANNAN NITHIN K V *has been admitted to the* **DEGREE OF DOCTOR OF PHILOSOPHY** *under the Faculty of Science and Humanities, having been certified by the duly appointed examiners to be qualified to receive the same in the year* **2010.**

Title of the thesis:

MULLITE GLASS CERAMIC PRODUCTION BY HIGH TEMPERATURE PLASMA TECHNIQUES AND CHARACTERISATION

Given under the Seal of the University

Dr. R. UDAYAKUMAR, ME.,Ph.D.,
Principal
Avinashi Road,
Neelambur, Coimbatore-641 062.

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62.

Chennai 600 025
India
December 2010

Controller of Examinations | *Registrar* | *Vice-Chancellor*

Anna University

PROGRESS THROUGH KNOWLEDGE

Reg.No.11210431059/RG

The Syndicate of the Anna University hereby makes known that **VARATHARAJ M** *has been admitted to the* **DEGREE OF DOCTOR OF PHILOSOPHY** *under the* **Faculty of Information and Communication Engineering** *having been certified by the duly appointed examiners to be qualified to receive the same in the year* **2018**. *The degree has been awarded in compliance with the* ***"University Grants Commission, Regulations 2009"***.

Title of the Thesis:

DESIGN OPTIMIZATION AND SYNCHRONIZATION OF VERTICAL AXIS HIGHWAY WIND MILL HYBRID WITH PHOTOVOLTAIC SYSTEM

Dr. R. [illegible]KUMAR, ME.,Ph.D.,
[illegible]
[illegible] Ashmashi Road,
Neelambur, Coimbatore - 641 062.

Given under the seal of the University

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62.

Chennai 600025
India
December 2018

Controller of Examinations *Registrar* *Vice-Chancellor*

VARATHARAJ M

Anna University

Reg.No. 10910421069/RG

The Syndicate of the Anna University hereby makes known that **VAIKUNDASELVAN B** *has been admitted to the* **DEGREE OF DOCTOR OF PHILOSOPHY** *under the* ***Faculty of Electrical Engineering,*** *having been certified by the duly appointed examiners to be qualified to receive the same in the year* **2015.** *The degree has been awarded in compliance with the "University Grants Commission, Regulations 2009".*

Title of the Thesis:

CERTAIN INVESTIGATIONS ON THE PERFORMANCE IMPROVEMENTS OF THE WIND ENERGY CONVERSION SYSTEM USING POWER CONVERTER TOPOLOGIES

Given under the Seal of the University

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62.

Anna University

Progress Through Knowledge

Reg No [illegible]

The Syndicate of the Anna University hereby makes known that **SURESH A R** *has been admitted to the* **DEGREE OF DOCTOR OF PHILOSOPHY** *under the Faculty of Mechanical Engineering, having been certified by the duly appointed examiners to be qualified to receive the same in the year* **2016.** *The degree has been awarded in compliance with the "University Grants Commission, Regulations 2009".*

Title of the Thesis:

EXPERIMENTAL STUDIES ON POWDER METALLURGY PROCESSED LOW ALLOY STEEL FOR SLIDING APPLICATIONS

Given under the Seal of the University

Dr.R. UDAYAKUMAR, Ph.D.
Kathir College of Engineering
"Wisdom Tree", Avinashi Road,
Neelambur, Coimbatore - 641 062.

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62.

Chennai 600 025
India
May 2017

Controller of Examinations

Registrar

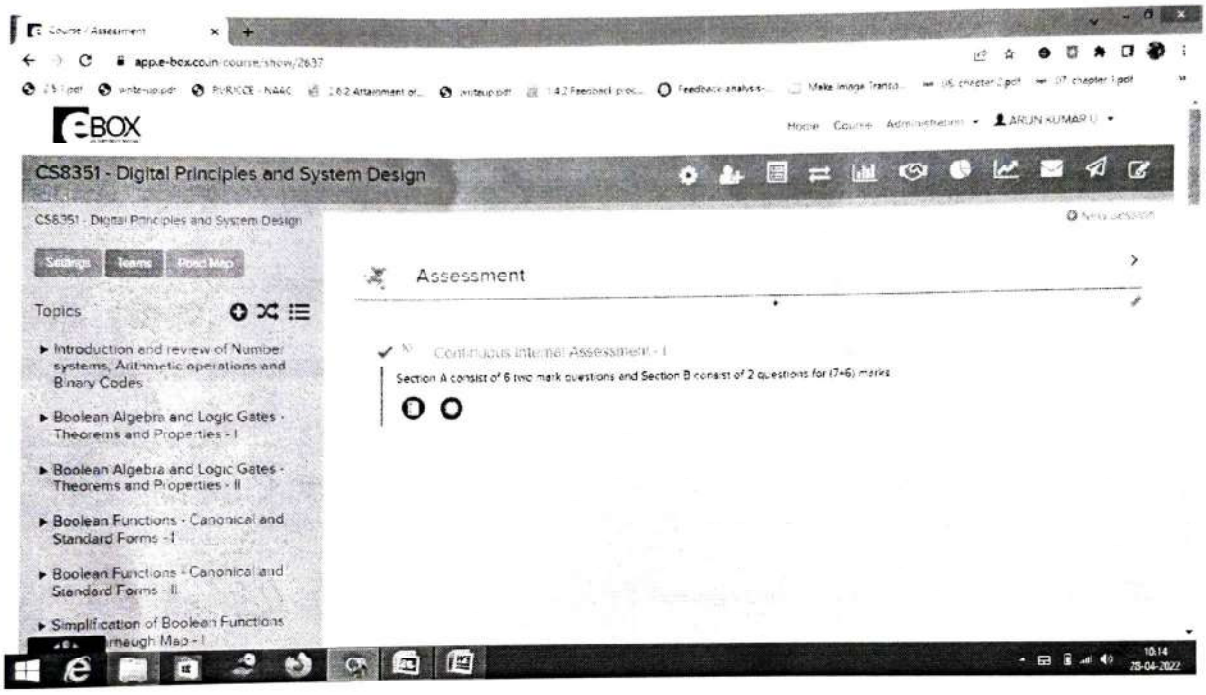
Chairman, Convener Committee
Vice-Chancellor

Kathir College of Engineering

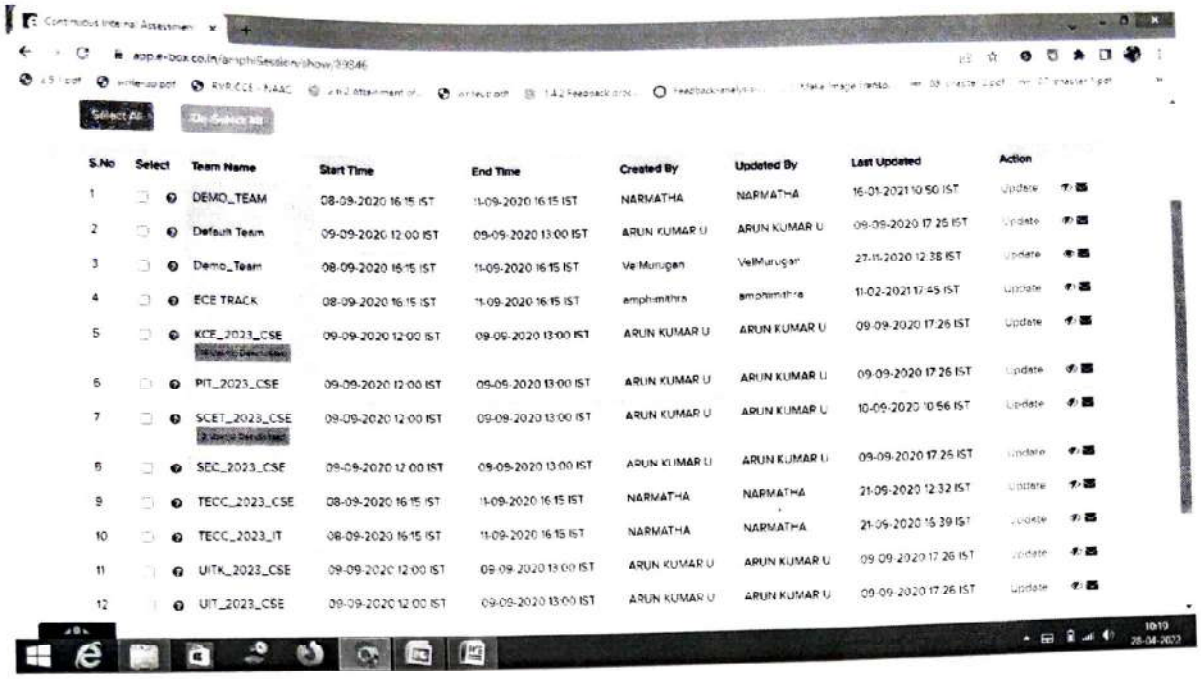
[Approved by AICTE | Affiliated to Anna University | Accredited by NAAC]

Wisdom Tree, Neelambur, Avinashi Road, Coimbatore-62

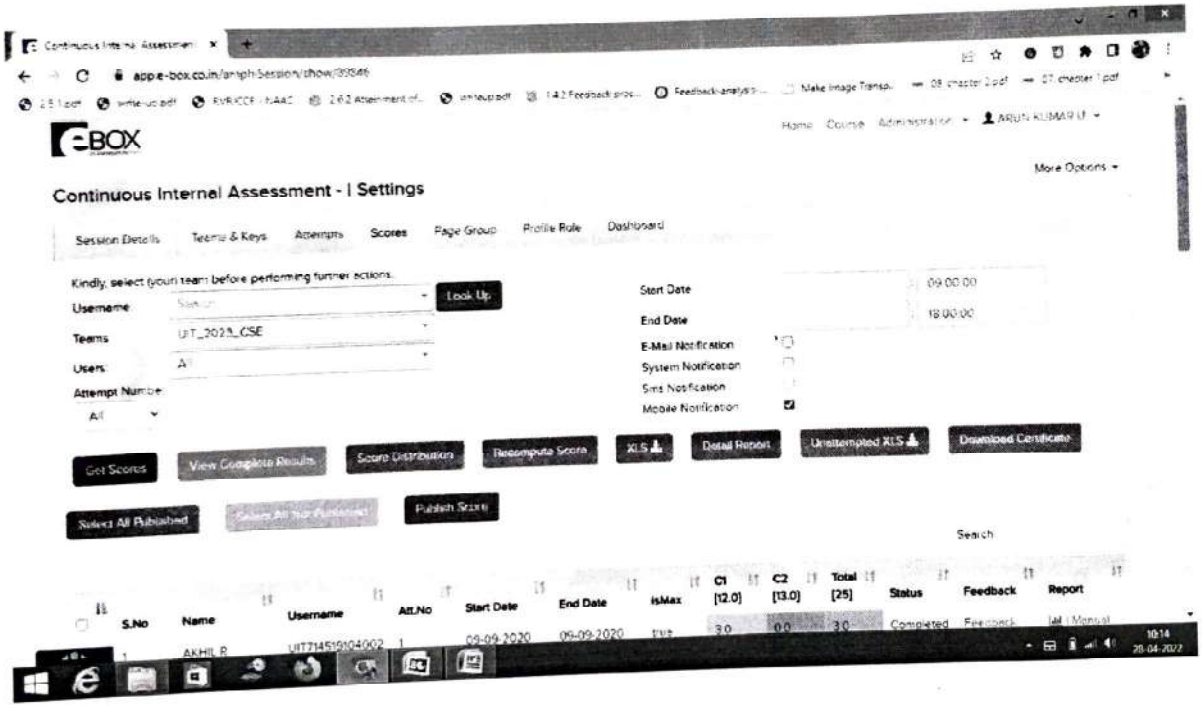
Collaborative quality initiatives with other institution(s)



Dr. R. UDAIYAKUMAR, M.E., Ph.D.
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.



S.No	Select	Team Name	Start Time	End Time	Created By	Updated By	Last Updated	Action
1		DEMO_TEAM	08-09-2020 16:15 IST	11-09-2020 16:15 IST	NARMATHA	NARMATHA	16-01-2021 10:50 IST	Update
2		Default Team	09-09-2020 12:00 IST	09-09-2020 13:00 IST	ARUN KUMAR U	ARUN KUMAR U	09-09-2020 17:26 IST	Update
3		Demo_Team	08-09-2020 16:15 IST	11-09-2020 16:15 IST	Ve Murugan	VelMurugan	27-11-2020 12:38 IST	Update
4		ECE TRACK	08-09-2020 16:15 IST	11-09-2020 16:15 IST	amphimathra	amphimathra	11-02-2021 17:45 IST	Update
5		KCE_2023_CSE	09-09-2020 12:00 IST	09-09-2020 13:00 IST	ARUN KUMAR U	ARUN KUMAR U	09-09-2020 17:26 IST	Update
6		PIT_2023_CSE	09-09-2020 12:00 IST	09-09-2020 13:00 IST	ARUN KUMAR U	ARUN KUMAR U	09-09-2020 17:26 IST	Update
7		SCET_2023_CSE	09-09-2020 12:00 IST	09-09-2020 13:00 IST	ARUN KUMAR U	ARUN KUMAR U	10-09-2020 10:56 IST	Update
8		SEC_2023_CSE	09-09-2020 12:00 IST	09-09-2020 13:00 IST	ARUN KUMAR U	ARUN KUMAR U	09-09-2020 17:26 IST	Update
9		TECC_2023_CSE	08-09-2020 16:15 IST	11-09-2020 16:15 IST	NARMATHA	NARMATHA	21-09-2020 12:32 IST	Update
10		TECC_2023_IT	08-09-2020 16:15 IST	11-09-2020 16:15 IST	NARMATHA	NARMATHA	21-09-2020 15:39 IST	Update
11		UITK_2023_CSE	09-09-2020 12:00 IST	09-09-2020 13:00 IST	ARUN KUMAR U	ARUN KUMAR U	09-09-2020 17:26 IST	Update
12		UIT_2023_CSE	09-09-2020 12:00 IST	09-09-2020 13:00 IST	ARUN KUMAR U	ARUN KUMAR U	09-09-2020 17:26 IST	Update



Continuous Internal Assessment - I Settings

Session Details | Teams & Keys | Attempts | Scores | Page Group | Profile Role | Dashboard

Kindly select (your) team before performing further actions.

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Teams: UIT_2023_CSE

Users: All

Attempt Number: All

Start Date: 09:00:00

End Date: 18:00:00

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Get Scores | View Complete Results | Score Distribution | Recompute Score | XLS | Detail Report | Unattempted XLS | Download Certificate

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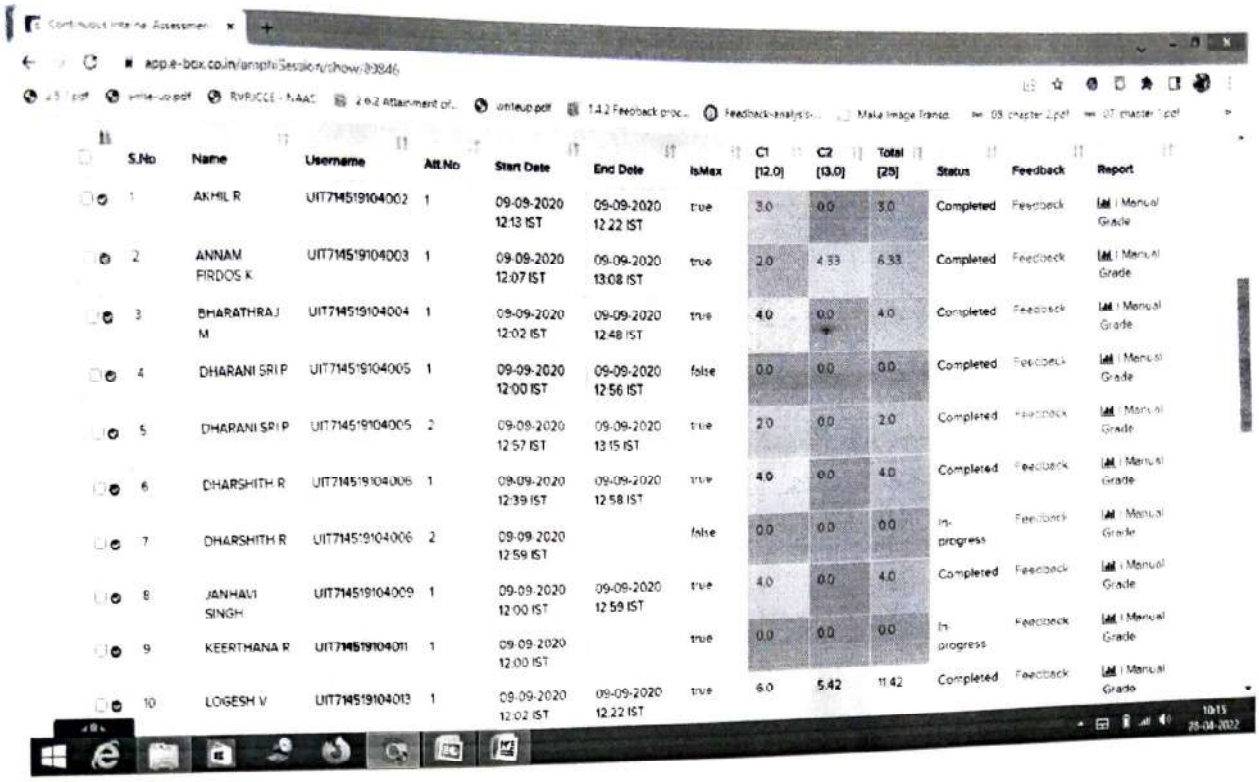
S.No	Name	Username	Att.No	Start Date	End Date	isMax	C1 [12.0]	C2 [13.0]	Total [25]	Status	Feedback	Report
1	AKHIL R	UIT21451910400 2	1	09-09-2020	09-09-2020	Yes	3.0	0.0	3.0	Completed	Feedback	[M] Manual

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.



S.No	Name	Username	Att.No	Start Date	End Date	IsMax	C1 [12.0]	C2 [13.0]	Total [25]	Status	Feedback	Report
1	AKHIL R	UIT7145191040002	1	09-09-2020 12:13 IST	09-09-2020 12:22 IST	true	3.0	0.0	3.0	Completed	Feedback	Manual Grade
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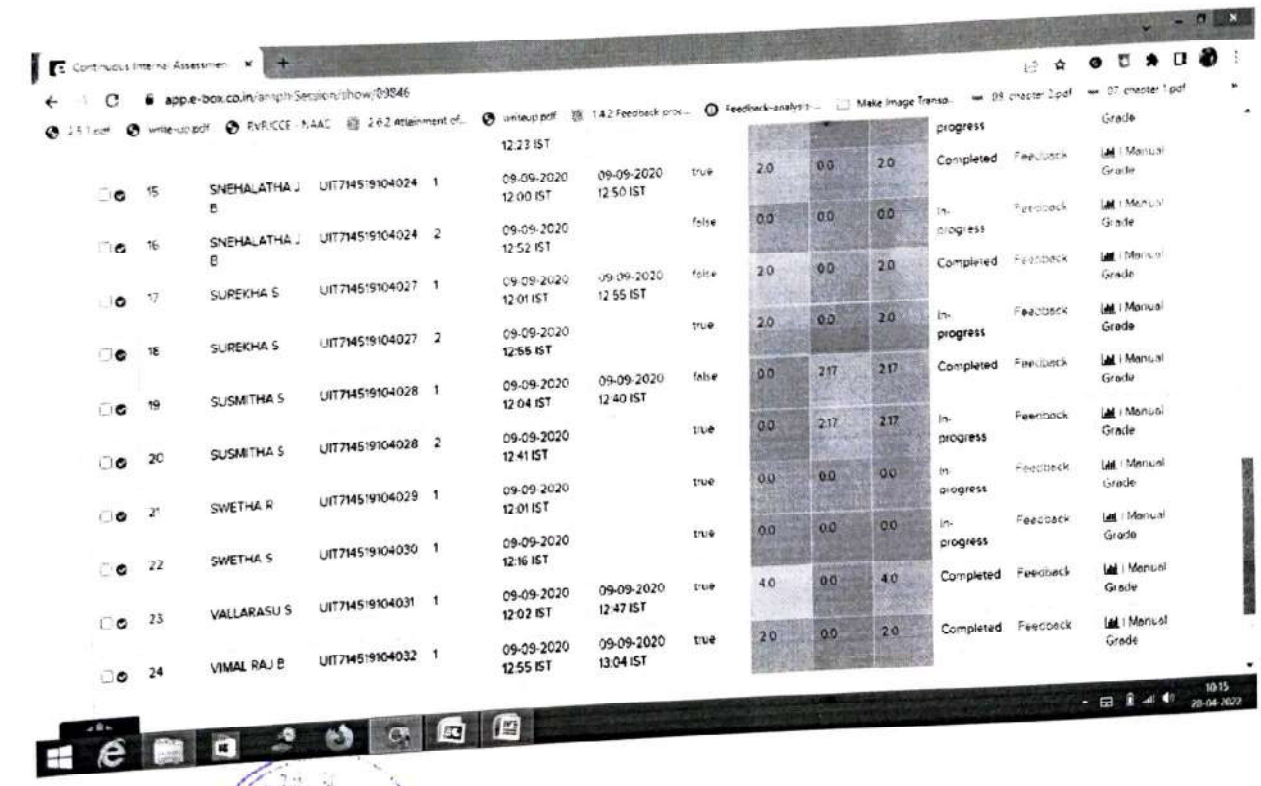
5	DHARANI SRI P	UIT7145191040005	2	09-09-2020 12:57 IST	09-09-2020 13:15 IST	true	2.0	0.0	2.0	Completed	Feedback	Manual Grade
6	DHARSHITH R	UIT7145191040006	1	09-09-2020 12:39 IST	09-09-2020 12:58 IST	true	4.0	0.0	4.0	Completed	Feedback	Manual Grade
7	DHARSHITH R	UIT7145191040006	2	09-09-2020 12:59 IST		false	0.0	0.0	0.0	In-progress	Feedback	Manual Grade
8	JANHAVI SINGH	UIT7145191040009	1	09-09-2020 12:00 IST	09-09-2020 12:59 IST	true	4.0	0.0	4.0	Completed	Feedback	Manual Grade
9	KEERTHANA R	UIT7145191040011	1	09-09-2020 12:00 IST		true	0.0	0.0	0.0	In-progress	Feedback	Manual Grade
10	LOGESH V	UIT7145191040013	1	09-09-2020 12:02 IST	09-09-2020 12:22 IST	true	6.0	5.42	11.42	Completed	Feedback	Manual Grade



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18	SUREKHA S	UIT7145191040027	2	09-09-2020 12:55 IST		true	2.0	0.0	2.0	In-progress	Feedback	Manual Grade
19	SUSMITHA S	UIT7145191040028	1	09-09-2020 12:04 IST	09-09-2020 12:40 IST	false	0.0	2.17	2.17	Completed	Feedback	Manual Grade
20	SUSMITHA S	UIT7145191040028	2	09-09-2020 12:41 IST		true	0.0	2.17	2.17	In-progress	Feedback	Manual Grade
21	SWETHA R	UIT7145191040029	1	09-09-2020 12:01 IST		true	0.0	0.0	0.0	In-progress	Feedback	Manual Grade
22	SWETHA S	UIT7145191040030	1	09-09-2020 12:16 IST		true	0.0	0.0	0.0	In-progress	Feedback	Manual Grade
23	VALLARASU S	UIT7145191040031	1	09-09-2020 12:02 IST	09-09-2020 12:47 IST	true	4.0	0.0	4.0	Completed	Feedback	Manual Grade
24	VIMAL RAJ B	UIT7145191040032	1	09-09-2020 12:55 IST	09-09-2020 13:04 IST	true	2.0	0.0	2.0	Completed	Feedback	Manual Grade

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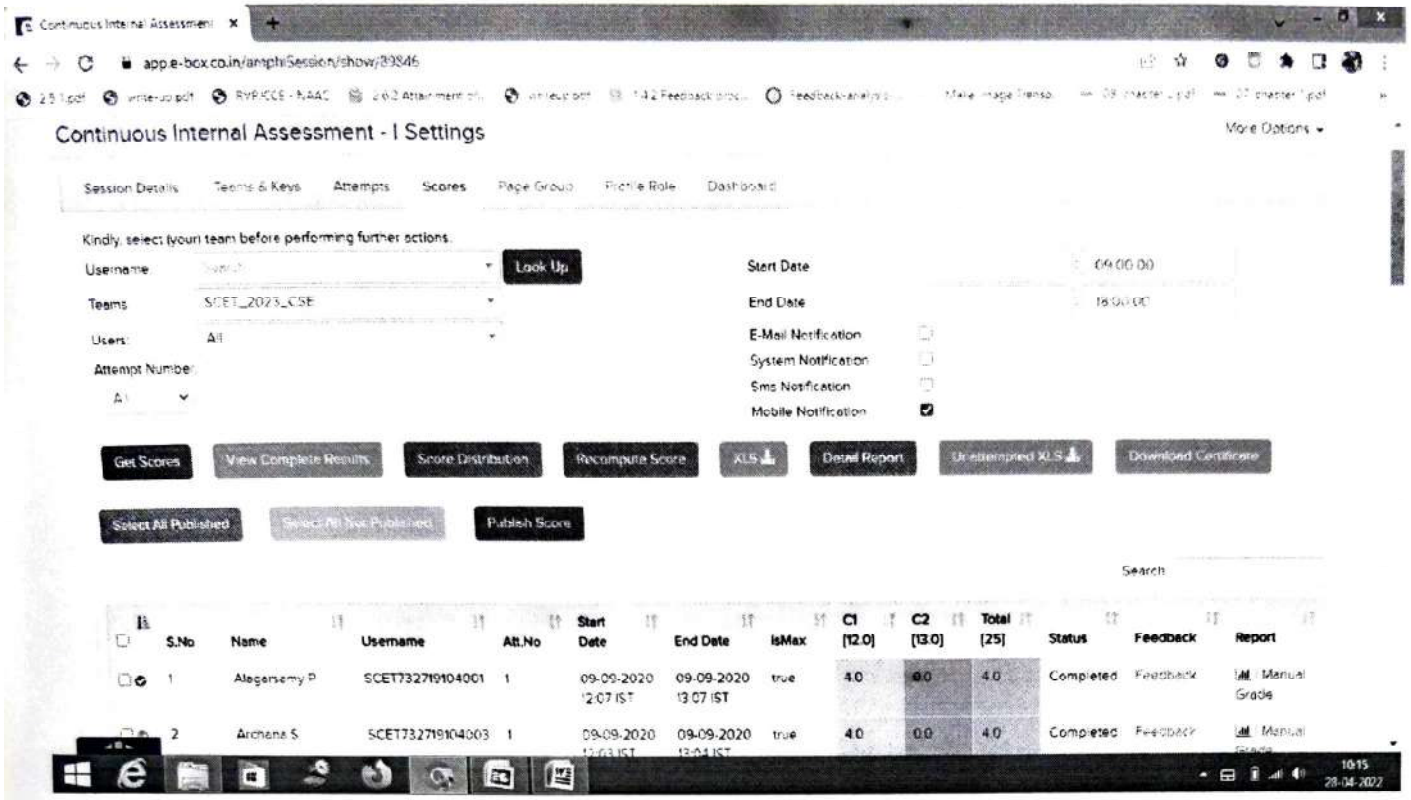

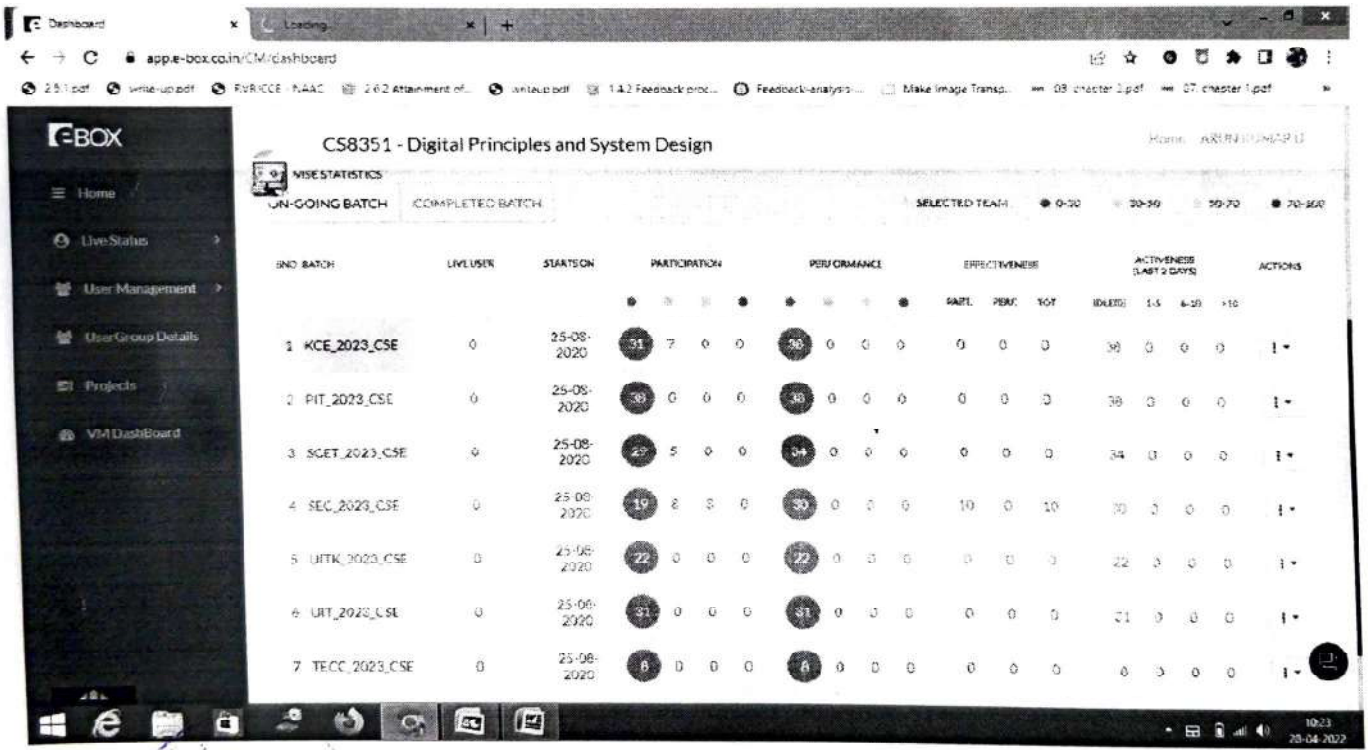

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3.	Combined phase balancing and reconfiguration for unbalanced distribution system optimization through hybrid fuzzy MFOA	Mahendran. G	EEE	Journal of Ambient Intelligence and Humanized Computing	2021
4.	Upgrading the Quality of Power Using TVSS Device and PFC Converter Fed SBLDC Motor	Arun Kumar U	EEE	Arabian Journal for Science and Engineering	2021
5.	A Bridgeless Landsman Converter Fed Sensorless Brushless DC Motor Drive for Upgrading quality of Power	Arun Kumar U	EEE	Solid state Technology	2021
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Universal dispersion curves of a planar waveguide with an exponential graded-index guiding layer and a nonlinear cladding

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Keywords:
Slab waveguide
Exponential graded index
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ABSTRACT

A planar waveguide consisting of three layers is considered. The guiding layer is assumed of exponentially graded index of refraction. The cover layer is a nonlinear material of Kerr-type. The refractive index distribution of the film layer changes as an exponential function from the guiding layer to the substrate. The solutions of Helmholtz equation are found. They are written in terms of three parameters a, b and V. The solutions in the guiding layer and substrate are found as Bessel functions of order $V\sqrt{b}$. The characteristic equation is derived and the dispersion curves are plotted and analyzed. A set of attracting features are found such as there is no cut-off thickness corresponding to a symmetric waveguide structure. The b-values do not exceed unity. This means the dispersion curves refer to guided modes.

Introduction

For the past decades, graded-index waveguide [1–3] achieved greater attention as it is more practical than step-index. The properties of both step-index and graded index waveguides are generally similar to each other except some delicate changes. A waveguide with graded-index guiding layer is the composition of three layers whose index profile has a region with index n_s, a guiding layer with index n_f and a cladding with an index n_c. In general, waveguides with graded-index profile, the substrate and guiding layers merge smoothly as a continuous area which indicates that the index in both layers is merged. It is represented by one function $n(x)$. The index of refraction $n(x)$ alters continuously from n_f to n_s. In waveguides like lithium tantalate and in-diffused lithium niobate, the index distribution has a smooth variation from that of the film to that of the substrate. It is approximated as an exponential function. To investigate a graded-index waveguide with a random profile, it is required to employ numerical techniques. Sometimes the techniques of approximation may be employed such as WKB. Approximate dispersion relation can be deduced in these cases.

There has been considerable interest in the waveguide analysis that comprises nonlinear media of intensity-dependent indices. Waves guided by these structures were investigated [4–7]. A large variety of optical devices are based on these waveguides. Various solutions of wave equation characterized by nonlinear index were proposed. Formulating a theory was proposed for the reflection and refraction of electromagnetic waves at the boundary between a linear and nonlinear media [8]. It was shown that as the wave angle of incidence is amended, hysteresis hops are noted from the transmission regime to the regime of total internal reflection and vice versa. When the nonlinearity is small, the closeness of the linear index of the nonlinear material and that of the linear material is the crucial condition required for hysteresis consequence presence. Such studies, which handled reflection and refraction of electromagnetic waves at an interface between nonlinear and linear materials, stimulated additional theoretical and experimental research on electromagnetic waves both refracted and guided by these interfaces [9]. Researchers have found numerous analytical solutions for the

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Upgrading the Quality of Power Using Hybrid Controller Based PFC Converter Fed SBLDC Motor Drive

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Abstract - The globe has now come to a point where it is unmanageable for humans to do any work without power. Therefore, the main motive of this paper is to ameliorate the quality of power. So, to enhance the quality of power, unification of PF, and lowering the harmonic distortion is required. This paper presents the improvement of power quality using a power factor correction regulator feeding a brushless drive with sensorless control. The converter configurations designed used here operates in intermittent conduction mode which acts as an inherant part to improve the quality of power. A brushless drive fed using the power factor correction converter is controlled using hysteresis comparator technique which reduces the phase lag of back emf and improves the consistency of the system. Moreover usage of fuzzy logic improves the robustness of the system and enhances the consistency. A comparative analysis is done among the various converters with sensorless control of BLDC and the converter with better performance is analyzed based on the PQ parameters. Also, usage of bridgeless configuration of converter reduces the switching losses as the diode rectifier is partially eliminated. The designed system is validated through experimental results with wide range of control speeds and voltages. The obtained quality of power is under the acceptable limits of IEEE and IEC standards.

Keywords: Improved Power Quality; Sensorless Brushless DC (SBLDC) motor; Power Factor Correction (PFC), Hybrid Controller (Fuzzy+PI)

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ORIGINAL RESEARCH

Combined phase balancing and reconfiguration for unbalanced distribution system optimization through hybrid fuzzy-MFOA

G. Mahendran[1] · C. Govindaraju[2]

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Abstract
The phase balance and reconfiguration of the power distribution system is a dynamic analysis to improve and manage the radial power distribution system. Power loss analysis in the distribution system is mainly central, considering the point of view of money. In order to reduce power loss, different technologies are excluded in reconstruction, capacitor layout and phase balance. In addition to these three methods, in unevenness in the distribution system, the phase balance is considered one of three dynamic processes all of those above. Unbalanced feeders are dangerous for incremental power loss and excessive burden conditions; however, they affect quality and cost. A severely uneven circuit can convey an unsafe voltage drop in the intense phase. A positive feeder system is arranged to be load-dependent, recording balanced feed, the desire to improve the load and unbalanced load errors will begin feeder imbalance. For the equilibrium phase feeder, the exchange is a quick and convincing way. This paper proposes a problem of adding phase balance and reconfiguration to try to assist the hybrid fuzzy and Moth flame optimization algorithm (MFOA) to deal with the uneven distribution system. The verification of the estimative program is completed with two standard evaluations, and the work approves the simulation results.

Keywords Distribution system · Fuzzy · Moth-flame optimization · Phase balancing · Reconfiguration · Unbalanced feeder

1 Introduction

1.1 Background of the study

The optimization of the power distribution system is because the presentation of the system greatly improves the basics. The well-known techniques, namely feeder reconfiguration, capacitor placement, Distributed Generator (DG) placement and phase exchange, can reduce power loss and reduce unbalanced loads at the feeder.

The reconfiguration of the power distribution system is a process, which changes the feeder interconnection planning in the power distribution system by changing the handle opening/closing condition (Ding and Loparo 2016; Pegado et al. 2019). DG and capacitor positions (Abdelsamad et al. 2015; Pereira et al. 2016; El-Ela et al. 2018; Mehmood et al. 2018; Gangwar et al. 2019) are the proof and optimization estimation mechanism of the perfect zone. The DG/capacitor layout and feeder reconfiguration have been swapped in the previous schedule for a significant expansion timeline and were generally ignored by general inspections. Due to the openness of the set number of segment switches, feeder reconfiguration is challenging. The principle of phase change encountered is an unbalanced feeder system. Phase swapping is a direct and alternative method of phase change. To improve the program's use, it is necessary to be exchanged in the same three stages spread the load. Phase exchange has not yet developed its reasonable idea, due to inconsistencies in the feeder system, to assess the problem and internal and external, regardless of the stage of irregular effect. Most of the problems to extend distribution systems exchange has not been marked investigation.

1.2 Literature review

In Dolloff (1996), a phase balance machine was suggested, which records phase adjustment changes in the feeder. A heuristic backtracking search algorithm is described in

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RESEARCH ARTICLE-COMPUTER ENGINEERING AND COMPUTER SCIENCE

Upgrading the Quality of Power Using TVSS Device and PFC Converter Fed SBLDC Motor

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Abstract
This globe has now come to a point where it is unmanageable for humans to do any work without power. Therefore, the main motive of this paper is to ameliorate the status of power. So to boost the condition of power, there are three predominant processes. So this proposed procedure performs functions like repressing the transitory voltage surge, get unification of PF, and lowering the harmonic distortion. This is because power changes, whether high or low, present a complication with electrical equipment. Therefore, transient voltage surge suppressors are utilized in the AC power line to stay the power changes usual. Then, for the motive of unifying the energy factor and lessening the harmonic distortion, this paper utilizes the more efficient BLDC Motor fed through bridgeless converter configuration. Because utilizing a brushless motor, performs functions extremely efficiently such as longevity, increasing reliability and reduced noise. However, since it is exceeding principle to command the speed of the motor, the Sensorless form is utilized here. The intention of utilizing this is the spot of the rotor is extremely pivotal to handle the momentum of the motor and it's also hugely difficult to identify. Therefore, this proposed mechanism for performing these functions utilizes the Sensorless BLDC Motor and to reach power factor correction (PFC) bridgeless converter topologies are used. A comparitive analysis is done among the various converters and the best converter is analyzed based on the PQ parameters. The obtained quality of power is under the acceptable limits of IEEE and IEC standards.

Keywords Improved power quality · TVSS device · Sensorless brushless DC (SBLDC) motor · Power factor correction (PFC)

1 Introduction

Nowadays brushless motors are utilized additional often than brushed motors. The reason is that brushless motors are very good performing at the low sound noise and power efficiency improvements. Usually brushless motors use one or more sensors. With this function, the sensor is wired and the cost of operating it is high. Also, sensors cannot be used in rotor existing applications in closed housing. In applications where the motor is submerged in a fluid such as a compressor, or some pumps, must keep the number of electrical inputs to a minimum. So in terms of technology and cost reason, Sensorless BLDC Motor is considered as a major requirement. This Sensorless BLDC Motor gives very high performance, at very low cost. As a result of high performance, excessive torque to inertia ratio, excessive power density, low preservation need and extensive variety of speed manipulate; brushless DC (BLDC) motors are extensively favoured in lots of minimal and medium energy exeercises. It's far used in many house equipments of Gadget like fans, air conditioners, water pumps, Refrigerators, washing machines etc.It also finds applications in lots of commercial gear, medical equipments, Heating, air flow and air con, robotics and Particular movement control structures [1–3].

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A Bridgeless Landsman Converter Fed Sensorless Brushless DC Motor Drive For Upgrading The Quality of Power

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Abstract— This paper presents the upgradation of quality of power using a bridgeless landsman converter fed SBLDC motor drive. The designed regulator operates in intermittent inductor current mode and used to attain a close to unity power factor at supply ends. The speed of the SBLDC drive is maintained using a sensorless technique where the BLDC is fed through a bridgeless regulator. Moreover, usage of BL regulator provides minimal conduction losses as the diode rectifier is eliminated partially. The proposed design shows a substantial improvement in the efficiency compared with the existing system. The achieved quality of power indices that the limits are under various international standards like IEC and IEEE.

Keywords- *Intermittent Inductor Current Mode, SBLDC Motor Drive, Bridgeless (BL) Landsman (LM) Regulator*

I. INTRODUCTION

Brushless drives have acquired significance in most recent decades because of power quality upgradation and wide performance compared with traditional drive systems[9]. The features of high effectiveness, high unwavering quality, reduced electromagnetic difficulties and astounding process execution over wide scope of speed control have made this drive more popular[3]. The BLDC drive is fit for many low and medium power applications varying from computer hard drives, fuel pumps, e vehicles, compressors and dryers.

A diode rectifier feeding the voltage source inverter via DC link capacitor makes the drive to draw high harmonic current from the mains resulting in reduced quality of power[7]. To avoid these blemishes, power factor regulators are used. Few many designs are derived in the literature surveys with less number of components and reduced losses. Usually, a boost converter approach will be used which includes current multiplier approach requiring three sensors and high with high switching stress. The front end cuk and sepic converter configurations have been designed but a higher cost. BL SEPIC converter is designed with higher inductance and huge cost.

Bridgeless configurations have gained importance recently due to minimal switching losses due to partial avoiding of uncontrolled rectifier[5]. Figure 1 shows the basic stepup converter fed BLDC drive. In

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Liquid phase hydrodeoxygenation of furfural over laponite supported NiPMoS nanocatalyst: Effect of phosphorus addition and laponite support

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ABSTRACT

Unsupported and laponite supported NiPMoS catalysts were prepared under the hydrothermal method and investigated for liquid-phase hydrodeoxygenation of furfural in a high-pressure batch reactor at 423 K – 463 K under 20 bar H_2 pressure. The reaction significantly produced 94% of furfural conversion with 75% yield of 2-MF on NiPMoS catalyst whereas, NiPMoS/Lap catalyst exhibited 28% of 2-MF yield with complete conversion at 463 K under 20 bar H_2 pressure in toluene solvent. The influence of process parameters such as reaction temperature, reactant volume, catalyst compositions, and hydrogen pressure on furfural conversion and product yield was investigated in detail. The high reactivity and synergetic effect of the NiPMoS catalyst are due to added phosphorus, which has a profound influence on the structure of the catalyst, thereby increasing surface acidity, basicity, hydrogen consumption, and a number of MoS_2 fringes and the dispersion of MoS_2 on the surface of the support. The catalysts were characterized based on HRTEM, H_2, CO_2, and NH_3 TPD, FT-IR, FT-Raman, DRS UV-Vis, XRD, N_2-physisorption, and TGA. Recyclability, N_2-physisorption, and XRD results confirm the stability and practical applicability of the catalyst for industrial applications.

1. Introduction

In the current decade, the scarcity of non-renewable fossil fuel has harnessed to find renewable and sustainable resources to solve the rapid increase in energy demand related to petrochemical products. In addition to that, from the point of eco-friendly perspective, the constant consumption of fossil fuel would be responsible for CO_2 emission which results in air pollution and global warming. With consideration of these facts, much attention has been paid to re-balancing the carbon cycle. Biomass seems to be considered an alternate and naturally available material for future energy production and petrochemical economics. Biomass can be converted into value-added chemicals and petrochemical intermediate compounds through pyrolysis, high-pressure liquefaction and hydrogenation of bio oil into through catalytic hydrogenation and hydrodeoxygenation [1–3]. In addition to that, the carbon emission from the biomass derived fuel compounds can be kept constant for producing carbon-neutral fuel that would be a potential alternative for fossil fuels.

In recent years, biomass into fine chemicals *via* catalytic hydrogenation and its derived biofuel is much more attractive because of an increase in the demand for energy to produce sustainable fuel chemicals. As biomass contains a significant weight percentage of oxygenated unsaturated compounds, the catalytic conversion of biomass-derived oxygenates through hydrodeoxygenation (HDO) is considered to be important for the fundamental understanding of the process [4–6]. Furfural (FFR) is an important heterocyclic organic compound of lignocellulosic biomass, considered a platform chemical [7]. Catalytic conversion of this compound can be utilized to generate various kinds of fuel-grade hydrocarbons and chemicals such as, for instance, 2-methyl furan, furfuryl alcohol, and tetrahydrofurfuryl alcohol [8,9]. It has been reported that catalytic conversion of furfural into alicyclic five-membered compounds was achieved on Pt and Pd supported catalysts [10,11]. The reaction involved in obtaining those compounds either through selective catalytic hydrogenation of FFR or C-O bond breaking by catalytic cracking over a suitable hydrotreating catalyst [12].

These compounds can be used as a potential fuel/fuel additive or solvent for the production of resins [7,13]. tetrahydrofurfuryl alcohol is extensively applied as an eco-friendly solvent, associated with the following reasons, significantly less toxic, and it could be degradable and stable compared to unsaturated furan compounds. Furfural derivative

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SUSTAINABILITY

ENVIRONMENTAL PROGRESS & SUSTAINABLE ENERGY

Performance, environment, and cost-benefit analysis of a split air conditioning unit using HC-290 and HCFC-22

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Abstract

A widely used hydrochlorofluorocarbon (HCFC) refrigerant HCFC-22 in the split air conditioner (AC) is being phased out in all countries under the Montreal Protocol. Propane (HC-290) is a favorable substitute for HCFC-22. The performance, environment impact and cost-benefit analysis of a split AC unit operated with HCFC-22 and HC-290 has been carried out experimentally under different test conditions prescribed by IS 1391. The results showed that the variation in system performance was more significant for HCFC-22 than for that of HC-290 while varying the refrigerant charge. The experienced optimum charges that represent the maximum coefficient of performance (COP) was varied with the working environment and it was realized that, generally the optimum charge for HC-290 was 50% lesser than that of HCFC-22. The COP of the AC unit with HC-290 was observed to be 5% more than that of HCFC-22. However, the system capacity diminished by 7.8%. The operation of a split AC unit with HC-290 produced up to 15.9% lesser CO_2 emission than that of HCFC-22 under all the test conditions. The use of HC-290 in an existing HCFC-22 split AC system can save up to 12.22% of the life time total cost. Finally, it was inferred that the replacement of HCFC-22 with HC-290 in the split AC unit showed dominance in all aspects such as performance, emission, and life time total cost.

KEYWORDS
COP, global warming potential, HC-290, HCFC-22, total equivalent warming impact

1 | INTRODUCTION

Hydrochlorofluorocarbon (HCFC) refrigerant HCFC-22 has been widely used as a refrigerant in heat pump and air conditioning (AC) applications. The use of HCFCs is restricted due to environmental protocols.[1-2] The Montreal protocol agendas have been progressive to phase out the manufacturing and practicing of HCFCs by 2020 and 2030 by the developed and developing countries (India), respectively.[3-4] In India, about 6.7 million AC units were sold in 2018 and it is expected to reach 124 million by 2030. Approximately 145 GW of electricity is needed for its operation. Also, most of the split ACs in India use HCFC-22 (about 70%), and this results in more

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Upgrading The Quality Of Power Using Bridgeless Cuk Converter Fed SBLDC Drive

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Abstract—This paper develops a BL Ćuk converter-fed SBLDC drive for an air conditioning usability. A new technique to manage the speed of SBLDC motor is proposed with the aid of controlling the potential at DC bus the usage of a one voltage sensor. The proposed drive utilises a BL Ćuk converter working in Intermittent inductor current mode (IICM) for the power aspect correction and advanced energy excellence at the AC mains for a extensive variety of speed manipulation. The speed of the SBLDC drive is maintained using a sensorless technique where the BLDC is fed through a bridgeless regulator. The BL Ćuk regulator working in a IICM offers an inherent PAC and calls for a simple voltage follower technique for the voltage control. The BL topology is designed for acquiring the low conduction losses and need of low size of warmth sink for the devices. The proposed system is designed and its overall performance is simulated for an air conditioning system to function over a huge form of speed manage with near energy factor at AC mains

Keywords- *Intermittent Inductor Current Mode, SBLDC Drive (Sensorless Brushless Drive), (BL) Ćuk Regulator, Power Aspect Correction (PAC), Uncontrolled Bridge Rectifier (UBR)*

I. INTRODUCTION

As a result of high performance, excessive torque to inertia ratio, excessive power density, low preservation need and extensive variety of speed manipulate; brushless DC (BLDC) motors are extensively favoured in lots of minimal and medium energy exeercises. It's far used in many house equipments of Gadget like fans, air conditioners, water pumps, Refrigerators, washing machines etc [1-3].It also finds applications in lots of commercial gear, medical equipments, Heating, air flow and air con, robotics and Particular movement control structures [1-3]. This machine has a 3 segment windings on the stator and permanent magnet within the rotor. As the call suggests, it has no brushes for the commutation moreover an electronic commutation is utilised in which hall transducers are utilized for the position analyzing to arise the desired commutation situation using a potential supply inverter (VSI). Hence, it is also referred to as electronically commutated drive[3]. Owing to this, majority problems related to the mechanical commutator which include sparking, put on and tear of brushes and commutator meeting, noise troubles and electromagnetic intervention are eliminated[3].

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DESIGN AND ANALYSIS OF MPPT BASED BUCK BOOST CONVERTER FOR SOLAR PHOTOVOLTAIC SYSTEM

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ABSTRACT

Maximum power point trackers are so important to improve the efficiency of photovoltaic systems. Many methods have been proposed to achieve the maximum power that the PV modules are capable of producing under different atmospheric conditions. This paper proposed a Perturb and Observe based Maximum Power Point Tracking (MPPT) algorithm for solar system. The solar panel is simulated and analyzed in MATLAB/SIMULINK. Photovoltaic system is connected to a DC-DC Buck-boost converter. The Solar panel can produce maximum power at a certain operating point called Maximum Power Point (MPP).To achieve maximum power and to get maximum efficiency, the whole system must operate at that Maximum Power point. Maximum power point of PV panel keeps same on changing with changing solar irradiance and temperature of cell. Then to obtain maximum power from a PV system, MPPT algorithms are implemented. So that, P & O based MPPT is developed and Simulation results show the effective of the P&O based controller to produce more stable power.

Keywords: DC-DC Boost Converter, Maximum Power Point Tracking, PV System, P&O Method, Solar Panel.

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ORIGINAL CONTRIBUTION

Design and Implementation of FPGA-Based Grid-Connected Impedance-Source Inverter

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Abstract In recent time, Z-source inverter (ZSI) is designed by a new power adapting concept mainly for renewable energy application and other industrial applications. ZSI eliminates the drawbacks of the traditional inverter and provides high efficiency, and it also contains the buck and boost operation in it. This paper presents the grid-connected Z-source inverter and LZ-source inverter by controlling the shoot-through states of an impedance-source neutral-point-clamped inverter using a space vector modulation technique. Normally, the grid-side source contains harmonics. The main aim of this paper is to design, model and experimentally study the Z-source and LZ-source grid-connected inverters by using the MATLAB simulation. By using the control algorithm, the grid-side total harmonic distortion (THD) is controlled and maintains the IEEE standard level. The control algorithms make this inverter's outputs purely sinusoidal. The THD values of the Z-source and LZ-source grid-connected inverters are compared to find the efficient impedance-source inverter. The proposed control technique hardware is designed, and the experimental results are compared with the simulation results.

Keywords ZSI · L-ZSI · FPGA · Grid · THD

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Introduction

Recently, the distributed generation (DG) is progressively critical to get an increasingly productive power exchange [1, 2]. The profoundly utilized distribution generation frameworks are sunlight-based boards, windmills and thermal power plants. Mainly, the energy is received from these resources and further connected with the inverter/converter circuit, which is further fed to the grid side for carrying the transmission of active and reactive power. The major disadvantages are: It can infuse or it will ingest the receptive power at times and the vast majority of the frameworks are working unity power factor. Another downside of the conveyance age framework is the power will not consistently go to the grid on account of certain variables such as the absence of intensity request and more utilization.

Many forms of new and renewable energy are not natural 50 Hz or 60 Hz sources, and the question arises on the means of incorporating them into a standard electricity grid [3]. Power systems are experiencing a quick development with reference to distributed generation [4]. A number of factors arise due to this trend including monetary benefits, environmental concerns, consistency needs and tax incentives. Different power production technologies including microturbines, fuel cells and renewable sources such as solar and wind powers are described by [5, 6]. This list will certainly develop with the advent of cap hybrid electric vehicles and well-organized energy storage to mention just two technologies that draw a special attention [7, 8]. Miniature generators have been spread throughout the power system. Generally, these sources are not coordinated with the grid power supply, but rather put into service when the primary supply is intermittent. Furthermore, they tend not to be organized with each other.

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PWM STRATEGY FOR THREE PHASE VOLTAGE SOURCE INVERTER WITH MINIMUM HARMONIC DISTORTION

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ABSTRACT

In this paper, comparison between two different Pulse Width Modulation (PWM) techniques employed for three phase Voltage Source Inverter (VSI) is discussed. A suitable PWM technique is employed to obtain the required output voltage in the line side of the inverter. The PWM generation techniques used in this paper mainly based on Space Vector based Pulse Width Modulation (SVPWM) and Modified Space Vector based Pulse Width Modulation (MSVPWM). MSVPWM method involves the comparison of the three phase reference modulating signals with a common triangular carrier wave to generate the pulses for the three phases. Whereas, in SVPWM method, a revolving reference voltage vector is provided as voltage reference instead of three phase modulating waves. This paper analyses the two Pulse Width Modulation techniques for three phase VSI and the current THD is maintained at the level of below 5%. The two Pulse Width Modulation techniques for three phase Voltage source inverter are compared by the current THD values to select the method with lower THD values.

Keywords: Pulse Width Modulation, Voltage Source Inverter, Total Harmonic Distortion, SVPWM, MSVPWM.

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POWER FACTOR CORRECTION BY BRIDGELESS BUCK BOOST CONVERTER

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ABSTRACT

In current Scenario, efficiency and economic are the major concerns in designing and developing low-power applications. The aim of the paper is to design a Bridge Less Power Factor Corrected (BLPFC) buck boost converter for low power applications. The diode bridge is eliminating using bridgeless configuration thus reducing the conduction losses associate with in it. A BLPFC buck boost converter is design to operate in Discontinuous Current Mode (DCM) to provide a better Power Factor Correction (PFC) at AC mains. The PI controller design will be used to reduce the harmonics present in the system and to maintain the unity power factor at different voltages. This drive is to compare with the different input voltages and shows satisfactory performance. The performance of the system is to be simulated using MATLAB/Simulink. The experimental output values will be tabulated and the system is maintaining unity power factor at various voltages (90V, 100V, 125V).

Keywords: Power factor correction, Bridge Less Power Factor Corrected (BLPFC), Buck boost converter, PI Controller, discontinuous current mode.

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SMART DIGITAL WATER FLOW SURVEILLANCE SYSTEM USING IOT

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Abstract: *The idea of a Smart digital water flow surveillance system is for the Smart buildings, Colleges, Hospitals, Industries, and Homes. In our day to day life, we see our cities facing many problems with water wastage, which leads to water scarcity and water pollution due to the overflow of water along roadsides. The main process is to save the water and monitor the usage of water. The wastage of water will also affect the environment and can cause water pollution due to the addition of oils and pesticides around the land. The most important need for having a smart way of life is by saving water. The Smart digital water flow surveillance system is a new idea to save water. It can send information through IoT to an android application of the user about the filling and empty water tank and it can also detect the water flow from the public water line. This system also used to measure the usage of water by the user using the water flow meter. Every process of the system is updated in an android application for user convenience.*

Index Terms **- PIC16F877A, Moisture sensor, Floating sensor, Wi-Fi module, Water flow sensor, Solenoid valve.**

I.INTRODUCTION

The world is getting automated more day by day and hence an eco-friendly technique is essentially required. Water management is the most required process around the world. Water usage can be estimated by monitoring and measuring the water utilized by a person. So far, the technology is much developed but there is a need for innovation. The concept provides a plan for reducing the wastage of water[4]. Nowadays, most of the industries are given rebirth with automation but, the local is still backward in automation. It is also equally important to have a low cost, robust and simple system to monitor the water consumption in the residence using an automated system.

The implementation of concept may differ among countries; insufficient water is a major issue among most developing nations. Since, less water usage is always welcomed wide over the world. Water management has an important commitment to ensure water consumption awareness and to avail of the measurement to the consumers. Mostly, the usage is unlimited due to the lack of measurement. In some cases, consumer involvement is necessary to save water but the concept must result in a system that combines both measurement and monitoring without the presence or any manual interruption of the consumer. The smart digital water flow surveillance system is presented in this paper. This system is available to measure and manage water consumption. The processed results will be published with the help of a Wi-Fi module for and displayed in the smartphone with the help of an android application [6]. The android application is used for the quick access and control of the device from anywhere. These can be supported in all versions and it can be updated and new supports can be added when it is needed. The smart digital water flow surveillance system can reduce the cost of the system. This system uses IoT for fast sharing of information to the user.

1.1Related Work

Nihil R, Riya Rajan, Rangit Varghese [2019]
Proposed the Water Quality Monitoring System is a real-time water quality measurement system focused on GSM. The system is incredibly robust and cost-effective. This machine tests various criteria relating to the water and sends them to the control center. It can automatically track the quality of water and is low in cost and does not require duty staff. Authorized users can access the data by logging in to the Thing Speak website. By entering the registered user ID and password, it will be led to the web page where the parameters will be shown in real-time in the form of plots. [1]

ImranB, Shakir Ahmed Sha KS, PavethraM, Siva Sankari k, Kavitha [2018]
Proposed a research that helped to designed and managed by a Wireless Sensor Network (WSN) which helps to track the quality of water with the aid of information sensed by sensors immersed in water, in order to keep the water resource within the norm defined for domestic use and to be able to take the necessary measures to restore the health of the deteriorated water body. The introduction of industrial process regulation is made possible through the use of the Internet. [5]

GowthamyJ, ChintaRohith Reddy, PijushMeher, SaranshShrivastava, Guddu Kumar [2018]
Proposed a study by installing this device in the smart city, it will be able to collect and evaluate the trends of residents ' water usage and save a lot of water from waste. The Internet of Things (IoT) is a revolutionary concept, that has the potential to turn almost anything into a smart thing. IoT provides an interface to track and work remotely from anywhere and at any time. Existing liquid level control systems are commonly used for controlling liquid levels, reservoirs, silos and dams, etc. The device suggested is used for the home/office. [3]

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POINT OF INTEREST RECOMMENDATION ENGINE

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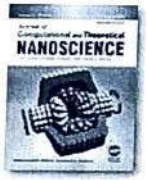
Abstract—The popularity of location-based social networks (LBSNs) has led to an enormous amount of user-based check-in data.Recommended Points of Interest (POIs) plays a key role in meeting the needs of LBSN users. While recent work has explored the thought of adopting a collaborative ranking (CR) for recommendations, few attempts are made to include time-based information for POI recommendations using CR. In this article, we propose a two-phase CR algorithm that comes with the geographical influence of POIs and is regularized supported the variance of recognition of POIs and user activities over time.Time-sensitive regularized penalizes users and POIs that have been more time-sensitive in the past, helping the model to account for long-term behavioural patterns while learning from user-POI interactions. Moreover, in the first phase, it attempts to rank the visited POIs higher than the unvisited ones and, at the same time, to apply the geographical influence. In the second phase, our algorithm attempts to rank the preferred POI users higher on the recommendation list. Both phases use a collaborative learning strategy that enables the model to capture complex latent associations from two different perspectives. Real-world dataset experiments show that our proposed time-sensitive collaborative ranking model beats the state-of - the-art POI recommendation methods.

Keywords — Point-of-interest recommendation, time-aware recommendation, collaborative ranking, location-based social networks.

I. INTRODUCTION

With the launch of location-based social networks (LBSNs) such as Yelp, Trip Advisor and Foursquare, users can share check-in data on their mobile devices. LBSNs collect valuable information about mobile user records with check-in details. Generating Points of Interest (POIs) guidelines play a key role in addressing user needs, such as exploring a new POI or visiting a city. In reality, every city has multiple POIs , and a user may have visited just a few in her hometown as well as when out of town.POI Recommendation attempts to ensure the satisfaction of users by proposing to them the most interesting locations in theirvicinity, taking into account their preferences and contextual constraints.

The accuracy of POI recommendation is constrained by many challenges. For example, data scarcity is a major challenge in Recommendation of the POI. Despite the fact that there are LBSNs with a large number of locations, in practice users visit a very limited number of locations, making the user-item matrix sparse. Moreover, as users spend most of their time in their hometown, the data scarcity problem is aggravated when a user visits a new city where has no history of visited locations. Some studies seek to address the question of data scarcity by integrating additional data into the model, such asgeographical and temporal data.The data scarcity problem is actually even worse when suggesting POIs as opposed to other things like movies or songs.This is mainly due to the fact that the check-in data provides an implicit feedback whereas users usually express their



Exploring Refractive Index Ultra Compact Nano Sensor Using Photonic Crystal Resonant Cavities

Authors: Mohammadi, Masoud [1]; Seifouri, Mahmood [1]; Boyerahmadi, Elham [2]; Udaiyakumar, R. [3];
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In this paper, an ultra-compact photonic crystal sensor based resonant cavities is proposed with improved quality factor, sensitivity and detection limit. The proposed sensor has 2D pillar photonic crystals with hexagonal array of dielectric rods. The refractive index of dielectric rods, radius of rods, filling factor *(r/a)* and lattice constant of the proposed structure are 3.46, 108 nm, 0.2 and 542 nm, respectively. The mean transmission efficiency, Quality factor, sensitivity, Figure of Merit (FOM) and limit of detection (LOD) are calculated as 92.2%, 9975.8, 371 nm/RIU, 2366 and 4.5 x 10-^{5} RIU, respectively. The corresponding electric field distributions and it band characteristics are studied using finite different time domain method (FDTD) and plan wave expansion (PWE). The cross-section of the proposed structure is 86 */xm^2* and is desirable for photonic integrated circuits (PIC) and ultra-compact optical sensors.

Keywords: Detection Limit; Photonic Crystal Sensor; Quality Factor; Sensitivity

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Conflagration and logging detection

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Abstract

The forest fire and deforestation has an adverse effect in environment. A wild land fire is an uncontrollable fire that occurs mainly in forest areas, it also occurs in urban or agricultural areas. Among the most causes of wildfires, human factors, either intentional or accidental, are the foremost usual ones. The number and impact of forest dangerous fires are expected to grow as a consequence of the worldwide warming. In order to fight against these disasters, it's necessary to adopt a comprehensive and multiple approaches that permit endless situational awareness and instant responsiveness. The main intention of this project is to provide forest security by preventing unauthorized cutting of trees and forest fires. The detection device used to detect the forest fire and deforestation comprises of multiple sensors such as LM35 temperature sensor, MQ3 smoke sensor, Flame sensor and PIR sensor to indicate the fire in different factors. Arduino board and Wemos D1 are used to control all these sensors. The program will be loaded and uploaded in Wemos. An application was developed to connect and work in a single server. The detected information will be send to user mobile and mobile apps using SMS and Wi-Fi interface by the Arduino.

Keywords Arduino UNO, Wemos D1, GSM.

1. Introduction

Nowadays forest fire occurs very frequently. It causes great damage to the great extension of forest land and destroys habitats like animals and birds. Due to the forest fire some rare species of trees and medicinal plants get extinct. Forest fire increases carbon-di-oxide levels in atmosphere contributing to greenhouse effect and climate changes. It destroys much of the soil and erodes the soil causing flood and landslide. The entire forest ecosystem will also be collapsed. In earlier days fire occurs naturally, ignited by heat from the sun. One of the main reasons of natural occurrence of forest fire is due to the departure of the lightening strike, sometimes collision of two siliceous rocks that also produces spark which results in the minimal impact of fire. Naturally occurring fires can be quickly detected as they have only one outbreak. However most of the wildfires are due to human's uncontrollable activity and carelessness such as lit cigar, not burning debris properly, fireworks, arson and camp fire and also due to the damage of power lines or military accidents. Next to the forest fire deforestation has an adverse effect on society. Development of urbanization and the construction of industries and factories in rural areas are the major reasons which results in deforestation. Since the dams are constructed across the river it results in destruction of forest cover. Farming, cattling, logging for materials also results in deforestation. 70% of animals and plants live in forest and deforestation leads to destroy their homes, since they provide shelter for some rare species of plants. Deforestation not only reduces the level of ground water but also that results in water scarcity. Logging of trees results in the release of large amount of green house gases into the atmosphere and also leads to global warming. It decreases the level of pollution that could be controlled by the nature warming and climate changes. Soil erosion is being caused by wide spread deforestation. The proposed unique solution helps to overcome the above

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Opulent Futuristic Smart Sensing Garden

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Abstract— The project proposed here is an automatic public garden system which uses a PIC16F877A controller. The PIC controller is used to control the entire system. The hardware components required for this project are PIC16F877A, timer, battery, DC motor, humidity sensor, relay, solar panel, water level sensor, voice module, IR sensor. The project is an automatic design in which PIC controller controls the entire public garden system like gate, water system, lights and dustbin. Initially, the controller switches ON the entry gate that is opened for certain time, after some time the exit gate will also open. A voice indication is given to alert the public for closing time of garden then both gates will be closed. An IR sensor is fixed in the exit gate which is used to exit the people stuck inside the garden after closing time. Lights are automatically turned ON and OFF using timer. Based on humidity sensor the DC motor will supply water by using water sprinklers. If the water level in tank is beyond a certain fixed level the motor will automatically ON and fills the tank by using water level sensor. For disposal of garbage we introduce a smart garbage system which has two dustbins in which if one dustbin is filled by trash it gets automatically closed and another dustbin will be opened. The filled dustbin is indicated by LED and a message is send to the corresponding authorities for disposal. The overall power supply to the garden is generated and provided internally using a renewable energy.

Keywords— PIC16F877A, Timer, Moisture sensor, Water level sensor, IR sensor, GSM, Solar panel

I. INTRODUCTION

At present the public gardens are playing a vital role in our society. Garden helps to keep cities cool and act as a place of recreation. In crowded cities, it will be difficult to maintain a clean and secure public garden. The most important problems faced in public garden are the misuse of electricity. Sometimes carelessness of the workers will result in wastage of electricity. The water wastage is an another issue which will be faced in gardens. Due to improper watering, plants are suffering from prolonged drought or high humidity which causes infection to the greeneries. In addition, it requires manpower to open and close the garden's gate.

The improper maintenance of trash is a big problem in gardens. This can cause spread of pest species and many diseases. So by implementing a smart garbage system this can be overcome which is also easy to maintain. There is a need of external power supply from the Electricity Board for the garden. To overcome this, we use renewable energy will play a vital role to generate the needed power for the garden. By implementing the project named as '**Opulent Futuristic Smart Sensing Garden**' all the above situations can be avoided which is used to develop a smart city.

II. RELATED WORK

Pawar P.M, et al (2016) proposed an automatic garden monitoring system that is used for household gardens and can be expanded to greenhouses. It is a microcontroller based project. It helps to reduce the human efforts and makes the appropriate use of water resources to improve the health and life of plants [1].

Mr. Mahadev Vilas, et al (2017) proposed a project that helped to gain a better knowledge on various aspects related to automation. Using this system the farmers can utilizes the available resources efficiently without wastage. The user can feed the input through the GSM so that a particular condition will turn on for a predefined time [2].

Ramkumar.E, et al (2018) proposed the plant monitoring and smart gardening using IoT in the Raspberry Pi platform. The main goal of automation is to make the people comfort by reducing manual work. All the sensors in this system connected with the Raspberry pi and the information about the garden is directly monitored and controlled by the owner through smart phone [5].

R.B.Thombare, et al (2018) proposed a public garden automation by using arduino. To control the wastage of

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Newfangled Immaculate Trash Can Tracking System

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Abstract: ***The idea of trash can monitoring systems is for the Smart buildings, Colleges, Hospitals and Bus stands. In our day to day life, we see our cities facing many problems with garbage overloading, which leads to producing green-house gases and it leads to polluting our environment and also it is harmful to humans. The main natural process is the greenhouse effect that warms the earth's surface.***

The emission of greenhouse gases can also affect the ozone layer. The most important need for having a smart way of life is being clean smart garbage system. Trash can monitoring system is a new idea of implementation which makes a normal dustbin as smart using Arduino Uno and GSM modules are used to send the SMS. The proteus software tool is used to create the schematic diagram of our project.

The trash can will constantly measure the level of garbage in the bin and automatically detect if any toxic gases present in the bin and also detect any burning occurs in the garbage and it Sense and sends a message to the higher authority. If that cleaning team will not initiate cleaning, then the dustbin will automatically move by using the line follower sensors to dispose of the waste at the desired location.

Keywords: Arduino, GSM, ultrasonic sensor, gas sensor, temperature sensor, Proteus tool, and line follower robot.

I. INTRODUCTION

All cities in the world are facing great challenges due to increasing urbanization and one of the major challenges is reducing the amount of dumping waste. In many public places, we see that garbage bins are kept but they have not been cleaned. Overflow of waste causes air pollution, land pollution, and respiratory problems. Some gaseous compounds are extracted from the wastes in the bin, it can cause health effects by causing shortness of breath, headaches, eye irritation. Some of the industries produce toxic products that are thrown away into normal dustbin against the rule.

Though the dustbin is filled there is a formation of gases such as ammonia, carbon dioxide, and methane and some of the contents in the garbage that react with each other and release Sulphur & Nitrogen. Burning of garbage releases very poisonous carbon monoxide gas in the air. This may cause fire and pollute the atmosphere severely. Fire can also occur due to people's careless and they are unaware of the burnings & combusting material. This fire may also spread to homes, working area & causes a threat to the surroundings.

To reduce these problems we can use the existing technology to sense these unusual conditions. Using the level monitor like an ultrasonic sensor we can sense the level of waste in the dustbin [1]. Using the gas sensor we can sense the formation of hazardous gases like CO2, SO2, NO2, methane, and ammonia. Fire sensor is used to sense the temperature level in the garbage if any burning occurs it senses it. GSM & Arduino module is used to transfer data and messages.

If any unusual condition occurs in the waste like overflow, toxic gas or any burning of waste then it senses and sends the message or voice call to higher authority and scavengers for cleaning [3]. After sending these messages, if the scavengers are not coming to clean the waste.

Then the dustbin will automatically move towards disposing of the waste. Here the line follower concept is used. These line follower sensors are used to move the dustbin in that pre desired path or black line. When it reaches that destination it automatically disposes the waste at the desired location [5]. Upload the code to Arduino after setting up the smart trash can and providing a 5V power supply to the Arduino board to circuits. Thus using this method we can avoid some undesirable health problems and environmental pollutions. Using this idea we can make our India as smart cities.

IOT Based Refuse Reuse Recycle Technique for Zero Waste Management

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[2,3,4,5]Bachelor of Engineering Students, Department of Electronics and Communication Engineering, Kathir college of Engineering, Tamilnadu, INDIA.

Abstract : In almost all parts of the world there is no a proper solution for the disposal of waste. There is no proper monitoring and maintenances. The trash may overflow at times and make the city look unclean as well as it leads to the spread of various infections. If the trash pertains for more than a week in the same place it leads to the release of various toxic gases which may affect the children and old age people living in that area. The main idea of this project is to maintain the city clean by a proper collection of waste and not allowing it to overflow. At the same time, it makes utilization of biodegradable waste as natural manure to enhance crop production with the help of the bokashi composting technique. This method effectively increases crop production all over the world by 40%. So, it reduces the risk of disposing waste or dumping it under the water.

IndexTerms - PIC microcontroller, GSM, Servo motor, LCD display, DC motor, Infrared sensor, Dustbin, Mobile phone.

I. INTRODUCTION

In India, almost 60 million tonnes of waste are generated every year. Out of these, only 20% of waste is treated and the remaining 80 % of waste is either dumped as landfill into the earth or in most cases it is burnt. Both of these cases cause great disaster to the earth. Burring the waste deep into the ocean may lead to depletion of water organisms and burning of waste might cause depletion of the ozone layer.

The major problem faced all over the world is the scarcity of food. Totally 11% of the Earth's land area is utilized for agricultural purposes. Nowadays, the remaining agricultural area is also destroyed due to the construction of various buildings and it is also destroyed due to various natural disasters. If this situation prevails there will be a dramatic decrease in crop production. The usage of artificial manure may lead to decreased crop production and produces unhealthy crops that would be harmful for human consumption

To maintain the city clean and reduce the deposition of waste onto the earth and at the same time to increase the total crop production by 40% it paves way to go for the REFUSE REUSE RECYCLE concept.

There are 3 types of composting techniques like

1.Normal Composting,
2.Vermi Composting,
3.Bokashi Composting

But the first two has the following drawback. The biodegradable trash thus obtained is again segregated into GREEN AND BROWN trash and mixed up in a 50:50 ratio. They must be exposed to air whenever needed and needs sunlight at times. There is a chance of forming anaerobic bacteria which might be harmful to live beings. Due to all these complications, advised to adopt the BOKASHI COMPOSTING technique. Where an alternate layer of BOKASHI POWDER and trash is mixed up and placed in an airtight container and it is left undisturbed for 2 weeks. The extract thus obtained can be sprayed onto the crop which act as a natural fertilizer and increases the crop yield by 40%

II. LITERATURE SURVEY

In the former adopted methods, there was a hole dug inside, above which a polythene bag was covered. The biodegradable waste followed by a layer of cow dung and phosphate powder is sprinkled evenly. Then the setup is covered by a layer of cow dung and is left undisturbed for a period of 3 to 4 weeks. Now cracks start developing in its above layer at that time earthworm is introduced into its cracks. The top surface is covered with a layer of polythene bag and is checked periodically and water is sprinkled above it to avoid dryness. After a period of 4 to 5 weeks the earthworm digest all the degradable waste and turns it into manure and the corresponding manure is segregated from earthworm using a sieve and is packed and stored in a cool dry place. The casting analysis revealed that cow dung slurry along with paper and organic waste is converted into manure that is used to enrich the soil value by a small amount and reduction in C: N ratio make the plant to uptake quire people on duty.

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YEAR 2017: 7.143 | YEAR 2018: 8.502

YEAR 2019: 9.027

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Volume & Issue no: Volume 9, Issue 1, January - February 2020

Title:	Automatic Traffic Signal for Ambulance and VIP Vehicles
Author Name:	Mrs A Kaviya, Dr.M.Varatharaj, A. Arun kumar, V .Gayathri, S. Nivetha , S .Thamarai selvan
Abstract:	ABSTRACT: Normally, the traffic light signals are programmed for a particular time interval. But in this project the traffic light signals are programmed and generated based on the traffic level on the road. This type of traffic light signaling is used in all metropolitan cities. This particular project is designed to control the heavy traffic in required time. Most of the time the traffic will be at least for one hour. In this distance the traffic police can't hear the siren and the ambulance has to wait until the traffic is cleared. Sometimes the traffic clearance takes at least 30 minutes.so this leads to critical position. If the traffic density is high when the ambulance is arrived on the particular road, highest priority is given for that direction and the traffic is cleared immediately and provides way for ambulance and VIP vehicles. The RF sensors continuously send the signal to the receiver in the signal post to give way for ambulance immediately. Keywords: Traffic light controller, RF Sensor, Microcontroller, speed checker, GSM, sound sensor
Cite this article:	Mrs A Kaviya, Dr.M.Varatharaj, A. Arun kumar, V .Gayathri, S. Nivetha , S .Thamarai selvan , " Automatic Traffic Signal for Ambulance and VIP Vehicles", International Journal of Emerging Trends & Technology in Computer Science (IJETTCS), Volume 9, Issue 1, January - February 2020 , pp. 006-009 , ISSN 2278-6856.
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HIGH LEVEL WING

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Abstract: *The main focus of this project is to develop and design the mechanism of high level wing for lifting. It is controlled by an Arduino Uno microcontroller which accepts the input data's from the user. This high level wing working prototype is made up of a motor, camera accessed by ip webcam, gripper with a two relays and a Arduino board. These are connected together and are operated by ubidots software. In line with the human hand motion robotic arm additionally circulate and reacts the same. This will be accomplished from anywhere, we decided to overcome the positive difficulty approach by means of accessing the arm using an external joystick, in order that it is far easier than the preceding method. By the usage of the camera we able to stumble on the goal speedy and it enable to attain the target with the aid of the usage of this arm that is managed externally via a person. As machines develop even greater sensible, they're emerging no longer simply as a effective tools, but close companion. The control assignment of this is to govern the movement of robot arm from source to the destination spot. This could be done by the way of controllers within the Arduino which include certain specifications*

Keywords: *Gripper, Stepper Motor, WEMOSD1, RF Module, Wi-Fi Module.*

1. INTRODUCTION

Robotics may be a current emerging technology within the field of science. A number of universities in the world are working in this field. Robotics is that the new emerging booming field, which can be of great use to society in the upcoming years. Nowadays many sorts of wireless robots are being developed and are put to varied applications and uses.

The developed robotic arm, with learning and resources, which is operated & controlled wirelessly with the help of accelerometers which uses Rf module to transmits signals to the robot through an auto device manually through the hand and leg movement [3]. The Robot moves and acts in the manner depending on the gestures made by the hand and leg. The robot moves in up, down, left or right directions and picks up objects from one place and keeps at another desired place as directed by the movements of human. It is a TYPE — C Robot, servo controlled with continuous or point to point trajectories. The pre-defined arm are working in the form of wrapping a detectors in the arm of a human being [3].

By discussing the brand new frontiers of robot physical interplay with people, describing motivations and packages of safe pHRI (bodily human-robot interplay). The technical challenges to increase new robot structures for secure and powerful collaboration with people are mentioned, Sub-dividing the exposition into palms-off and fingers-on pHRI (physical human-robot interaction) systems [9]. We present a summary of the applicable safety standards and their ongoing development. It can be very useful when the arm is controlled externally, so that it can be make the movements according to the need and by using this technique it can make the needful for the human beings [3]. This can be done with the help of the Arduino boards connected to the hands which are programmed in order to do the favor. Hence, with the use of this, the desired result can be obtained. To make the life better than creating a modern world, we make use of the technology to develop the nation as well as the life of a being.

2. LITERATURE SURVEY

In the wireless gesture technique, microcontrollers accelerometers, degree of freedom, IP, RF modules are used. One accelerometer is mounted on the human hand and another on a leg from which the arm can be moved according to the movement of the human hand and leg, where hand movement captures the behavior and leg movement shows the platform movement

Intelligent Load Power Manager for Solar Powered Portable Devices

N.Vijayalakshmi, Dr.P.Maruthupandi

Abstract

The performance of real time solar energy converters and solar energy scavenging devices depends solely upon the speed and efficiency of the power management among the input, output and conversion ends. Hence this paper concentrates on designing of reconfigurable, reprogrammable, efficient Intelligent Load Power Manager (ILPM) system depicting low power, high precision and zero lag operation. (FPGA) Field Programmable Gate Arrays prove to be robust, low cost, high efficient methodology that works well in analog as well as in digital platform. Hence, FPGA based implementation of an Intelligent Load Power Manager (ILPM) is proposed for solar energy harvesting portable / remote devices. The input renewable power is stepped up with help of the DC DC Converter and the boosted voltage is given as input to the portable load. Since the harvested energy is not regular throughout the load requirement, a storage setup is made to meet up the lad needs. FPGA based ILPM proves to be an energy efficient module which controls the connectivity of the load needs and operation of the converter.Simulation and implementation of the Proposed FPGA based ILPM is done with Xilinx software 12.1 version.The dynamic power consumption of the proposed ILPM is found to be low. The obtained simulation output shows a comparative higher efficiency (96.2%), a decrease in chip area usage 130 $\mu m^2$and reduction in operation time as 4.283ns.

Keywords: Solar Energy Scavenging, Power Manager, FPGA, chip area, DC-DC Converter.

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An Investigation into the Tribological Properties of Bidirectional Jute/Carbon Fiber Reinforced Polyester Hybrid Composites

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ABSTRACT

In this work, the tribological performance of bidirectional jute/carbon fiber reinforced polyester composites was investigated using response surface methodology. The effects of three factors namely fiber weight fraction, load, and sliding velocity on the wear and friction values were examined. The composites were fabricated by using compression molding technique and the dry sliding test was conducted using pin-on-disk machine. The response surface methodology coupled with three factors – three-level Box-Behnken design was employed to examine the interactive effects of process variables on wear loss and coefficient of friction. Moreover, Analysis of Variance technique was used to inspect the statistical significance of the developed model. The outcomes revealed that the wear loss increased with the increase in sliding velocity and load and decreased with the increase in weight volume fraction due to diminishing contact between the polyester matrix and rotating disk. However, the coefficient of friction decreased with the increase in process variables. Furthermore, the morphology of worn-out samples was examined using scanning electron microscopy to understand wear mechanisms.

KEYWORDS

Natural/synthetic fibers; wear loss; coefficient of friction; RSM; ANOVA; wear mechanism

关键词

天然/合成纤维; 穿损失; 摩擦系数; 磨损机制

摘要

采用响应面法对黄麻/碳纤维双向增强聚酯复合材料的摩擦学性能进行了研究. 考察了纤维质量分数、载荷和滑动速度三个因素对摩擦磨损值的影响. 采用压缩成型工艺制备了复合材料，并在盘式针机上进行了干滑动试验. 采用响应面法结合三因素三水平Box-Behnken设计，研究了工艺变量对磨损损失和摩擦系数的交互影响. 采用方差分析技术对所建立的模型进行统计显著性检验. 结果表明，由于聚酯基体与转盘之间的接触减小，磨损量随滑动速度和载荷的增加而增大，随重量体积分数的增加而减小. 但随着工艺变量的增加，其系数逐渐减小. 此外，用扫描电子显微镜观察磨损样品的形貌，以了解磨损机理.

Introduction

The light weight structural members of automobiles, aerospace and other commercial fields are manufactured using fiber reinforced polymer composite materials due to their superior mechanical properties combined with high strength to weight ratio (Nagarjun, Kanchana, and Rajesh Kumar 2020). These polymer composites are usually developed by reinforcing the synthetic fibers like carbon, glass, aramid, and Kevlar in to the thermosetting and thermoplastic polymers which gives good overall performance (Nagaraja et al. 2020). However, in recent day the new legislations and growing environmental awareness boosted the use of natural fiber reinforced composites in various applications, because these natural fibers are biodegradable, light weight

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Bending analysis of generalized thermoelastic waves in a multilayered cylinder using theory of dual phase lagging

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Abstract. In this present problem, we construct the analytical model for wave propagation in a generalized thermoelastic multilayered composite hollow cylinder construct of inner and outer viscothermo layer fastened together by linear Elastic materials with voids (LEMV). To uncouple the equation of motion, and heat conduction equations, displacement potential functions are introduced. The frequency equations are derived for longitudinal and flexural modes of vibration and are studied numerically for heat conducting viscothermoelastic material. The computed dimensionless frequency is presented in the form of scattering curves against various physical variables. Adhesive layer LEMV is compared with Carbon Fiber Reinforced Polymer (CFRP).We found that the frequency wave characteristics are finite in physical variables in the presence of thermal parameter.

1. Introduction

The thermoelasticity applications are used in various branches of science and technology, so a reasonable consideration has been built since last few centuries. It is acknowledged that the postulate of coupled thermoelasticity deteriorate from physical defect that the thermal signal grow with the boundless speed.In order to the extensive use of materials under high temperature in current technology and with the modern development of polymer and plastic industry,the investigation of viscoelastic materials playing a vital role in solid mechanics.

The extended history of thermoelastic damping investigation established from Zener [1] and other authors Nayfeh and Yuxin Sun [[2],[3]] for dissimilar structures like plate,shaft, cylindrical panel etc.Bland and Christensen[[4],[5]] describes a long analysics of viscothermoelacity.Viscothermoelastic vibrations in micro-scale beam resonators with linearly varying thickness and adducent analysis of circular micro-plate resonators by using generalized viscothermoelasticity theory of DPL model are briefly described by Grover [6],[7].The generalized thermoelasticity theory with the dual phase lag effect has been developed by Da Yu Tzou [8].Naggar,Abd-Alla,Fahmy and Ahmed [9] study about thermal stresses in a rotating non-homogeneous orthotropic hollow cylinder.Guo,Wang and Rogerson[10] analysis of thermoelastic damping in micro-and nanomechanical resonators based on DPL generalized thermoelasticity theory.Sharma,Grover and Sangal [11] statistically studied viscothermoelastic waves.Sharma,Mohinder Pal and Dayal Chand[12] investigated three-dimensional vibration analysis of a piezothermoelastic cylindrical panel.Paul and

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Assessment of Hydrostatic Stress and Thermo Piezoelectricity in a Laminated Multilayered Rotating Hollow Cylinder

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KEYWORDS

Initial hydrostatic stress
Thermoelasticity
Longitudinal waves
Bessel function

ABSTRACT

In this paper, we built a mathematical model to study the influence of the initial stress on the propagation of waves in a hollow infinite multilayered composite cylinder. The elastic cylinder assumed to be made of inner and outer thermo piezoelectric layer bonded together with Linear Elastic Material with Voids (LEMV) layer. The model described by the equations of elasticity, the effect of the initial stress and the framework of linearized, three-dimensional theory of thermo elasticity. The displacement components obtained by founding the analytical solutions of the motion's equations. The frequency equations that include the interaction between the composite hollow cylinders are obtained by the perfect-slip boundary conditions using the Bessel function solutions. The numerical calculations carried out for the material PZT-5A and the computed non-dimensional frequency against various parameters are plotted as the dispersion curve by comparing LEMV with Carbon Fiber Reinforced Polymer (CFRP). From the graph, it is clear that those are analyzed in the presence of hydrostatic stress is compression and tension.

1. Introduction

Composite materials are generally utilized in en-gineering structures because of their predominance over the basic materials in applications requiring high quality and solidness in lightweight parts. Thusly, the portrayal of their mechanical conduct is taking imperative part in basic plan. Procedures that incite transversely isotropic flexible properties in them make most cylindrical parts, for example, poles, wires, cylinders, funnels and strands. Displaying the proliferation of waves in these parts is significant in different applications, including ultrasonic nondestructive assessment systems, progression of room explore and numerous others. Smart materials are normally prestressed during the assembling procedure. As initial stresses are indivisible in surface acoustic wave gadgets and resonators, investigation of such impacts has been finished with various methodologies. A few creators have considered wave engendering in prestressed piezoelectric structure.

Soniya Chaudhary et al. [1] derived secular equation of SH waves propagating in prestressed and rotating piezo-composite structure with imperfect interface. Abhinav Singhal et al. [2] analyticaly analysed interfacial imperfection study in pres-stressed rotating multiferroic cylindrical tube with wave vibration. Lotfy and El-Bary [3] discussed photothermal excitation for a semiconductor medium due to pulse heat flux and volumetric source of heat with thermal memory. Lotfy [4] discovered a novel model for photothermal excitation of variable thermal conductivity semiconductor elastic medium subjected to mechanical ramp type with two-temperature theory and magnetic feld. Soniya Chaudhary et al. [5] studied anatomy of flexoelectricity in micro plates with dielectrically highly/weakly and mechanically complaint interface. Ebrahimi et al. [6] discussed Magneto-electro-elastic analysis of piezoelectric-flexoelectric nanobeams rested on silica aerogel foundation. Abhinav Singhal et al. [7] investigate mechanics of 2D Elastic Stress Waves Propaga-

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Bending analysis of generalized thermoelastic waves in a multilayered cylinder using theory of dual phase lagging

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Abstract. In this present problem, we construct the analytical model for wave propagation in a generalized thermoelastic multilayered composite hollow cylinder construct of inner and outer viscothermo layer fastened together by linear Elastic materials with voids (LEMV). To uncouple the equation of motion, and heat conduction equations, displacement potential functions are introduced. The frequency equations are derived for longitudinal and flexural modes of vibration and are studied numerically for heat conducting viscothermoelastic material. The computed dimensionless frequency is presented in the form of scattering curves against various physical variables. Adhesive layer LEMV is compared with Carbon Fiber Reinforced Polymer (CFRP).We found that the frequency wave characteristics are funct in physical variables in the presence of thermal parameter.

1. Introduction

The thermoelasticity applications are used in various branches of science and technology, so a reasonable consideration has been built since last few centuries. It is acknowledged that the postulate of coupled thermoelasticity deteriorate from physical defect that the thermal signal grow with the boundless speed.In order to the extensive use of materials under high temperature in current technology and with the modern development of polymer and plastic industry,the investigation of viscoelastic materials playing a vital role in solid mechanics.

The extended history of thermoelastic damping investigation established from Zener [1] and other authors Nayfeh and Yuxin Sun [[2],[3]] for dissimilar structures like plate,shaft, cylindrical panel etc.Bland and Christensen[[4],[5]] describes a long analysics of viscothermoelacity.Viscothermoelastic vibrations in micro-scale beam resonators with linearly varying thickness and adducent analysis of circular micro-plate resonators by using generalized viscothermoelasticity theory of DPL model are briefly described by Grover [6],[7].The generalized thermoelasticity theory with the dual phase lag effect has been developed by Da Yu Tzou [8].Naggar,Abd-Alla,Fahmy and Ahmed [9] study about thermal stresses in a rotating non-homogeneous orthotropic hollow cylinder.Guo,Wang and Rogerson[10] analysis of thermoelastic damping in micro-and nanomechanical resonators based on DPL generalized thermoelasticity theory.Sharma,Grover and Sangal [11] statistically studied viscothermoelastic waves.Sharma,Mohinder Pal and Dayal Chand[12] investigated three-dimensional vibration analysis of a piezothermoelastic cylindrical panel.Paul and

Synthesis and characterization of cobalt-doped cadmium oxide thin films prepared by sol–gel spin coating method

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Abstract–In this work, cobalt-doped Cadmium oxide thin films are prepared by sol-gel spin coating technique on the glass substrate. The effects of anncaling temperature and Co concentration on Structural, optical properties of the thin films are studied. XRD pattern indicates that a CdO single phase with a cubic polycrystalline structure is formed in all the samples. Prepared thin film samples were revealed by EDX analysis. Optical measurements show that the optical transmission of the layer is reduced and the optical-band gap decreases due to the increase in molar concentrations. The optical-band gap is decreasing while increasing of Co concentration and annealing temperature.

Keyword: Thin films, Cadmium oxide, Sol-gel, Spin coating, annealing

1. Introduction

In recent years, Oxide based materials such as ZnO, CdO, SnO_2, TiO_2 and In_2O_3 have attracted increasing interest [1]. Due to the optical, physics and electron properties including excellent transmission of visible light and electrical conductivity CdO thin films have gives more attracted amid the numerous metal oxides [2]. In solid-state devices, Cadmium Oxide (CdO) makes an important semiconductor material for developing of various technologies. In visible and NIR spectral regions CdO thin films are transparent [3]. At 540 nm it is transparent in the solar spectrum. In the field of optoelectronic devices like solar cells, transparent electrodes, and photodiodes CdO have wide applications among others. To fabricate CdO/CdTe heterostructure solar cells with 9.1% efficiencies, CdO transparent conducting oxide with optical-band gap of 2.3 eV and an electron affinity of 4.5eV were used in DC magnetron sputtering [4].

The properties like structural, morphological and optical were affected by changing annealing temperature in successive ionic layer adsorption and reaction (SILAR) method. The optical-band gap was changed due to change in annealing temperature of 300 °C and 400 °C [5]. In thermal annealing method hydroxide phase with the structural transformation can be achieved.

CdO thin films were prepared in different methods like sol-gel [6], pulsed laser deposition [7], spray pyrolysis [8], sputtering [9], chemical bath deposition (CBD) [10], e-beam evaporation technique [11], pulsed filtered cathodic arc deposition (PFCAD) [12], successive ionic layer adsorption and reaction (SILAR) method [13,14],. Sol-gel spin coating method add more advantage to process high smoothness of the films, simplicity, low sintering temperature, the possibility for coating over the large-area substrate, high smoothness of the films, reliability, controllability, reproducibility, etc [15–20]. Moreover, some parameters are optional for coating like spin, speed, ambient, solution morality, drying, and annealing process [21].

Influence of Organic Additive Benzene Sulfamide on the Magnetic Behavior of Electrodeposited CoMnP Thin Film Alloys

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Electro deposition of CoMnP thin films was carried out for different concentrations of organic additive Benzene sulfamide at a constant bath pH value and for various current density. Magnetic properties such as coercivity, saturation magnetization and the surface morphology were investigated for electrodeposited CoMnP thin films. The characteristics of the CoMnP thin films were found to attain enhanced values, because of the variation in the concentration of the bath solution. The Scanning Electron Microscope (SEM) micrographs of the CoMnP thin films for various bath compositions and additive concentration exhibited different micro cracks. From the X-ray diffraction pattern, structure of the CoMnP alloy films was analyzed and it was found to be Hesagonal Close Packed (HCP) structures with the dominant microstructure and all the co-deposited thin films were found to exhibit Nano crystalline structure. The magnetic properties of the specimens were characterized using Vibrating Sample Magnetometer (VSM). Adhesion and hardness of the electroplated films influenced by organic additive Benzene Sulfamide were also investigated. The magnetic properties were highly influenced by the addition of the organic additive Benzene Sulfamide for various bath composition and bath conditions. Under best condition involving addition of 0.2 M of NaH_2PO_2 and 2 g/L of Benzene Sulfamide acid at current density 5 mA/cm^2 and time of deposition 60 Minutes, the thickness of the film was found to be 4.6 micrometer with coercivity 1500 Oe.

Keywords: CoMnP ALLOY FILMS; ENERGY DISPERSIVE X-RAY; ORGANIC ADDITIVE BENZENE SULFAMIDE; SCANNING ELECTRON MICROSCOPE (SEM); SPECTROSCOPY (EDS); VIBRATING SAMPLE MAGNETOMETER (VSM); X-RAY DIFFRACTOMETER (XRD)

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Influence of Organic Additive Benzene Sulfonic Acid on the Magnetic Behavior of Electrodeposited COMNP Thin Film Alloys

M.RM. Krishnappa, K.V. Kannan Nithin

Abstract: ***CoMnP alloy films were synthesized by Electrodeposition Technique. The Electrochemical deposition technique is especially interesting due to its low cost and high quality of deposit. Thin Magnetic films are extensively used in various electronic devices including high density recording media and micro electromechanical systems (MEMS). Electrodeposition being cost effective, in the present work cobalt based magnetic films was deposited electrochemically and characteristics features of the deposited film were studied. Effect of organic additives Benzene sulfonic acid in the presence of the sodium hypophosphite was studied. Structural and magnetic properties were investigated and reported. The hysteresis loops of the CoMnP alloy films were measured and studied. The result shows that organic additive Benzene sulfonic acid has altered the magnetic properties of the films. Among the different compositions, CoMnP compound exhibit good hard magnetic properties, Under the best condition involving addition of 0.2M of NaH2PO2 and 4 gL-1 of Benzene Sulfonic Acid at a current density of 7 mA-cm-2 and time of deposition 60 minutes, the thickness of the film was found to be 3.5 micrometer with coercivity 1410 Oe and remanent 0.12 emu.The reason for the change in magnetic properties and structural characteristics because of the additive were discussed.***

Keywords—CoMnP thin films, organic additive Benzene sulfonic acid, Magnetic properties.

I. INTRODUCTION

Different actuation mechanisms for microactuators include electrostatic [1], Piezoelectric[2], thermopneumatic[3], bimetallic[4], electromagnetic[5], electrochemical[6] and shape memory alloys [7]. At present hard and soft magnetic material gains increasing interest in micro electro mechanical systems and micro optical electrochemical system devices, for example microaculators and sensors. In particular hard magnetic materials are advantageous to bidirectional actuation, which is needed in bidirectional actuation. The importance of electrodeposition as a fabrication technology in the electronic industry is large and growing. [8]. Development of microelectromechanical system [MEMS] requires hard magnetic films with both high coercivity and remanence [9]. Electrodeposited thin magnetic films are important in computer read/ write heads and MEMS because of their fiexibility, capability, quality and low cost. With the current trend towards miniaturization, high performance packaging, cost-competitiveness and electro deposition has become the dominant manufacturing technology in many new applications and remains firmly established in others. For example in micro electro mechanical system (MEMS) devices, data storage media, magnetic recording head and reading heads [8]. In addition to the above, Electrodeposition has been recognized as a preparation method characterized by remarkable degree of reproducibility. The electro deposition technique is especially interesting due its cost-effectiveness, quality deposits and easy maintenance. As CoMnP ternary alloy films are having hard magnetic properties various studies have been carried out to develop these thin magnetic films. Electro-deposition provides an easy way to produce these thin films with high quality[10]. As of now, various Co-based permanent- magnet materials have been electrodeposited because of the crystalline structure of cobalt is highly anisotropic. Numerous studies have been carried out to investigate binary and ternary Co based iron group magnetic films[11]. They mostly focused on the mechanism of anomalous codeposition, effect of plating, the effect of various additives and the corrosion properties. To our knowledge, there have been a few detailed studies on Co based magnetic films prepared using electro deposition [12]. The purpose of the present work was to study the influence of bath parameters (current density, pH, and time duration of deposition) mainly on the magnetic properties of electro deposited CoMnP thin films. CoMnP films were characterized using Vibrating sample Magnetometer (VSM), energy dispersive X-Ray Spectroscopy (EDS), X-Ray diffractometer (XRD) and the influence of the bath parameters on the film structure , composition, and magnetic properties were discussed. The influence of the organic additive Benzene Sulfonic Acid on the magnetic properties was also studied.

II. EXPERIMENTAL DETAILS

All the CoMnP films were electrodeposited at constant pH value 3.00 The CoMnP films were electro deposited on Copper substrates of size: breath; 20 mm X Length ;120 mm X Thickness 0.1 mm. Pure Cobalt of the same size was used as anode. Current for electrodeposition was passed from a regulated direct current (DC) unit. Analytical reagent grade chemicals were used to prepare baths Solution. Each and every

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Idle Vehicle Detection and Traffic Symbol Analysis using Artificial Intelligence and IoT

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ABSTRACT

The emerging development in smart vehicles has improved transportation seamlessly. This paper deals with incorporating the modern technologies like Artificial Intelligence and Internet of Things(IoT) with the traditional transportation system. It states how AI algorithms can be integrated with IoT powered vehicles to manage and avoid crashing with idle vehicles on a speedway and assists for safer driving using the traffic symbol analysis to reduce accidents. Several communication standards for data transmission between the vehicle and control system has been stated. It also provides additional features like emergency or assistance for vehicles in speedway. It uses complex learning and analysis algorithms to improve the efficiency of driving and reduce rear-end collisions. This paper hence gives a comprehensive survey of the enabling technologies, protocols, and architecture for IoT powered transport.

Keywords: Internet of things, Wireless Sensor Network(WSN) , IR sensor, Wireless data transmission, Radio frequency Identification, traffic symbol analysis, idle vehicle.

1. INTRODUCTION

The increases in number of vehicles have led to new problems in the aspect of transportation. Traditional traffic monitoring and control systems fail to meet the great demands of the current scenario. To handle such critical situations we use Artificial Intelligence algorithms with the support of IoT powered devices to monitor and take necessary actions. In particular, the rear-end collisions are a major problem in any highway. These occur majorly due to idle vehicles or vehicles that are parked at the leftmost lane. The misconception of drivers is the major cause for rear end collisions which stands 3rd in the index of accidents. There is no proper method to prevent or control such accidents. Almost every year 40% percentage accidents occur due to this. The proposed system reduces such accidents by continual vehicle monitoring. Another cause for accidents is the unawareness of traffic symbols. Out of 600 drivers 500 of them never mind the traffic symbols which not only cause accidents but may also end in fatal injuries and vehicular damage. All such defects in driving can be assisted by intelligent systems which assist in driving. The automation in transport has been approved by several countries and their governments. For example, Germany Federal Highway Research Institute And US National Traffic Safety Association promote 2-level automation, which allows the driver to analyse several driving and safety factors of the vehicle.

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Data Analysis in Trade

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ABSTRACT

Data Warehousing is arisen in order to overcome the issues faced by the excel file. When several database is maintained by the excel file a conflict will arise such that which source file belongs to which excel sheet. In order to overcome the problem a data warehousing is used and a new technique used in data warehousing is soft concatenation mapping which depicts a relationship between column during transformation and concatenation .At that time many redundancy and loss of data may occur in order to overcome the issue an efficient method is used that is used to derive an approximate algorithm. This approximation is used both in real time and synthetic data sets.

Keywords-Database management, data profiling, data integration, data analysis, Concatenation

1. INTRODUCTION

A Data Warehouse is a form of central repository which stores the data that are collected from various internal and external source file .Data Warehousing that emphasizes and capture the data for processing in an legitimate manner. Typically a Data Warehousing is a form of relational database which is mounted on an enterprise main framework. Dataset from various online transaction process and other online system they are selectively extracted in order for efficient analysis on Business activities ,for better decision support and also enhance the growth of easy analysis task. The process of collecting all the required data about the small or large scale organisation and storing in the central repository and by the use of data analysis task using the certain tools an enhanced analysis process can be taken out from the output of the data analysis an better decision can be taken out or that make an intimate for users as kind of awaréness before proceeding the process.

1.1 EXISTING SYSTEM

The Data are stored in the form of excel where the searching process and their performance is very low. Since the data is stored in the form Excel sheets and Spreadsheet the data is information that is stored in any spreadsheet program such as Excel or Google Sheets or any other format. The Data stored in cells in a worksheet can be used in calculations, displayed in graphs, or sorted and filtered to find specific information. The maintenance of the Excel sheet for collection of storage of all amount data in an large database is that the performance is very low and issue will arise such that which data belongs to which data source .similarly the maintenance of the collection of huge data in the Excel sheet will result in an many redundancy and loss of data.

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Online Job and Candidate Recommendation System

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ABSTRACT

To develop an enhanced web application, using web services for both online job and candidate recommendation system. By using Professional Social Recommender (PSR) and Text field filtering the recommendation of jobs and candidates will be classified. Three tier architecture designs have been implemented for efficient data retrieval and data transfer. They are Job seeker interface, Candidate recruitment interface and Recommendation database will be the architecture taken for developing this application. The primary architecture will be the job seeker interface, in followed with candidate recruitment interface and Recommendation database will be interconnected. The professional social recommender will works as a third party agent and the agent will retrieves all the recommended job and candidate profiles. A panel will be designed for displaying the recommended job and candidate details. All the displayed jobs will be more relevant to the user's profile. The generated user and candidate profile will be encrypted in order to overcome the privacy breaches.

Keywords: Professional Social Recommender (PSR), online job, Candidate recommendation

1. INTRODUCTION

Generally, data mining (sometimes called data or knowledge discovery) is the process of analysing data from different perspectives and summarizing it into useful information - information that can be used to increase revenue, cuts costs, or both. Data mining software is one of a number of analytical tools for analysing data. It allows users to analyse data from many different dimensions or angles, categorize it, and summarize the relationships identified. Technically, data mining is the process of finding correlations or patterns among dozens of fields in large relational databases.

Data mining, the extraction of hidden predictive information from large databases, is a powerful new technology with great potential to help companies focus on the most important information in their data warehouses. Data mining tools predict future trends and behaviors, allowing businesses to make proactive, knowledge-driven decisions. The automated, prospective analyses offered by data mining move beyond the analyses of past events provided by retrospective tools typical of decision support systems. Data mining tools can answer business questions that traditionally were too time consuming to resolve. They scour databases for hidden patterns, finding predictive information that experts may miss because it lies outside their expectations.

Most companies already collect and reference massive quantities of data. Data mining techniques can be implemented rapidly on existing software and hardware platforms to enhance the value of existing information resources, and can be integrated with new products and systems as they are brought online. When implemented on high performance client/server or parallel

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Traffic Accident Evaluation using MATlab

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ABSTRACT

The main aim of this paper is to analyze the road traffic accidents in metro-politian city level at all intersection points. Analysis shows that the distribution of road accidental deaths and injuries in cities varies according to age, month and time. To develop the system that would avoid the accident by sending the notification whether the area is most traffic and there are so many accidents occurred in that place .The most accident precaution systems are available but those are not enough to users, so this new system may bring comfort zone to the users. Already know that high number of accidents is happened because of hightraffic at peak hours.Reason of traffic was no of vehicles are increased.so the main concept of the system has to be done using the no of vehicles at every zone. And we use some clustering methods to denote that which zone was in active and un-active state .The userwho travelling in the night that should be most useful for them.

Keywords: Traffic accidents, Clustering, Flash board, MATLAB, number of vehicles.

1. INTRODUCTION

Road accidents are higher in extreme weather and during working hours .The Analysis of road accident scenario at state and city level shows that there is a huge variation in fatality risk across states and cities. Fatality risk in 16 out of 35 states and union territories is higher than the all India .Although, burden of road accidents in India is marginally lower in its metropolitan cities, and almost 50% of the cities face higher fatality risk.In general, while in many developed and developing countries, road safety situation is generally improving, India faces a worsening situation. There is thus an urgent need to recognize the worsening situation in road deaths and injuries and to take appropriate action.We are developing the system that can be used to avoid the accidents in intersection of roads and major traffic areas .Using clustering methods, merging the all intersection the roads. For this system we develop a manual report of particular four zones.That report containing number of vehicles about north ,west ,east , and south.Using the report we have drawing the graph that showing the number of accidents occurred and number of vehicles in current location.From the graph which location has the high percentage of Accidents and vehicles at a time the Flash board that show the alert message to the drivers.

2. EXISTING SYSTEM

Previous works are contain only about traffic risks, high risky location and some precaution methods. Some works have collected the reasons of those accidents like drivers unawareness , inproper driving experience and their age. Other systems are tried to collect the fatality ,injury types and compare them using some classifiers. Several studies related to traffic data mining have

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Electronic Health Record System using Blockchain

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ABSTRACT

This paper deals with the Electronic Health Records for storing information of the patient which consist of the medical reports. Electronic Health Records (EHRs) are entirely controlled by Hospitals instead of patients, which complicates seeking medical advices from different hospitals. In the existing system of storing details of the patients are very dependent on the servers of the organization. In the proposed all the information of the patient are stored in the blockchain by using the Metamask and these details are stored in the block chain as a blocks of data. Each block consists of the data which is encrypted data. Electronic Health Record (EHR) systems record health-related information on an individual so that it can be consulted by clinicians or staff for patient care. The data is encrypted by the algorithm known as SHA-256 which is used to encrypt all the data of the patients into a single line 256 bit encrypted text which will be stored in the block at etherscan. These records for not only useful for the consultation but also for creation of historic family health information tree that keeps track of genetic health issues and diseases it can also be used for any health service with the authorization from both the patient and medical organization.

Keywords: Blockchain, SHA 256 algorithm, Encryption of data, Metamask.

1. INTRODUCTION

The objective of this project is to provide the application which is user friendly and cost effective. The major advantage of this project is security. A securable system is more important to be reliable. Electronic Health Records (EHRs) provide a convenient health record storage service, which promotes traditional patient medical records on paper to be electronically accessible on the web. This system was designed to allow patients to possess the control of generating, managing and sharing EHRs with family, friends, healthcare providers and other authorized data consumers. Moreover, provided that the healthcare researcher and providers of such service access these EHRs across-the aboard, the transition program of healthcare solution is expected to be achieved. However, in the current situation, patients scatter their EHRs across the different areas. During life events, causing the EHRs to move from one service provider database to another. Therefore, the patient may lose control of the existing healthcare data, while the service provider usually maintains the primary stewardship. Patient access permissions to EHRs are very limited, and patients are typically unable to easily share these data with researchers or providers.

Blockchain is a decentralized database whose data block is connected chronologically. In the healthcare industry, there are many different parties who need to collaboratively manage personal EHRs blockchain (in a model of consortium blockchain), such as medical specialists, hospitals, insurance departments, etc. Electronic Record Systems are proprietary that is centralized by

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Detaching and Reproducting of Data in a Cloud for Excellent Performance and Security

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ABSTRACT

Cloud computing is third party administrative control so our data is outsourced it gives rise to security concerns.security is one of the important aspect of any technology. Therefore high security measures are required to protect our data. In this paper, we propose Detaching and Reproducting of Data in a cloud for excellent performance and security that collectively approaches security issues and data sharing protectively. In this methodology, we divide the file into fragments and replicated over cloud nodes. Files are fragmented and shuffled like (1-2,2-3,3-4,4-1)in sequential order and stored in multiple servers. Moreover nodes sharing fragments are separated with certain distance by using T-colouring graph to prohibit an attacker by guessing the location of fragments. This methodology does not rely on traditional cryptography techniques.

Keywords: cloud security, fragmentation, replication, T-colouring graph, data splitting

1. INTRODUCTION

Cloud computing is one the top most technology in our world. Cloud computing is innovative technology that uses advanced computational power and enhancing storage capabilities. Cloud computing is mainly used for storage and management of information technology framework. Cloud computing are characterized by

- On-demand self-services
- Ubiquitous network accesses
- Resource pooling
- Elasticity
- Measured services.

Cloud security issues may stem due to the core technologies implementation (virtual machine (VM) escape, session riding, etc.), cloud service presenting (structured query language injection, weak authentication schemes, etc.), and arising from cloud computing characteristics (data recovery vulnerabilities, Internet protocol vulnerabilities, etc.). Some benefits of cloud are

- Minimum cost
- Negligible management
- Greater elasticity
- Cost savings

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Mathematical modeling and analysis of elastic waves in a thermo piezoelectric multilayered rotating composite rod with LEMV/CFRP interface

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Abstract: In this present paper, we form the mathematical model for wave propagation in a thermo piezoelectric multilay rotating composite rod made of inner and outer piezoelectric layer bonded together by Linear Elastic Materials with v (LEMV).To uncouple the equation of motion, electric and heat conduction equations, displacement potential functions introduced. The frequency equations are obtained for longitudinal and flexural modes of vibration and are studied numeric for heat conducting PZT-5A material.The computed non-dimensional frequency is presented in the form of dispersion cu against various physical quantities. Adhesive layer Linear Elastic Materials with Voids (LEMV) is compared with Carbon F Reinforced Polymer (CFRP).We found that the frequency wave characteristics are more stable and realistic in the presenc thermal, electrical and the rotation parameters

Keywords: Piezoelectric cylinder, Thermal cylinders, Rotating rod, Vibration, Stress analysis, LEMV, CFRP, multilay structures, Composite cylinder.

1 Introduction

Solid state materials in engineering is hovering to provide significant inputs to the areas of constructive design of struct components as well as creating trends of its own. The cross disciplinary fields of mechanical materials and interfacial compor are shows potential developments. Further interdisciplinary materials research will likely to continue to acquiesce materials v improved properties for application that is both common place and specialized. piezoelectric polymers allow their use in a mas amount of compositions and geometrical shapes for a huge variety of applications from transducers in acoustics, ultrasonics hydrophone applications to resonators in band pass filters, power supplies, delay lines, medical scans and some industrial r destructive testing instruments.The frequency responses of rotating cylindrical structures has numerous applications in a var of fields of science and technology, specifically, submarine structures, pressure vessel, bore wells, ship building industries have many other engineering applications.

Honarvar et al. (2007) developed a wave propagation model for a transversely isotropic cylinders and verified their phys characteristics. Thermo-piezoelectric materials are intelligent materials that display individual electro-mechanical couplin view of this, Paul and Raman (1991) studied wave propagation in a hollow pyroelectric circular cylinder of crystal c 6.Mindlin (1974)analyzed equations of high frequency vibrations of thermopiezoelectric crystal plates.Also Paul and Ra (1993) discussed wave propagation in a pyroelectric cylinder of arbitrary cross section with a circular cylindrical cavity.Storo (2013),investigated propagation of electro elastic waves in multilayer piezoelectric cylinders with a sector notch.Nelson Karthikeyan (2008a) discussed axisymmetric vibration of pyrocomposite solid cylinder.Nelson and Karthikeyan (2008b)stu axisymmetric vibration of pyrocomposite hollow cylinder.Shulga (2002) observed Propagation of harmonic waves in anisotr piezoelectric cylinders:Compound waveguides.Hua et al. (2013) observed guided wave propagation and focusing in multi-l pipe with viscoelastic coating and infinite soil media.Tasdemirci et al. (2004) discussed Stress wave propagation effects in two- three-layered composite materials.Singh and Saxena (1995) discussed axisymmetric vibration of a circular plate with double li variable thickness.Presented clear statement for modal shapes and natural frequencies of materials into account the effect length, shear deformation, and rotary inertia.Abd-Alla and Mahmoud (2010) observed magneto-thermoelastic problem in rota non homogeneous orthotropic hollow cylindrical under the hyperbolic heat conduction model.El-Naggar et al. (2002) discu thermal stresses in a rotating non-homogeneous orthotropic hollow cylinder.Abd-Alla et al. (2000) examined thermal stresses non-homogeneous orthotropic elastic multilayered cylinder.Abd-All et al. (1999) observed transient thermal stresses in a rota non-homogeneous cylindrically orthotropic composite tubes. Selvamani (2015) has discussed wave propagation in a rotating of polygonal cross-section immersed in an inviscid fluid.Several researches are performedto incorporate the interfacial materi analysis of composite multilayered mechanical structure.Among that, the study of Gewin and Nunziato (1983) with Linear El Materials with Voids as interface bonding materialis noted. However, the rotational effect on the thermo-electro-mechar

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An optimal low power digital controller for portable solar applications

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ABSTRACT

The design of controllers for solar energy harvesting systems plays the key role in deciding the efficiency of the energy utilized. In applications of energy scavenging, the harvested power is consumed for about 70% in the operation of the converter and controller blocks before being supplied to the load. The proposed optimal Field Programmable Gate Array based Load Predictive Maximum Power Point Tracking (LP_MPPT) Digital Controller is used for low power, speedy, and decisive energy scavenging systems for a long run in applications of wireless or remote sensing or portable. LP_MPPT helps to predict the need of the load and generate the converter output as buck/boost/buck_boost mode power in comparison to the input from solar panels for every clock cycle. The power consumption of the controller section is comparatively reduced as the buck_boost mode of operation utilizes the no operation state. The proposed methodology is simulated and implemented using Xilinx ISE Design Suite 12.1 which is supported by the family SPARTAN 3E. The simulation results thus obtained show an increase in efficiency (94.39%) with trade off factors, namely, speed and area.

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CFD AND EXPERIMENTAL ANALYSIS OF SAVONIUS VERTICAL AXIS WIND TURBINE

T. Sivakumar, K. Sivakumar, B. Sivaraman, C. Sivan Raj and A. Kuppu Raj

Abstract

This paper presents the study of flow over Savonius Wind Turbine consisting two bladed and three bladed configurations and its performance. For this kind of wind turbine, axis of rotation is almost perpendicular to relative wind. Due to continuous variation of flow angle with respect to pitch angle, strong unsteady effects like flow separation, vortex shedding, etc., are observed, in order to evaluate the performance. Comparison and investigation are carried out to appraise the performance on two bladed Savonius Wind Turbine of with three bladed configurations through CFD Analysis. For this purpose, Two bladed VAWT (Vertical Axis Wind Turbine) and Three bladed VWAT are designed with Aspect Ratio (D/H) as one. Numerical Simulation using Ansys-Fluent is carried out to two bladed and three bladed configurations, which provides a lot of insight about three dimensional unsteady flow over it. It confirms the ability of numerical approach, to evaluate and compare the efficiency of VAWT against each other.It has been observed that two blaces Savonius wind turbine is more efficient, it has higher power coefficient under the same condition than that of three blades Savonius wind turbine.

EXPERIMENTAL INVESTIGATION OFWEAR PROPERTIES OF UNI-DIRECTIONAL JUTE / CARBON FIBER REINFORCED HYBRID POLYESTER COMPOSITE

Journal: Journal of the Balkan Tribological Association 24 (3) (2018) Pages: 507 - 520

▼ Authors

RAVI KUMAR, P. ; GIRIRAJ, B. , SENTHIL KUMAR, AP

▼ Abstract

Hybrid polymer composites are widely used in many engineering applications such as construction, automotive and aviation due to their superior properties. In the present experimental study, hand-layup followed by compression molding process were used to fabricate the Unidirectional jute / carbon fiber reinforced polyester composites (UDJCFRPC) in three different (10, 20 and 30) wt {\%} in the polyester matrix. Wear tests under dry sliding condition were conducted with the sliding velocity in the range of 2.62 - 4.7 m / s and with the loads in the range of 20 - 60N. Wear tests were conducted using Pin-on-Disc apparatus (PoD) and to optimize the combination of fiber weight fraction, sliding velocity and load conditions for relevant applications, Box Behnken (BB) method of Response Surface Methodology (RSM) of Design of Experiments was used. It was observed that Coefficient of Friction (COF) decreases with the increase in load and wear increases with the increase in the load of the composites. Frictional Force was found to be increasing with the increase in the load. The morphology of wear composite specimens has been examined by scanning electron microscopy (SEM) to understand the wear mechanisms.

▼ Keywords

▼ Cite this article

KUMAR, PR, GIRIRAJ, B., & KUMAR, APS (2018). EXPERIMENTAL INVESTIGATION OFWEAR PROPERTIES OF UNI-DIRECTIONAL JUTE / CARBON FIBER REINFORCED HYBRID POLYESTER COMPOSITE. In *Journal of the Balkan Tribological Association* (Vol. 24, Issue 3, pp. 507–520).

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Design and analysis of a portable friction stir welding machine

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Abstract

Friction stir welding is a mechanism to combine two solid metals without melting. This technique is much preferred for its flexibility, energy efficient, and also environment friendly as it results in high quality welding with low shrinkage. But these machines are giant and also consume more power. In order to address this problem, a portable friction stir welding machine has been designed and analysed. In this study, a machine has been designed to weld plates of 2mm thickness at low power consumption. This could be very much beneficial for the onsite welding processes and also to weld materials of less thickness. The design was done in four stages and the fourth stage was finally analysed for 2 tonne load and the plots are also shown in results and discussion for stress, displacement, strain and factor of safety. The analysis of overall factor of safety of the portable friction stir welding machine shows that all the components are safe except the transverse drive with a Factor of safety 1.431e-001 which is considered to be safe because the applied load is double to that of the required load. The Structural static analysis also was successfully completed using Solid Works by applying 2 tonne load and the results of various parameters such as stress, displacement, strain were plotted and tabulated.

Selection and/or Peer-review under responsibility of Materials Processing and characterization.

Keywords: Portable FSW machine; Stress and strain analysis; 2mm plate;

1. Introduction

Friction stir welding is a solid state welding process that is used to join metals like aluminium, nickel, titanium etc, just by the heat that is produced by the rotating tool[1]. This welding was invented by W.Thomas and E Nicholas at The Welding Institute in UK at 1991[1,2]. The term friction welding has been existing for more than 100 years and it is commonly used for joining rod or pipe shaped materials.

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IMME17

CHARACTERISATION OF ALUMINUM METAL MATRIX COMPOSITES AND EVALUATION OF THERMAL PROPERTIES

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Abstract

Aluminium Metal Matrix Composite (AMMC) to minimise defects usually associated in stir casting for materials during experimental evaluation. SiC and Flyash were added in the composites in varying levels of 6%, 12% & 18%. Specimens were stir cast in six different compositions. The chosen matrix material was LM 30 which is a popular light aluminium alloy used for casting small sized automobile engine cylinders. The elastic modulus and hardness of the AMMC was found to be increasing to a certain level of the content of the SiC in the composite and then found to be decreasing. Thermal characteristics are studied in detail to determine the properties. Thermal property analysis will be useful for the fix the exact design parameters to develop the product and to check the dimensions range for further analysis.

Selection and/or Peer-review under responsibility of International Conference on Emerging Trends in Materials and Manufacturing Engineering (IMME17).

Keywords: Aluminium Metal Matrix Composite(AMMC), Stir casting, SiC, Flyash ,thermal coductivity, k value

1. Introduction:

To overcome the problems faced in conventional materials, studies are going on to replace them with alloys/composites. Aluminium materials are found to be the best alternative with its characteristics like high strength to weight ratio low density and low cost. In this study lightweight Aluminium based material LM30 is used to prepare composites with silicon carbide and fly ash as reinforcements. Fly ash is one of the inexpensive and low

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STUDY OF MECHANICAL PROPERTIES OF JUTE/CARBON FIBER REINFORCED POLYMER HYBRID COMPOSITES FOR AUTOMOTIVE APPLICATIONS

Journal: Journal of the Balkan Tribological Association 24(2) (2018) Pages: 222 - 237

▾ Authors

KUMAR, R.; GIRIRAJ, B.; KUMAR, S.; SURESH, A. R.

▾ Abstract

High strength to weight ratio is an important criteria in aerospace and automobile applications for performance. The lightweight structure that uses a novel design and advanced materials is one of the keys to improve the fuel efficiency and re- duction of the environmental issues of automotive vehicles. Carbon fiber rein- forced polymer matrix composite (CFRPMC) materials are being used in such ap- plications for manufacturing structural components due to their light weight and high strength. To reduce the cost of CFRPMC, hybrid Jute/Carbon (JC) fiber rein- forced polymer composite materials (HJCFRPMC) are processed and mechanical characterization was done to find tensile, flexural, impact, water absorption and the fatigue properties of composites are studied in this work. The composites are fabricated up to a maximal weight fraction of fiber 30(\%) by hand layup method and followed by compression moulding process. It has been found out that there is significant improvement in tensile strength, tensile modulus, flexural strength, flexural modulus, impact strength and fatigue strength by 56(\%), 50(\%), 41(\%), 47(\%),113(\%) and 41(\%) respectively in HJCFRPMC. The fractography analysis of the frac- tured test specimens has also been carried using Scanning Electron Microscopy (SEM).

▾ Keywords

▾ Cite this article

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Investigations on Deep Cryogenically Treated Low Alloy Steel Impregnated with WS_2

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Abstract

The effect of 'Deep Cryogenic Treatment' (DCT) on the Powder Metallurgy processed Low Alloy (PMLA) steel impregnated with solid lubricant WS_2 in four different weight proportions (0, 2.5, 5 and 10%) was investigated. Precipitation of Ni was observed after DCT in PMLA steel impregnated with 0% WS_2. Finer needle-like martensitic regions, marginal precipitation of carbides and uniformly-distributed precipitation of Ni in the micro-structure and improved wear resistance were seen after DCT in PMLA steel with 2.5% WS_2. Higher porosity was found to be detrimental to dry sliding in PMLA steel impregnated with 5 and 10% WS_2.

Selection and/or Peer-review under responsibility of International Conference on Emerging Trends in Materials and Manufacturing Engineering (IMME17).

Keywords: Deep cryogenic treatment; Powder metallurgy; Low alloy steel; Solid lubricant; Wear resistance;

1. Introduction

Wear resistant materials and suitable material combination for the sliding pair are of great interest to engineers and researchers. Materials used in sliding applications undergo demanding service conditions with multiple complex environmental factors due to the effects of mechanical, thermal, chemical including tribological loading. Recently, extensive research works are reported showing the effect of low temperature (cryogenic) treatment on the performance of materials. The low temperature treatment, down to -196°C with liquid nitrogen is known as 'Deep Cryogenic Treatment' (DCT). Usually, cryogenic treatment is used as a supplementary heat treatment process and

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EXISTENCE OF SOLUTIONS OF DOUBLE PERTURBED IMPULSIVE NEUTRAL FUNCTIONAL INTEGRODIFFERENTIAL EQUATIONS

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Abstract: In this paper, we establish a set of sufficient conditions for the Existence of solutions for double perturbed impulsive neutral functional integrodifferential equations of the form

$$\frac{d}{dt}\big(x(t) - h(t, x_t)\big)$$
$$= A(t)x(t) + F\left(t, x_t, \int_0^t a(t,s)K_1\big(s, x_\tau, g_1(x_\tau)\big)d\tau\right)$$
$$+ G\big(t, x_t, \int_0^t b(t,s)K_2\big(s, x_\tau, g_2(x_\tau)\big)d\tau$$
$$x_0 = \varphi \in B,$$
$$\Delta x(t_i) = I_i\big(x(t_i)\big), \quad i = 1,2,\dots,n, \ a.e.\, t \in J = [0,a],$$

The results are established by using semigroup theory and Schauder fixed point theorem.

Keywords: Integrodifferential equation, Semigroup theory, Fixed point theorem, Equicontinuous, Banach space.

1. INTRODUCTION

In recent years, the theory of impulsive differential equations has become an important area of investigation stimulated by their numerous applications to problems arising in mechanics, electrical engineering, medicine, biology, ecology, etc,. Relative to this matter, we refer the reader to Bainov and Simeonov[5], Rogovchenko [30, 31]. For other contributions on the impulsive problems see [2, 16]. Dong [19, 20, 18], Guedda [22], Bans [11], Runping [32, 33] and Xue [36] studied some functional differential equations under the conditions in respect of the measure of noncompactness.

Neutral integrodifferential equations arise in many areas of applied mathematics and for this reason these equations have received much attention in the last decades. The literature relative to ordinary and partial neutral functional differential equations is very extensive and we refer the reader to [3, 7, 8, 10, 14, 15] and the references therein.

Recently Selma Baghli et al. [4] studied the existence of mild solutions of partial perturbed evolution equation with infinite delay in Frechet spaces described in the form

$$y'(t) = A(t)y(t) + f(t, y_t) + g(t, y_t), \quad a.e.\, t \in J = [0, \infty),$$

$y_0 = \varphi \in B,$

Advanced Representations of Graph Theory in Engineering Systems

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Abstract— The discrete mathematical representations of graph theory, augmented by theorems of Metroid theory, were found to have elements and structures isomorphic with those of many different engineering systems. The properties of the mathematical elements of those graphs and the relations between them are then equivalent to knowledge about the engineering system, and are hence termed "embedded knowledge". The use of this embedded knowledge is illustrated by several examples: a structural truss, a gear wheel system, a mass-spring-dashpot system and a mechanism. Using various graph representations and the theorems and algorithms embedded within them, provides a fruitful source of representations which can form a basis upon which to extend formal theories of reformulation.

Keywords— Graph theory, Isomorphic structures, Flow graph representation, Knowledge representation, Metroid theory

I. INTRODUCTION

When a human analyses or synthesizes an engineering system by using the mathematical representation governing its behavior, he or she creates a mathematical model of the engineering system, and then manipulates the equations using knowledge about them and their relation with the physical reality. In usual engineering practice, one uses a model that is known to be suitable for the system at hand and the aim of the computation. Reformulation of the problem into another formally understood mathematical system [1,2] to the extent that it is done for engineering analysis, usually uses continuum mathematics. This paper shows that representations of graph theory for engineering problems can be useful as a basis upon which to extend formal theories of reformulation.

Research in engineering analysis usually starts with an understanding of the physical system, then the adoption of a suitable mathematical model for the system. In the work reported here a different approach was adopted. Rather than starting with the physical system itself or the mathematical representations historically used for the behavior of engineering systems, many other mathematical approaches were investigated to find those which can be useful representations of engineering systems. Representations were sought for which knowledge of the mathematical properties of those representations and the relations between them can be used to provide augmented understanding of the physical engineering system.

Graph theory is a useful representation because on the one hand the elements of the graph can be defined so as to have a one-to-one correspondence with the elements of many kinds of engineering systems. On the other hand, the theorems and algorithms of graph theory allow one also to represent behavioral properties of the system, such as deformations and forces, or velocities and movements, as properties of the vertices or edges of the graph.

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$\psi\hat{g}$ -CLOSED SETS IN BI˘CECH CLOSURE SPACES

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Abstract

In this paper, we introduce the concepts of $\psi\hat{g}$-closed (resp. $\psi\hat{g}$ - open) sets in bi ˘ Cech closure space and some characterizations and properties are investigated. Further, the concept of ${}_{\psi\hat{g}}C_0$ bi ˘ Cech spaces and ${}_{\psi\hat{g}}C_1$ bi-˘Cech spaces are introduced and their basic properties are studied.

Keywords: bi˘Cech closure operator, bi˘Cech closure spaces, bi˘Cech-$\psi\hat{g}$ - closed sets, bi˘Cech-$\psi\hat{g}$ - open sets, $\psi\hat{g}$ C_0 bi˘Cech spaces and $\psi\hat{g}$ C_1 bi-˘Cech spaces

Subject Classification: 54A01

Introduction

˘Cech closure spaces were introduced by ˘Cech [1] and then studied by many authors, see e.g. [2,2,5,7]. In ˘Cech's approach operator satisfies idempotent condition among Kuratowski axioms. This condition need not hold for every set A of x when this condition is also true, the operator becomes topological closure operator. Thus the concept of closure space is the generalization of a topological space. Ramya and Parvathi [7] introduced the concept of $\psi\hat{g}$-closed set in topological spaces and to investigate some topological properties. This paper deals with the concept of bi˘Cech - $\psi\hat{g}$ - closed sets, $\psi\hat{g}$ C_0 bi-˘Cech spaces and $\psi\hat{g}$ C_1 bi- ˘ Cech spaces in bi-˘Cech closure spaces and some of their properties.

2. Preliminaries

Definition 2.1. Two functions k_1 and k_2 from power set of X to itself

are called bi- ˘ Cech closure operators (simply biclosure operator) for X if they satisfy the following properties.

(i) $k_1(\phi) = \phi$ and $k_2(\phi) = \phi$

(ii) $A \subset k_1(A)$ and $A \subset k_2(A)$ for any set $A \subset X$

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Vibration of thermo lemv composite multilayered hollow pipes

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Abstract. The present paper is concerned the effects of thermo elastic waves in a composite multilayered hollow pipes which contain inner and outer zinc layers bonded by Linear Elastic Material with Voids (LEMV) is considered.The equation of movement is derived by means of the constitutive equations of linear thermo elasticity.The equation of movement and heat conduction models are decoupled by the displacement of potentials which are constructed based on equilibrium equations of elasticity.The dispersion equation are acquired by means of traction free boundary conditions and are numerically analyzed for Zinc material.The enumerated frequency,phase velocity are presented graphically for LEMV and CFRP layers.

1. Introduction

The thermo pliant material contains various utilization in many extent of science,Engineering and Technology, by the propagation of waves namely study of modern engineering, thermal power station, sub marine framework, pressure thin and thick shells vessels,aircraft,oil and gas pipes and metallurgy.To replace components with classical materials such as, steel and concrete made by fiber reinforced materials.There are many attempts in engineering fields to use composites typically for the light-weight structures,on the modeling and analysis of multilayered composite.

Denos Gazis[1] investigated three dimensional wave propagation in hollow circular cylinders.Jinyoung so and Leissa[2] discussed the free vibrations of thick hollow circular cylinders from three-dimensional analysis.Farhang Honarvar[3] analyzed the wave propagation in transversely isotropic cylinders.Chau[4] studied about the vibrations of transversely isotropic finite circular cylinders.Farhang Honarvar et al.[5] carried out the results for asymmetric and axisymmetric vibrations of finite transversely isotropic circular cylinders.JaiLue Lai et al.[6] studied Propagation of harmonic waves in a composite elastic cylinder.Xi et al.[7] developed the study of dispersion of waves in immersed laminated composite hollow cylinders.Paul and Nelson [8] derived the frequency of equation and numerical solution for asymmetric vibration of piezoelectric composite cylinders.Nelson and Karthikeyan [9] analyzed the axisymmetric vibration of pyro composite hollow cylinders.Haines and Lee [10] carried out approximate theory of torsional wave propagation in elastic circular composite cylinders. Green and Lindsay [11] obtained an explicit version of the constitutive equations.Gei, Bigoni and Franceschin [12] studied the results for propagation of thermoelastic waves in layered structures.Erbay and Suhubi [13] discussed about longitudinal wave propagation in a generalized thermoelastic cylinder.They revealed that the elastic behavior dominates in mechanical and thermal modes.EliLeinov et al. [14, 15] investigated guided wave propagation and attenuation in pipe buried in sand and guided wave propagation in pipes fully and partially embedded in concrete.

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Carbon Nanotubes from Plant Derived Hydrocarbon - An Efficient Renewable Precursor

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Abstract

The present work aspire to explore cost effective a natural renewable Eco-friendly green precursor for the synthesis of Multi-walled carbon nanotubes (MWCNTs) using methyl ester of Moringa oleifera oil over Fe-Co impregnated Alumina support at 650 °C under N_2 atmosphere. The characterization of the as-grown carbon materials were analyzed by Scanning electron microscopy (SEM), High resolution transmission electron microscopy (HRTEM), XRD and Raman spectroscopic analysis. The bimetallic catalyst of Co and Fe supported on alumina gel particles improves the quality and uniformity in diameters of CNTs. The diameters of as-synthesized nanotubes are in the range of 19 nm to 22 nm

Keywords: *Carbon nanotubes; Moringa oleifera oil; Raman & XRD spectroscopic analysis; Spray-pyrolysis; SEM.*

1. INTRODUCTION

Carbon nanotubes (CNTs) are now well into their teenage years. Earlier on, theoretical predictions and various experimental evidence showed that CNTs possess chemical and physical properties that surpass those of many other nanosized materials. This has activated intense research into CNTs world wide. The vital publication of Iijima (Iijima, 1991) made carbon nanotubes (CNTs) one of the key component in nanoscience and technology. as the numerous new applications are being proposed, so is the rapid rise in demand for its large production. This is due season to explore new environment friendly natural renewable precursors.

In general, CNTs are synthesized by arc discharge, laser ablation, and CVD or spray Pyrolysis. Among these methods CVD or spray pyrolysis method is regarded as a promising method to synthesize carbon nanotubes (CNTs) because of its benefits to achieve a high yield of CNTs and can be easily scaled up for the production of CNTs at a relatively low cost (Karthikeyan *et al.* 2008). Several papers have been published and describe a simple routine for synthesizing low-cost CNT arrays in large scale from petroleum-based precursors such as benzene, xylene and hexane (Sadeghian *et al.* 2009). These carbon precursors are related to fossil fuels and there may be a crisis for these precursors in the near future. There are few reports on the synthesis of CNTs from plant based precursors such as camphor (Kumar *et al.* 2003), turpentine oil (Afre *et al.* 2005), eucalyptus oil (Ghosh *et al.* 2007), palm oil (Suriani *et al.* 2009), neem oil (Kumar *et al.* 2011), coconut oil (Paul *et al.* 2011), pine oil (Karthikeyan *et al.* 2008), and reports from plant derived methyl esters *Oryza sativa oil* (Kalaiselvan *et al.* 2015; 2016), *Cymbopogen flexuosus* oil (Mageswari *et al.* 2014), *Helianthus annuus* oil (Angulakshmi *et al.* 2012; 2013), *Glycine Max* Oil (Angulakshmi *et al.* 2013), *Madhuca Longifolia* Oil (Kalaiselvan *et al.* 2013 ; 2014) and *Brassica Juncea* Oil (Kalaiselvan *et al.* 2014 ; 2016). The advantages of the plant derived carbon precursor are that it is a renewable biomaterial, and abundantly available and owing to these two factors, it has a huge potential to be used as the carbon source for the synthesis of CNTs, and therefore, the resulting product can be commercialized at a lower cost (Kalaiselvan *et al.* 2014).

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Application of Box Behnken design to Optimize the Reaction Conditions on the Synthesis of Multiwalled Carbon Nanotubes

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Abstract

This paper describes the use of Box Behnken design approach to plan the experiments for turning the yield of Multiwalled Carbon nanotubes (MWCNTs) synthesis by spray pyrolysis method using Citrus limonum oil as carbon precursor and Fe/Co supported on silica as catalyst. Reaction temperature, composition of catalyst and feed rate of precursor were the chosen parameters to optimize the process. A total of 17 runs were required to achieve the optimum conditions. Characterization of as grown CNTs were done by scanning electron microscopy, Transmission electron microscopy and Raman Spectroscopy. This work resulted in identifying the optimized set of turning parameters for spray pyrolysis to achieve high yield of CNTs.

Keywords: *Box-Behnken design, Carbon nanotube, Spray pyrolysis.*

1. INTRODUCTION

Carbon nanotubes are members of the fullerene structural family that was discovered by Iijima in 1991(Iijima, 1991). These incredible structures have enthralling mechanic, electronic and magnetic properties (Langer *et al.* 1996; Yu *et al.* 2000; Dressel Haus *et al.* 2001). These peculiar properties makes the material potentially applied in solar cells, nanoelectronic devices, field emitters, gas storage, biosensors and as catalyst supports (Suzuki *et al.* 2003; Brattas *et al.* 2008; Yoon *et al.* 2005; Dillon *et al.* 1997; Oh *et al.* 2009 ; Pan *et al.* 2006). There are several methods for synthesis of CNTs, most widely used among them are Arc discharge, Laser ablation, Chemical vapour deposition and spray pyrolysis method (Song *et al.* 2007, Guo *et al.* 1995; Suriani *et al.* 2009; Ghosh *et al.* 2007; Kalaiselvan *et al.* 2014). Spray pyrolysis is similar to CVD and the only difference it is a single step process, whereas in CVD it is two step processes (Kalaiselvan *et al.* 2013; 2016). Catalysts such as Fe, Co or Ni catalysts were widely used for the synthesis of singlewalled and multiwalled CNTs (Kalaiselvan *et al.* 2016). Synergetic effect of the metals involved in the catalyst found to enhance the catalyst activity (Ghosh *et al.* 2008). Li *et al.* have studied the effect of temperature on growth and structure of carbon nanotubes (Li *et al.* 2002). Natural hydrocarbons have been utilized as carbon precursor for the synthesis of CNTs such as camphor, turpentine oil, pine oil, *Cymbopogen flexuous* oil and *Helianthus annuus* oil (Afre *et al.* 2006; Kumar *et al.* 2007; Karthikeyan *et al.* 2010; Mageswari *et al.* 2014; Angulakshmi *et al.* 2013). These natural precursors are very cheap, renewable and ample of its availability. Recently, process optimization with the aid of design of experiments is rapidly gaining popularity in various field related to nanotechnology. Nourbakhsh studied the effect of process parameters on the diameter of carbon nanotubes utilizing RSM (Nourbakhsh *et al.* 2007). Statistical design of experiment is the science of statistically analyzing the largest possible amount of information with the smallest number of experiments (Goh *et al.* 2001). Liu etal., optimized the reaction conditions for the synthesis of single-walled carbon nanotubes using reponse surface methodology (Liu *et al.* 2012). Box-Behnken designs were introduced in order to reduce the sample size as the number of parameters grows. Box-Behnken is based on a spherical, revolving design. It has been applied for the

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Hardware Implementation of Bidirectional Full Bridge Isolated DC- DC Converter

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Abstract — **This paper presents the design and development of an ultra-high efficiency bidirectional isolated full bridge DC-DC converter. To achieve ultra-high efficiency, synchronous rectification and high efficiency magnetics are used. The proposed bidirectional converter allows a power flow in both directions using the same power components; this increases power density and reduce the cost. The converter operates at a switching frequency of 50 kHz with a voltage of 130 volts at one side and 52 volts at the other side of the converter. The fast switching speeds of the switching devices are utilized to achieve extremely high conversion efficiency thus reducing the total volume of the converter. The high power DC-DC converter has attained an extremely high efficiency of 80% in both the directions. The performance of a 1.7 kW bidirectional converter is validated in both forward direction (buck mode) and backward direction (boost mode) using MATLAB simulation.**

Keywords— *DC-DC Converter, Switching Device, buck mode, high efficiency, switching speeds.*

I. INTRODUCTION

Bidirectional DC-DC converters are used in applications where bidirectional power flow may be required. In Hybrid Electric Vehicles (HEVs) and Electric Vehicles (EVs), these bidirectional converters charge a low voltage (12 V) battery during normal operation (buck mode) and charge or assist the high-voltage (400V/600V) battery or bus in emergency situations like when a high-voltage battery has discharged to a very low energy or capacity level (boost mode). A typical system consists of a full-bridge power stage on the High-Voltage (HV) side, which is isolated from a full-bridge or a current-fed push-pull stage on the Low Voltage (LV) side.

The world's rapidly expanding population and increasing levels of consumerism have given rise to significant environmental issues that must be confronted. Firstly, there is a great reliance on fossil fuels to provide energy, of which a large part is consumed by transportation systems. While shale oil recovery by the hydraulic fracturing process has provided a temporary increase in production, it is only extending the point in time at which demand exceeds supply.

The second, and interrelated, major problem is that of environmental damage in general, and specifically that of air pollution. Aside from the contentious issue of global warming, there is a requirement for a reduction in the burning of hydrocarbons to achieve adequate air quality. The basis for a solution to both problems is in the sustainable use of resources, and considerable effort is being expended investigating forms of renewable, or green, energy [Kaminski.N, 2009]. Two of the more promising alternative energy sources are from wind and solar farms.

These allow for distributed and localized generation, which offers the advantages of reduced distribution costs and improved network security. However, the supply of energy from these sources is variable in nature, due to the dependency on the weather conditions, and results in grid planning and stability issues. Furthermore, the problems caused by these source variations are exacerbated by the wide variations in electrical energy demand, even on an hourly basis within modern societies. Electric vehicles (EVs) are a part of the solution to the energy problem.

Silicon has been used as a power semiconductor material for many decades. The material properties of Silicon have reached its maximum theoretical limit. For power devices, wide band gap materials such as Silicon carbide (SiC) and Gallium Nitride (GaN) are also promising because of their high switching speed and lower switching Figure of Merit (FOM). QossxRDS(ON). Compared to conventional silicon devices, for the same breakdown voltage, GaN devices have smaller area for the same on-resistance.

This paper presents a novel bi-directional isolated DC-DC converter which may be used in the V2G or DG applications discussed above. It has hardware that is similar to that of a Conventional Dual Active Bridge Converter (CDAB), except that the latter's inductor is replaced with a resonant network to reduce the converter's conduction losses.

II. BIDIRECTIONAL DC-DC CONVERTER

A PSFB converter consists of four power electronic switches (like MOSFETs or IGBTs) that form a full bridge on the primary side of the isolation transformer and diode rectifiers or MOSFET switches for Synchronous Rectification (SR) on the secondary side. This topology let's all the switching devices to switch with Zero-Voltage Switching (ZVS), resulting in lower switching losses and an efficient converter.

For such an isolated topology, signal rectification is required on the secondary side. For systems with low output voltage and/or high-output current ratings, implementing synchronous rectification achieves the best performance by avoiding diode rectification losses. In this work, synchronous rectification is implemented on the secondary side with various switching schemes to achieve optimum performance under varying load conditions. The circuit

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FPGA BASED BL-CSC CONVERTER-F MOTOR DRIVE WITH POWER FACTOR C

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Abstract — **This paper presents a Power Factor Correction (PFC) based Bridge Less Canonical Switching Cell (BL-CSC) converter-fed Brushless DC (BLDC) motor drive. The BL-CSC converter operating in a discontinuous inductor current mode is used to achieve a 0.99 power factor at the AC mains. The speed of the BLDC motor is controlled by varying the DC bus voltage using PI controller, where proportional and integral gains were tuned by conventional method. In order to reduce the switching losses of BLDC motor electronic commutation, Voltage Source Inverter (VSI) operates at fundamental frequency. Moreover, the bridgeless configuration of CSC converter offers low conduction losses due to partial elimination of diode bridge rectifier at the front end. The proposed configuration shows a considerable increase in efficiency.**

Keywords— *BLDC Motor, VSI, CSC, BL-CSC, sensor-less, diode bridge rectifier.*

I. INTRODUCTION

Brushless DC (BLDC) motors are recommended for many low- and medium-power drives applications because of their high efficiency, high flux density per unit volume, low maintenance requirement, low Electromagnetic Interference (EMI) problems, high ruggedness, and a wide range of speed control. Due to these advantages, they find applications in numerous areas such as household application transportation (hybrid vehicle) aerospace heating, ventilation and air conditioning, motion control and robotics renewable energy applications etc.

The BLDC motor is a three-phase synchronous motor consisting of a stator having a three-phase concentrated windings and a rotor having permanent magnets. It does not

THD of supply current and v
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DECENTRALIZED VOTING SYSTEM USING ETHEREUM BLOCKCHAIN

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ABSTRACT:

Electronic voting systems are proprietary, that is centralised by design. This means that, there's a single supplier that controls the code base, database and the system outputs and supplies the monitoring tools at the same time. It is difficult for centralised systems to gain trust from voters and election organisers. Open source, independently verifiable systems solves this issue. Voters can vote freely without even visiting the poll, also they can verify their own votes. All votes are recorded publicly on the Ethereum Blockchain and can be viewed and audited by anyone. This kind of decentralised voting systems are significantly advanced and are secure enough to prevent attacks like Man in the Middle, DDoS, eavesdropping etc. and no vote can be manipulated by intruders. Since the system is decentralised, there is no single point of failure. And, this also prevents the web pages from disappearing leaving us with 404 not found error. Though this is more advanced than the traditional system of voting, this does not completely replace the voting polls but can provide a much needed complementary voting method.

I INTRODUCTION

Bitcoin demonstrated that through the power of the default consensus mechanisms and voluntary respect of the social contract it's possible to enhance our preferred network to make the decentralised application of value-transfer system. Democracy providing an immutable, verifiable and secure online voting system to leverage the availability of blockchain as a secure transaction database. From this public ledger, voters will be able to independently audit the inclusion of their vote and the outcome of the election as a whole, while being sure that the results cannot be changed due to immutability of the blockchain.

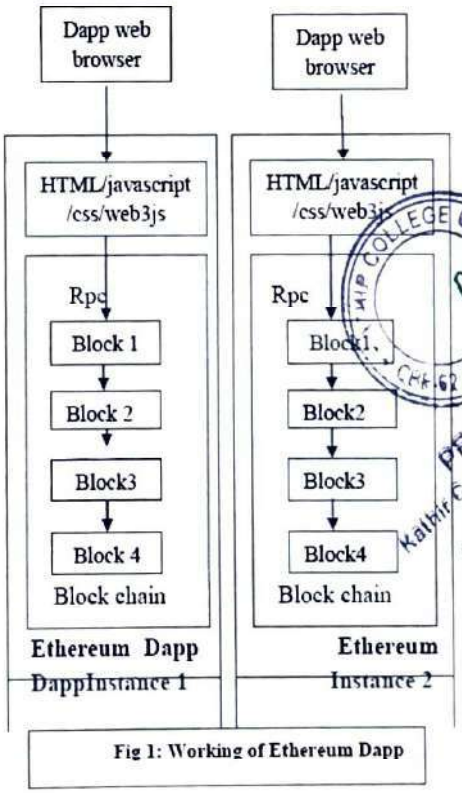

Fig 1: Working of Ethereum Dapp

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IMPLEMENTING INTELLIGENT TRAFFIC CONTROL SYSTEM FOR AMBULANCE CLEARANCE USING RFID

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Abstract

The proposed system presents an intelligent traffic control system to pass emergency vehicles without hassle. Vehicles are equipped with special radio frequency identification (RFID) tag, which cannot be removed or destroyed. We use RFID reader, Arduino and PIC16F877A system-on-chip to read the RFID tags attached to the vehicle. It determines the network congestion, and hence the green light duration for that path is adjusted. When an ambulance is approaching the junction, it will communicate to the traffic controller in the junction to turn ON the green light. This module uses ZigBee modules on CC2500 and PIC16F877A system-on-chip for wireless communications between the ambulance and traffic controller. The prototype was tested under different combinations of inputs in our wireless communication laboratory and experimental results were found as expected.

Index Term: *ZigBee, CC2500, GSM, SIM300, PIC16F877A, ambulance vehicle, stolen vehicle, congestion control, traffic junction.*

I. INTRODUCTION

INDIA is the second most populous Country in the World and it is a fast growing economy. It is seeing terrible road congestion problems in its cities. Infrastructure growth is slow as compared to the growth in number of vehicles, due to space and cost constraints [1]. Also, Indian traffic is non-lane based and chaotic. It needs a traffic control solutions, which are different from the developed Countries. Intelligent management of traffic flows can reduce the negative impact of congestion. In recent years, wireless networks are widely used in the road transport as they provide more cost effective options . Technologies like ZigBee, RFID and GSM can be used in traffic control to provide cost effective solutions. RFID is a wireless technology that uses radio frequency electromagnetic energy to carry information between the RFID tag and RFID reader. Some RFID systems will only work within the range inches or centimeters, while others may work for 100 meters (300 feet) or more. The ZigBee operates at low-power and can be used at all the levels of work configurations to perform predefined tasks. It operates in ISM bands (868 MHz in Europe, 915 MHz in USA and Australia, 2.4 GHz in rest of the world). Data transmission rates vary from 20 Kilobits/second in the 868 MHz frequency band to 250 Kilobits/second in the 2.4 GHz frequency band . The ZigBee uses 11 channels in case of 868/915 MHz radio frequency and 16 channels in case of 2.4 GHz radio frequency. It also uses 2 channel configurations, CSMA/CA and slotted CSMA/CA [5]. The whole paper is grouped into 5 parts. Sections II talks about the literature survey. Section III discusses about the current problems that

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An Android Based Automatic Irrigation System Using Bayesian Network with SMS and Voice Alert

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ABSTRACT

This paper presents an automatic irrigation system to provide water to the farms based on water level conditions using an android application, WSN and GPRS modules. Methods/statistical Analysis: An algorithm is developed such that sensor values are continuously fed to ARDUINO microcontroller. The sensor information is compared with the threshold values and based on that, decision will be taken to water the crops. The system is equipped with the photovoltaic panels and dual communication is established based on cellular-internet interface for continuous inquiry of data by the user. We have also developed an android mobile application for intercepting the data generated and voice alert generated. Findings: Because of system's energy sovereignty, low cost and relatively more amounts of underground water saving, this system is preferable at water scarcity locations like desert areas. Conclusion: This irrigation system has been working with high efficiency and top speed. This system sends message to the user whenever sensors exceed there threshold value, by this system every user can understand the soil conditions and controls the system too manually, if needed.

Keywords: Automatic Irrigation, Arduino UNO, GSM Module, Soil Moisture Sensor, Temperature Sensor, Humidity Sensor

I. INTRODUCTION

Internet of Things (IoT) is the emerging paradigm, which contains huge amount of smart object and smart devices connected to the internet for communicating with each other. IoT devices are used in many fields which make the users' day to day life more comfortable. In recent years, the growth of internet is tremendous and has been further extended to connecting things through internet. All devices are connected to one another with various smart technologies to create worldwide ubiquitous network called IoT. The development of technologies such as IoT generates huge amount of data, leads to new age of information. At the present we are facing many challenges in the real world, which have to deal realistically. By the use of IoT challenges are rehabilitate, which consumes more time, resources and manpower. Efficient water management plays an important role in irrigated agricultural cropping systems. Irrigation is an essential component of crop production in many areas of the world. The measurement of the soil water content (u) through in situdielectric methods are being used more frequently because they are non-destructive, provide almost instantaneous measurements, require little or no maintenance, can remain in the soil during the winter time, can provide continuous readings, they are nonradioactive, accurate measurements may be made near the soil surface, and their cost has decreased substantially in recent years. Self-propelled center pivot and linear-move irrigation systems generally apply water quite uniformly; however, substantial variations in soil properties and water availability exist across most fields.

In these cases, the ability to apply site-specific irrigation management to match spatially and temporally variable conditions can increase application efficiencies, reduce environmental impacts, and even improve yields. The development of a distributed in-field sensor-based site-specific irrigation system offers the potential to increase yield and quality while saving water, but the seamless integration of sensor fusion,

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FPGA Based Real Time Wireless Communication for Tele Health Using Android Phone

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ABSTRACT

In order to enhance the people's health, real time wireless communication system is introduced to monitor the patient's pulse by using an Android OS through FPGA. The end user receive the monitored data by means of GPRS, a wireless communication device. This paper presents the design and implementation of real time monitoring using GPRS between FPGA based embedded system and Android smart phones. This system offers a maximum performance, minimum power and 24 hours real time remote monitoring for tele health.

Keywords : FPGA, GPRS, Android Phone, Sensor, Wireless Communication

I. INTRODUCTION

Due to compatibility and mobility, smart phones have become people's personal assistance. This lead to the revolution of interfacing smart phones with other electronic devices, for example, pulse monitoring equipment. Wireless capability of a smart phone enables the user to control and monitor a wide array of sensors remotely. Android applications are easy to develop, open source and also offers flexibility.

As human health is unpredictable, an alert is required at the time of emergency. Remote medical monitoring allows to collect and view the health related data at the right time. This data is then easily accessed by the health care providers as smart phones are easily synchronized with online database that hosts a Content Management System(CMS).

This paper establishes a wireless communication between the FPGA and Android operating system running on a smart phone via GPRS connection. This design offers a real time monitoring of data such as pulse rate and instantaneously communicating the measured values. For this purpose, sensors are synchronized with FPGA along with a GPRS connector for communicating with the Android application. This system offers long distance connectivity at lower maintenance cost.

II. METHODS AND MATERIAL

1. Architecture

A. Hardware Tools

The FPGA used as the platform for the embedded system is Xilinx Spartan 3E. This extensible processing platform enables the developers to apply a combination of serial and parallel processing to the embedded systems.

The GPRS interface supports the communication between FPGA and Android phone. The board has a SIM connector which is used to connect the SIM with the module and give access to the network.

B. Software Tools

Any Android smart phone with internet access capability can run the application, provided it is compiled for the OS version the phone is running.

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VIDEO CODING BY SCALABLE APPROXIMATE DCT WITH HEVC

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Abstract *- The discrete cosine change (DCT) of length 4 is gotten from the 4 point DCT of estimated part and it's characterized by the High Efficiency Video Coding (HEVC) standard. It is for the most part utilized that for the calculation of DCT and inverse DCT (IDCT) of force of 2 lengths. It permits to ascertain DCTs of length 4, 8, 16 itemized by HEVC. DCTs produced by 4 point DCT include bring down many-sided quality as well as offer better pressure execution. A reconfigurable design is proposed where 8 point DCT utilized for a couple of 4 point DCTs. Utilizing a similar reconfiguration plot 32 point DCT could be designed for parallel calculation of two 16 point DCTs or four 8 point DCTs or eight 4 point DCTs. It offers preferred PSNR over existing. The request of portable associated gadgets has been encountering marvelous development, and by 2019 it is normal that there will be about 1.5 cell phones for every capita Small keen frameworks associated with Internet of Things (IoT) is additionally going to be universal. Coding, deciphering, downloading, and showing of video substance are the most usually utilized functionalities in little versatile associated gadgets. The aggregate power utilization to run these applications has two noteworthy parts: (i) the power utilization in coding (or translating) which is identified with the video codec multifaceted nature, and (ii) the power expended in transmitting or downloading of video which is a component of the bit-rate and relies on upon the pressure productivity of the codec. The proposed concept can perform HEVC video coding with DCT of length 32 point which can be configured by parallel computation of two 16 point DCTs.*

Index Terms—Discrete cosine change (DCT), DCT guess, High Efficiency Video Coding (HEVC)

1.INTRODUCTION

1.1 GENERAL:

The discrete cosine change (DCT) is famously utilized As a part of picture and video pressure. Since the DCT is computationally Intensive, a few calculations have been proposed In the writing to process it proficiently. As of late, huge Work has been done to infer rough of 8-point DCT for decreasing the computational many-sided quality [4]–[7]. The Main target of the guess calculations is to dispose of augmentations which devour the greater part of the power and calculation Time, and to get important estimation of DCT also. Haweel has proposed the marked DCT (SDCT) for 8 Blocks where the premise vector components are supplanted by their Sign, i.e, 1. Bouguezel-Ahmad-Swamy (BAS) have proposed[3] A progression of strategies. They have given a decent estimation of The DCT by supplanting the premise vector components by 0, 1/2, 1. In a similar vein, Bayer and Cintra have proposed Two changes got from 0 and 1 as components of change Kernel[4], and have demonstrated that their strategies perform superior to The strategy in, especially for low-and high-pressure Ratio situations. The need of estimation is more vital for higher-measure DCT since the computational multifaceted nature of the DCT develops Nonlinearly. Then again, present day video coding guidelines Such as high effectiveness video coding (HEVC) [1] utilizes DCT Of bigger square sizes (up to 32) keeping in mind the end goal to accomplish higher Compression proportion. In any case, the augmentation of the outline methodology utilized As a part of H264 AVC for bigger change sizes, for example, 16-point and 32-point is unrealistic. Plus, a few picture handling Applications, for example, following and synchronous pressure And encryption require higher DCT sizes. In this unique circumstance, Cintra has presented another class of

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EXPERIMENTAL INVESTIGATION IN SINGLE CYLINDER VCR MULTIFUEL ENGINE USING DIESEL

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ABSTRACT

VCR Engine is a technology in which the internal combustion engines's compression ratio could be varied. This variation in the compression ratios could bring out a difference in the performance of engine as well as the emission characteristics. This could be done to increase the fuel efficiency. Usually these tests are done with biodiesel which emits very less pollutants based on the raw material used. This study investigates the performance of a Variable compression ratio engine with diesel at 2 compression ratios varying the load from 0kg to 10kgs The results show that the Efficiency obtained with the compression ratio 18:1 gives a better value in terms of its performance when compared to that of 16:1

Key words: VCR Engine, Multi Fuel, Fuel Efficiency.

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1. INTRODUCTION

A VCR engine has been widely tested these days to bring out the best fuel efficiency and also to minimize the pollutants[1-2]. Various tests have been made these days by the researchers using this VCR engines to bring out the comparison results using petrol or diesel. This works investigates on a single cylinder multi fuel VCR Engine at 2 compression ratios 16:1 and 18:1 respectively. Petrol engines have the tendency to limit the max pressure during a compression stroke which would result in detonation rather than burning, and hence to achieve this max

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Location Based Travel Route Recommendation

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Abstract: Trajectory search has long been an attractive and challenging topic which blooms various interesting applications in spatial-temporal databases. In this work, we study a new problem of searching trajectories by locations. in which context the query is only a small set of locations with or without an order specified, while the target is to find the k Best-connected Trajectories (k-BCT) from a database such that the k-BCT best connect the designated locations geographically. Different from the conventional trajectory search that looks for similar trajectories w.r.t. shape or other criteria by using a sample query trajectory, we focus on the goodness of connection provided by a trajectory to the specified query locations. This new query can benefit users in many novel applications such as trip planning.

Keywords: Location, Route, Travel, Recommendation, Trajectories

I. INTRODUCTION

In our work, we firstly define a new similarity function for measuring how well a trajectory connects the query locations, with both spatial distance and order constraint being considered. Upon the observation that the number of query locations is normally small (e.g. 10 or less) since it is impractical for a user to input too many locations, we analyze the feasibility of using a general-purpose spatial index to achieve efficient k-BCT search, based on a simple Incremental kNN based Algorithm (IKNN). The IKNN effectively prunes and refines trajectories by using the devised lower bound and upper bound of similarity. Our contributions mainly lie in adapting the best-first and depth-first k-NN algorithms to the basic IKNN properly, and more importantly ensuring the efficiency in both search effort and memory usage. An in-depth study on the adaption and it efficiency is provided. Further optimization is also presented to accelerate the IKNN algorithm. Finally, we verify the efficiency of the algorithm by extensive experiments.

We study a new problem of searching the k Best-Connected Trajectories from a database by using a set of locations with or without an order constraint. Since the number of query locations is typically small, it enables us to adopt a spatial method for answering a similarity search query. We start the study based on a simple IKNN algorithm and then analyze the efficiency of different variants. As a conclusion, we would say that the BF-O achieves the best query performance although involving a risk of high memory usage. The pure DF-C algorithm, although guarantees a low memory consumption, performs poorly in efficiency. Therefore, we further devise the DF-D-M and DF-D-M-O to improve the DF-C for less R-tree node access and shorter query time, and finally their performance are theoretically and experimentally confirmed to be close to that of the BF.

The massive amount of trajectory data collected from GPS has emerged in recent year. Many researchers proposed trajectory queries such as top-k query. They focused to solve them based on distance and text relevance. However, the weight of these queries is unknown. Therefore, we plan to handle the trajectory skyline query based on distance and activity keywords. Furthermore, with the huge amount of keyword semantic trajectories, user may put the wrong activity keyword to search its trajectory. Therefore, it's hard to extract the trajectory based on the exact keyword activity. In this paper, we focused to handle the trajectory fuzzy problem based on edit distance and activity weight. To accelerate the query processing, initially, we used a Distributed Mining Trajectory based on R-tree DMTR-Tree to organize the big trajectory data, then we developed an efficient algorithm to handle the trajectory skyline query. Also, for a rapid computation of the algorithm, we used the cluster computing framework of Apache Spark with Map Reduce as programming model. Theoretical analysis and the experimental results show that query-processing algorithm is efficient and achieve the scalability.

II. DOMAIN OVERVIEW

Researches on Location-Based Service (LBS) have been emerging in recent years due to a wide range of potential applications. One of the active topics is the mining and prediction of mobile movements and associated transactions. Most of existing studies focus on discovering mobile patterns from the whole logs. However, this kind of patterns may not be precise enough for predictions since the differentiated mobile behaviors among users and temporal periods are not considered. In this paper, we propose a novel algorithm, namely, Cluster-based Temporal Mobile Sequential Pattern Mine (CTMSP-Mine), to discover the Cluster-based Temporal Mobile Sequential Patterns (CTMSPs). Moreover, a prediction strategy is proposed to predict the subsequent mobile behaviors. In CTMSP-Mine, user clusters are

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Secure Logging as a Service In Cloud

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ABSTRACT

Data and authorization security are needed everywhere. In case dealing with huge number of data in a cloud server, secured logging is must. This is because cloud servers are easily accessible and any one can access anywhere at any time. This is because intruders may have knowledge about the network where they are going to intrude. So data should be preserved well for intruders, hackers and unauthorised user. The main objective of this paper is to develop a secured logging as a service in cloud architecture. So in the proposed method, privacy and preservation methods are implemented. The secured logging contains six major functionalities to ensure more securities: Correctness, Confidentiality, data logs, Privacy, Preservation and VPS (Virtual proxy server). Confidentiality deals with sensitive information not displaying during search. Data logs deals with the data history for identifying appropriate users. Privacy scheme deals with file linking and data access history. So that secured logging as a service is much important for all kind of cloud server environment in order to provide proper login for authorized user and triggers out the unauthorized users.Preservation deals with enhanced colour code. Hackers can be avoided and intruders are can't be avoided.

Keywords : Secure Logging, Cloud Server, Virtual Proxy Serve, Network Security, Cloud Computing, SLAS, IaaS, PaaS, NAT

I. INTRODUCTION

Cloud Computing is a type of Internet-based computing that provides shared computer processing resources and data to computers and other devices on demand. It is a model for enabling ubiquitous, on-demand access to a shared pool of configurable computing resources (e.g., computer networks, servers, storage, applications and services),which can be rapidly provisioned and released with minimal management effort.

Network Security consists of the policies and practices adopted to prevent and monitor unauthorized access, misuse, modification, or denial of a computer network and network-accessible resources. Network security involves the authorization of access to data in a network, which is controlled by the network administrator. Users choose or are assigned an ID and password or other authenticating information that allows them access to information and programs within their authority.

II. METHODS AND MATERIAL

OBJECTIVE

Primary Objective

- The primary objective of this project is creating a secured data access with Secured Logging as a Service.
- The Secured Logging as a service will be enabled for both admin and user.
- The motivation is to find out the difference between User, Intruder, and Hackers. From the way of logging in to their networks

Secondary Objective

- Even thou admin login is more secured user should mention the security level of the uploading file.
- Improved Gaussian Mixture and Keystroke password enabled.
- Even keystroke value got leaked, the another security level of colour code was enabled.
- Log will records each activities of the user logging in
  - Last Accessed date
  - Last Accessed file

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Incremental Query Processing by Relevance Feedback Using Big-Data Streams

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ABSTRACT

This paper presents deals social network in large scale distributed server data storing and retrival process is more complex.There has been an explosive increase in media data,such as images,videos and social media in the internet,mobile devices, and desktops.Engineers and researches are dealing with data sets of petabyte scale in the cloud computing paradigm.Thus, the demand for building a service stack to distribute,manage and process massive data sets has risen drastically.Data collection has become easy due to the rapid development of both mobile devices and wireless networks.During the processing of image queries. Many factor are affecting quality of the retrievel system. Image searching and ranking , indexing are the insufficient factors to affect the quality of image search results. There are many factors which affect the quality of image search results.The learning of the model is from the image output extracts the designed with the evolutionary feedback system to perform the image retrievel by processing the image search query.

Keywords : Query Optimiztion using Feedback Processing, Backtracking Process.

I. INTRODUCTION

Data mining is a developing science and it can be defined and categorized in a number of ways depending on the specific knowledge domain. For example, this has manifest in the domain of biological science where the technology of data mining has been applied successfully and categorized as bioinformatics. Various techniques have been employed within bioinformatics to filter out the useful data to gain valuable information. High dimensional big Media data like audios, images and videos are growing rapidly nowadays. Emerging with this increasingly growing volume of data is the need to retrieve relevant contents from such large databases. The fundamental scientific problem behind this need is the nearest neighbor search problem. Typical graph applications include predicting biological activity of molecules, identifying errors in computer programs, and categorizing scientific publications. Unlike traditional vector data, graphs are only characterized by node-edge representation and no features are readily available for training prediction models. Taxonomies are the key to developing successful applications in a domain, such as information retrieval, knowledge searching and classification. In particular, considering the ever-growing amount of text digital data per year, taxonomy learning from text is a primary research area for developing such applications nowadays. Kernel methods have emerged as a versatile mechanism to handle generic data. The growing interest in kernels is mainly motivated by the positive impact they have in important applications such as data clustering and classification.

II. METHODS AND MATERIAL

A. Proposed System

The idea of the project is to implement the query optimization using the Feedback collection such as positive & negative Feedback.The Learning process is made by Supervised Learning in this we know the result which is going to produce.For this Ranking and Learning Process is used.

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Analysing the Social Data Opinion through Public User Raw Information

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ABSTRACT

The social network perspective provides a set of methods for revealing the structure of social networks as well as a variety of hypothesis explaining the patterns discovered in these structures. The study of these structures uses social network discovering to recognizing local and global patterns: locate influential entities, and proficiency network dynamics. Millions of users share their opinions on Social Networks, making it a valuable platform for tracing and analyzing public sentiment. Such tracking and analysis can provide critical information for decision making in various domains. Therefore it has captivated attention in both academia and industry. This approach needs Sentimental data analysis model using Neural Networks. Both positive and negative also comments will be calculated here. To further enhance the readability of the mined reasons, we select the most representative tweets for foreground topics and develop another generative model called Reason Candidate and Background LDA (RCB-LDA) to rank them with respect to their popularity within the variation period. Experimental results show that our methods can effectively find foreground topics and rank reason candidates.

Keywords : LDA, RCB-LDA, KDD, CVS, SVN, ANY, ANN

I. INTRODUCTION

Data mining for software engineering techniques consists of gathering software engineering data, extracting some knowledge from it and, if possible, use this knowledge to improve the software engineering process, in other words "operationalize" the mined knowledge. For instance, researchers have extracted usage patterns from millions of lines of code of the Linux kernel in order to find bug. In essence, data mining for software engineering can be decomposed along three axes: the goal, the input data used, and the mining technique used.

Data engineering at large consists of many tasks from specification, design, development, monitoring at runtime, etc. Each task is itself decomposed in many smaller scale tasks. For example, a programmer constantly switches between tasks, such as navigating code, reading documentation, writing code, debugging, etc. During the last decade, it has been shown that most software engineering tasks can benefit from data mining approaches, the tasks being whether technical or more people oriented. Data mining is to discover structure inside unstructured data, extract meaning from noisy data, discover patterns in apparently random data, and use all this information to better understand trends, patterns, correlations, and ultimately predict customer behavior, market and competition trends, so that the company uses its own data more meaningfully to better position itself on the new waves. The term Knowledge Discovery in Databases (KDD) is generally used to refer to the overall process of

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A Shoulder Surfing Resistant Graphical Authentication System

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ABSTRACT

People enjoy the convenience of on-line services, but online environments may bring many risks. We propose a virtual password and QR code concept involving a small amount of human computing to secure users' passwords in on-line environments. We adopted user-determined randomized linear generation functions to secure users' passwords based on the fact that a server has more information than any adversary does. We propose differentiated QR code mechanisms in which a user has the freedom to choose a virtual password scheme ranging from weak security to strong security, where a virtual password requires a small amount of human computing to secure users' passwords. A functionis used to implement the virtual password concept with security for complexity requiring a small amount of human computing. For user-specified functions, we adopt secretlittle functions in which security is enhanced by to generate QR CODE.

Keywords : Graphical Passwords, Authentication, Shoulder Surfing Attack.

I. INTRODUCTION

Today, the Internet has entered into our daily lives as more and more services have been moved online. Besides reading the news, searching for information, and other risk-free activities online, we have also become accustomed to other risk-related work, such as paying using credit cards, checking / composing emails, online banking and soon. While we enjoy its convenience, we are putting ourselves at risk. Most current commercial websites will ask their users to input their user identifications (IDs) and corresponding passwords for authentication. Once a user's ID and the corresponding password are stolen by an adversary, the adversary can do anything with the victim's account, which can lead to a disaster for the victim. As a consequence of increasing concerns over such risks, protecting users' passwords on the web has become increasingly critical. In this paper, we present a password protection scheme that involves a small amount of human computing in an Internet-based environment or an ATM machine, which will be resistant to phishing scams, Trojan horses, and shoulder surfing attacks. We propose a virtual password concept involving small amount of human computing to secure users 'passwords in online environments. The trade-off is that stronger schemes are more complex. Among the schemes, we have a default method (i.e., traditional password scheme), a system recommended function, a user-specified function, a user-specified program and so on. A function/program is used to implement the virtual password concept by trading security for complexity by requiring small amount of human computing. We analyse how the proposed schemes defend against phishing, key logger, shoulder surfing and multiple attacks. In user-specified functions, we adopt secret little functions in which security is enhanced by hiding secret functions/algorithms.

II. METHODS AND MATERIAL

1. Existence Approaches

In the Existing system, the access code will be sent to the mobile using that user login to the website. Access code security is not there. We present a password protection scheme that involves a small amount of human computing in an Internet-based environment or an ATM machine, which will be resistant to phishing frauds, Trojan horses, and shoulder surfing attacks.

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DIRECT GROWTH OF VERTICALLY ALIGNED CARBON NANOTUBES ON SILICON SUBSTRATE BY SPRAY PYROLYSIS OF *GLYCINE MAX* OIL

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ABSTRACT. Vertically aligned carbon nanotubes have been synthesized by spray pyrolysis from *Glycine max* oil on silicon substrate using ferrocene as catalyst at 650 °C. *Glycine max* oil, a plant-based hydrocarbon precursor was used as a source of carbon and argon as a carrier gas. The as-grown vertically aligned carbon nanotubes were characterized by scanning electron microscopy, high-resolution transmission electron microscopy, X-ray diffraction, thermogravimetric analysis, and Raman spectroscopy. Scanning electron microscopic images reveal that the dense bundles of aligned carbon nanotubes. High resolution transmission electron microscopy and Raman spectroscopy observations indicate that as-grown aligned carbon nanotubes are well graphitized.

KEY WORDS: Spray pyrolysis, Vertically aligned CNT, Ferrocene, Silicon substrate

INTRODUCTION

Vertically aligned carbon nanotubes are quasi-dimensional carbon cylinders that align perpendicular to a substrate [1]. Aligned carbon nanotubes represent an important architecture of CNTs because they can be used directly as field emitters in flat panel displays as reinforcing agents in composite materials [2, 3]. Furthermore, vertically aligned carbon nanotubes also exhibit a high capability to produce high current densities under low operating voltages [4]. Aligned carbon nanotubes possessing larger surface area and higher electrical conductivity over entangled CNTs, are ideal electrode material for DNA biosensor [5], energy storage device [6], sensors for glucose [7], pH [8] as well as NO_2 [9]. Jung *et al.* demonstrated laser transmission welding of vertically aligned carbon nanotube arrays for joining polymer sheets [10]. Aligned carbon nanotubes reported by Thess *et al.* were able to bundle 70% of the volume of nanotubes into crystalline ropes in 1996 [11]. Fan *et al.* introduced position controlled growth of vertically aligned CNT on porous and plain silicon substrate [12]. CNT arrays have successfully grown on different substrates such as quartz substrate [13], planar silicon substrate [14]. Ferrocene and its derivatives are significant as regards biological applications [15]. Ferrocene has been shown to be a good precursor of iron nanoparticles suitable to catalyze CNT growth [16-17]. Conventionally hydrocarbons such as methane, ethane, ethylene, acetylene, xylene and ethanol were used as a carbon source for the synthesis of CNTs [18-23]. The number of studies utilizing low-cost carbon sources for the synthesis of CNTs such as botanical hydrocarbon is very limited [24-28]. Afre *et al.* have used spray pyrolysis method and prepared aligned carbon nanotubes from ferrocene and turpentine oil mixture on quartz and silicon substrates [29]. Instead of using conventional petro chemicals, we rather use a natural precursor – *Glycine max* oil. From our previous study it is proved that *Glycine max* oil have been found to be an efficient precursor of

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Hybrid compression scheme using precoding block and fast stationary wavelet transformation

Cite

Article type: Research Article

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Abstract: In this paper a hybrid compression using precoding block and Fast Stationary Wavelet Transformation have been proposed for standard and compound images. The proposed method is the extension of transformation based compression process. It has two operations 1. precoding, 2. transformation. The first process is precoding in which the original image is divided into (n×n) non overlapping blocks then each block is combined with the precoding block, which have different level of gray values. When the original pixel value is nearer to the precoding block element, then the original pixel value is rounded near the precoding element data. Secondly the precoded image data has been transformed by FSWT (Fast Stationary Wavelet Transformation) and got the energy compaction.The proposed technique is dually reduce the size of the information by precoding block and transformation. So it is very much suitable for compressing all types of images.

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Efficient FPGA Implementation of AES 128 Bit for IEEE 802.16e Mobile WiMax Standards

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Abstract

In the present era of high speed communication, wireless technology plays a predominant role in data transmission. In the timeline of wireless domain, Wi-Fi, Bluetooth, ZigBee are some of the standards used in today's wireless medium. In addition, WiMax is introduced by IEEE as IEEE 802.16 standard for long distance communication, and mobile WiMax as 802.16e. WiMax is an acronym of worldwide interoperability for microwave access. It helps to provide wireless transmission with high quality of service in a secured environment. Privacy across the network and access control is the predominant goal in the wireless protocol. In the wireless environment one of the most widely used security algorithms in MAC layer is Advanced Encryption Standard (AES). Especially Medium Access Control (MAC) sub layer should be evaluated in the security architecture. AES is used in the MAC layer that consumes more power and involves high cost. So, in this paper an optimized architecture of AES 128 bit counter mode security algorithm for MAC layer of 802.16e standard is proposed. The SBOX and MixColumn transformation are modified in the architecture of AES to achieve optimized power and delay. The design has been implemented in Xilinx virtex5 device and power has been analyzed using XPower analyzer. It is compared with two standard existing architectures. The simulation results revealed a power reduction of 41% compared to existing one.

Keywords

AES Encryption/Decryption, Galois Field, Low Power Architecture, Electronic Code Book Mode, FPGA Implementation

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Autonomous Control of Interlinking Converter with Energy Storage in Hybrid AC-DC Microgrid

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[1,2,3]Department of Electrical and Electronics Engineering
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Abstract— Due to the decade of fossil fuels, renewable energy plays an important role to supply the power to meet our load requirements. The main drawback of renewable energy system is its installation cost is very high and renewable energy sources are mainly unpredictable. To eliminate the drawbacks in renewable energy, hybrid system plays a major role. Hybrid system is an interconnection of two or more sources. In this project solar energy and battery are used as a two different sources. Power from the solar energy is boosted by boost converter and boost converter act as a impedance matching network. When internal impedance of solar is matched with the boost converter impedance power will be transfer from source to load. Battery power is boosted by boost converter and output of solar and battery added together and given as a input to the inverter. To connect the 3 phase line to the microgrid it is necessary to find 3 phase network. Hence BLDC motor is used as load because it is used to verify the 3 phase network. The proposed design has an advantage i.e., battery bank and solar panel acts as a source, hence the uninterrupted power obtained to run the system

Key words: component; formatting; style; styling; insert (key words)

I. INTRODUCTION

The Smart residential units are often connected to a non-conventional energy sources to provide smart energy. Due to the complexity of the space allocation, these dedicated energy sources are highly localized and have low terminal power and voltage ratings. The power ranges typically, on the order of a hundred watts. Conventional designs involve two separate converters, a DC–DC converter such as boost converter (e.g., boost) and a voltage source inverter (VSI), connected either in cascade or in parallel manner, supplying DC and AC outputs at VdcOut and VacOut, respectively. Depending upon the requirements, topologies providing higher gains may be required to achieve step-up operation .This project investigates the use of single boost-stage architecture to supply hybrid loads.

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The Need for Renewable Energy

Renewable energy is one of the resources it comes from the natural resources such as wind energy, solar energy, water and geothermal heat energy. These resources are renewable and it maybe recycles and uses it for further use. Therefore it is used for all practical purposes, these resources can be considered to be inexhaustible, because the other important resources like conventional fossil fuels leads to damage or highly risky state composition. The global energy crunch has provided a renewed impetus to the growth and development of Clean and Renewable Energy sources. Apart from the rapidly decreasing reserves of fossil fuels in the world, another major factor working against fossil fuels is the pollution associated with their combustion.

II. DIFFERENT SOURCES OF RENEWABLE ENERGY

A. Wind Power:

Wind turbines can be used to harness the energy available in airflows. Current day turbines range from around 600 kW to 5 MW of rated power. Since the power output is a function of the cube of the wind speed, it increases rapidly with an increase in available wind velocity. Recent advancements have led to aero foil wind turbines, which are more efficient due to a better aerodynamic structure.

B. Solar Power:

The tapping of solar energy owes its origins to the British astronomer John Herschel who famously used a solar thermal collector box to cook food during an expedition to Africa. Solar energy can be utilized in two major ways. Firstly, the captured heat can be used as solar thermal energy, with applications in space heating. Another alternative is the conversion of incident solar radiation to electrical energy, which is the most usable form of energy. This can be achieved with the help of solar photovoltaic cells or with concentrating solar power plants.

C. Small Hydropower:

Hydropower installations up to 10MW are considered as small hydropower and counted as renewable energy sources These involve converting the potential energy of water stored in dams into usable electrical energy through the use of water turbines. Run-of-the-river hydroelectricity aims to utilize the kinetic energy of water without the need of building reservoirs or dams.

D. Biomass:

Plants capture the energy of the sun through the process of photosynthesis. On combustion, these Plants release the trapped energy. This way, biomass works as a natural battery to store the suns Energy and yield it on requirement.

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Structural and thermo-optic studies on linear double hydrogen bonded ferroelectric liquid crystal homologous series

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ABSTRACT

A novel series of supramolecular hydrogen bonded ferroelectric liquid crystal (HBFLC) is formed through hydrogen bonding interaction between nonmesogenic dextro-levo tartaric acid (DLTA) and mesogenic p-n-alkyloxy benzoic acids (nBAO, where n = 7 to 12). The formation of hydrogen bond in the complex is confirmed through Fourier transform infrared spectroscopy (FTIR) studies. Optical and thermal behaviors for mesomorphic phases of individual complex in the series are meticulously studied by means of differential scanning calorimetry (DSC) and polarizing optical microscopy (POM). Computation of the enthalpy values in the homologous series of complex during both heating and cooling cycles is proved that thermal equilibrium exhibited by the complex system. Extended thermal span width and rich liquid crystallinity is observed in the present complex due to the presence of aromatic ring with chiral center. Thermal stability factor and thermal equilibrium are also discussed. Presence of alkyloxy chain on either side of chiral molecules hinder the abundant reduction in phase transition temperature and lowered melting point compared to the individual mesogens. Optical tilt angle for smectic C* phase is determined and the same is fitted to a power law.

KEYWORDS

Smectic; POM; DSC; thermal stability factor

1. Introduction

Liquid crystals (LCs) exhibiting the intermediate phases between isotropic liquid and solid crystal during their phase transitions which have both liquid and crystal properties [1]. Molecular orientation and self-assembly systems are the basic requirements for exhibiting these interesting properties. A single LC may not satisfy all the requirements of our day-to-day life applications. Usually, supplement/compliment properties of multicomponent LC mixture is more useful for industrial applications. In particular more than two LCs are mixed with each other in definite molar ratio, it gives major effect on intermolecular hydrogen bonding and results in diversity of thermodynamic and optical properties [2–4]. In the recent decade, various research groups all around the world interesting to work on the synthesis of liquid crystal complexes through intermolecular hydrogen bonding [5–7]. The variety

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Color versions of one or more of the figures in the article can be found online at www.tandfonline.com/gmcl.

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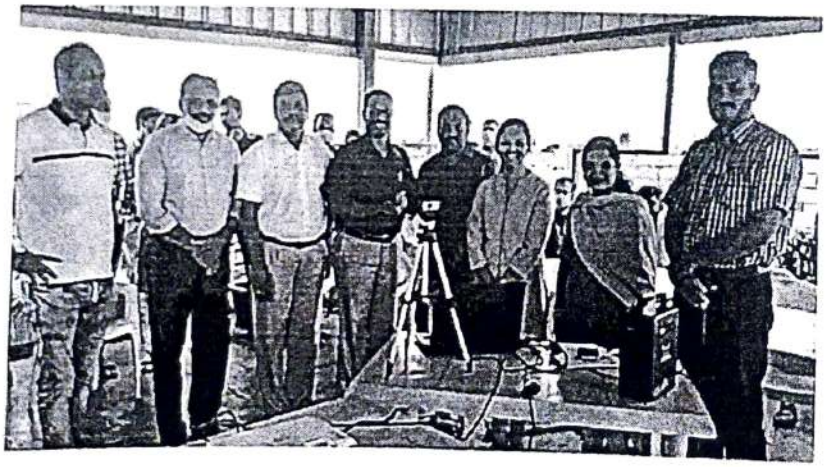
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ASICPLAY START-UP STUDIO

- It was Inaugrated on 5th November 2020
- ASICPlay is an open source Cloud based IC Design Learning Platform. It is a One Stop Platform to learn IC Physical Design and to become a Physical Design (PD) Engineer
- It is an Industrial-Academic Collaboration with the aim of providing IC design framework to circuit branch students
- Dr.R.Udayakumar,Principal, Kathir College of Engineering is one of the academic advisor of ASICPLAY technologies
- This collaboration affords a stepping stone for circuit branch students to achieve dream job in VLSI Physical Design
- It offers various research oriented training activities to all sectors of students at affordable cost



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WHY TO CHOOSE ASICPLAY?

- Working Knowledge of IC Physical Design curated by Industry experts
- Short runtimes to understand Physical Design concepts, challenges and how to fix methods
- Accessible from anywhere on Laptops/Desktops without Lab setup or Higher end computers
- An easily affordable solution that can be done in tandem with the college

EVENTS CONDUCTED:

- Webinar on Semiconductor Industry (Technology, Trends and Opportunities) by MADHUBALA MUNJULURI, CEO of ASICPlay technologies held on 20th March,2021

LINK TO THE WEBSITE: https://asicplay.com

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INAUGURATION OF TRUSTGREENZ-START UP STUDIO

Date: 10-Sep-20

NAME OF THE COMPANY	TrustGreenz PRIVATE LIMITED
DATE OF INAGURATION	5th September 2020
ACTIVITIES	Growing of food grain crops (cereals and pulses). AGRICULTURE, HUNTING, FORESTRY AND RELATED SERVICE ACTIVITIES HUNTING
CEO OF TRUSTGREENZ	Mr.T. Kumaragurubaran

Kathir college of Engineering, Coimbatore has inaugurated the startup studio TrustGreenz Private Limited. This startup focuses on agriculture based services such as growing food grain crops, hunting, forestry and related service activities. Based on test and internship performance students were selected as members of the Trustgreenz.

HOD 10/9/20

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INAGURATION OF FRESH STORY STARTUP STUDIO

Date:04-sep-20

Name of the company	Fresh story pvt lmt
Inaguration	28th August 2020
Activities	Provide Artificial Intelligence based education
CEO OF FRESH STORY	Mr. SiddhartaSatapathy

Kathir college of Engineering, Coimbatore has inagurated startup studio for Fresh story private limited. This company focus on Artificial Intelligence based business development statergy. Based on the test and internship performance five students selected as members of Fresh story.

HOD 4/9/20

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Kathir College of Engineering

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Wisdom Tree, Neelambur, Avinashi Road, Coimbatore-62

Date: 14/09/2020

Department of Mechanical Engineering

REPORT: Start up studio on Fibres & Fabrics

The institution has taken the sufficient measures for developing the innovation sprit among the students and faculty members. The start up studio on the Aerial Bots has been inaugurated on **12.09.2020** by the Kathir College of Engineering, Coimbatore and Amphisoft Technologies, Coimbatore. The Chief Guest on the occasion, **Mr. G.Shanmugavel, Ideator and Managing Director of CIBI Cotton Group** shared his vision behind the Fiber and Fabric Startup Studio. He said, in Tirupur, Coimbatore and Erode there is a huge potential and markets are well established. Tirupur has Rs 50,000 crore business turnover every year and marketing, production and other processes need admin-oriented software with the latest updates.

Inauguration of Start-up Studio : Fibers & Fabrics

OnlineLink:https://www.youtube.com/watch?v=JDPm5Te8Kkk&list=UU289NpwbeBAAwrA_grLBUTg&index=26

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Wisdom Tree, Neelambur, Avinashi Road, Coimbatore-62

Date: 21/09/2020

Department of Mechanical Engineering

REPORT: Start up studio on Aerial Bots

The institution has taken the sufficient measures for developing the innovation sprit among the students and faculty members. The start up studio on the Aerial Bots has been inaugurated by **Mr. Arvind Palanlappan, Industrial Advisory Member, Aerospace product and and Business Experton 19.09.2020,** Kathir College of Engineering, Coimbatore and Amphisoft Technologies, Coimbatore.

Inauguration of Start-up Studio : Aerial Bots

The start up mainly contributes to the following informations, esign, and control of agile aerial robots with rich sensory and motor abilities that can move and work in very different environments: open skies, confined environments, on the ground, on vertical surfaces, in swarms, and near humans.

Online Link:
https://www.youtube.com/watch?v=GD8oTZRrYsk&list=UU289NpwbeBAAwrA_qrLBUTg&index=25&t=3521s

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SUNDARAPURAM, COVAI-24.

21/09/21 Kathir College of Engineering Coimbatore

MEMORANDUM OF UNDERSTANDING (MoU)

BETWEEN

KATHIR COLLEGE OF ENGINEERING, NEELAMBUR, COIMBATORE 641062

AND

AMPHISOFT TECHNOLOGIES PRIVATE LIMITED, COIMBATORE 641 037

This Memorandum of Understanding (hereinafter called as the 'MoU') is entered into on this the 04 day of October 2021 by and between.

Kathir College of Engineering, Coimbatore, the First Party represented herein by its **Principal Kathir College of Engineering, Coimbatore**, and **Amphisoft Technologies Private Limited, Coimbatore**. The Second party, and represented herein by its Managing Director **Smt. T. Punitha**

4/10/21

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062

4/10/21

For Amphisoft Technologies Pvt. Ltd

Director

WHEREAS:

A) First Party is a Higher Educational Institution named: **Kathir College of Engineering, Coimbatore**

B) First Party & Second Party believe that collaboration and co-operation between themselves will promote more effective use of each of their resources, and provide each of them with enhanced opportunities.

C) The Parties intent to cooperate and focus their efforts on cooperation within area of Skill Based Training, Education, Placement, Industrial Visit, Expert Lecture.

D) **Amphisoft Technologies Private Limited, Coimbatore**, - the Second Party is engaged in **IT Product development in Ed-Tech**

NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL PROMISES SET FORTH IN THIS MOU, THE PARTIES HERETO AGREE AS FOLLOWS:

CLAUSE 1 **CO-OPERATION**

1.1 Both Parties are united by common interests and objectives, and they shall establish co-operation.

1.2 First Party and Second Party co-operation will facilitate effective utilization of the intellectual capabilities.

1.3 The parties shall co-operate with each other and shall as promptly as is responsibly practical, relevant agreement.

CLAUSE 2 **SCOPE OF THE MoU**

2.1 Industrial Training & Visits: Industry and Institution interaction will provide an insight into the latest developments / requirements of the industries; the Second Party to permit the Faculty and Students of the First Party to visit its group companies and also involve in Industrial Training Programs for the First Party. This will provide confidence & smooth transition for students work. Also, the Second party may register on the AICTE Internship Portal for the benefit of students.

2.2 Guest Lectures: Second Party to extend the necessary support to deliver guest lecturers to the students of the First Party on the technology trends and in house requirements.

2.3 Placement of trained students: second party will actively engage to help the delivery of the training and placement of the students of the first party on the technology trends and in house requirements.

2.4 There is no financial commitment on the part of the **Kathir College of Engineering, Coimbatore,** the first party to take up any program mention in MoU. If there is any financial consideration, it will be dealt separately.

2.5 Both Parties to obtain all internal approvals, consents, permissions, and licenses of whatsoever nature required.

CLAUSE 3 **VALIDITY**

3.1 This Agreement will be valid until it is expressly terminated by either Party on mutually agreed terms, during which period, the Second Part.

CLAUSE 4 **RELATIONSHIP BETWEEN THE PARTIES**

5.1 It is expressly agreed that First Party and Second Party are acting under this MOU as independent contractors, and the relationship established under this MOU shall not be construed as a partnership.

4/10/21

First Party

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering,
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

Principal

4/10/21

Second Party

For Amphisoft Technologies Pvt. Ltd

Managing Director, Amphisoft Technologies Private Limited **Director**

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SUNDARAPURAM, COVAI-24.

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MEMORANDUM OF UNDERSTANDING (MoU)

BETWEEN

KATHIR COLLEGE OF ENGINEERING, NEELAMBUR, COIMBATORE 641062

AND

KASADARA TECHNOLOGY SOLUTIONS PRIVATE LIMITED, COIMBATORE 641014

This Memorandum of Understanding (hereinafter called as the 'MoU') is entered into on this the 04 day of October 2021 by and between.

For KASADARA TECHNOLOGY SOLUTIONS PRIVATE LIMITED

AUTHORISED SIGNATORY

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

Kathir College of Engineering, Coimbatore, the First Party represented herein by its **Principal Kathir College of Engineering, Coimbatore**, and **KASADARA TECHNOLOGY SOLUTIONS PRIVATE LIMITED, COIMBATORE**. The Second party, and represented herein by its Managing Director P.Arunkumar

WHEREAS:

A) First Party is a Higher Educational Institution named: **Kathir College of Engineering, Coimbatore**

B) First Party & Second Party believe that collaboration and co-operation between themselves will promote more effective use of each of their resources, and provide each of them with enhanced opportunities.

C) The Parties intent to cooperate and focus their efforts on cooperation within area of Skill Based Training, Education, Placement, Industrial Visit, Expert Lecture.

D) **KASADARA TECHNOLOGY SOLUTIONS PRIVATE LIMITED, COIMBATORE**., - the Second Party is engaged in **IT Product development**

NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL PROMISES SET FORTH IN THIS MOU, THE PARTIES HERETO AGREE AS FOLLOWS:

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2.4 There is no financial commitment on the part of the **Kathir College of Engineering, Coimbatore**, the first party to take up any program mention in MoU. If there is any financial consideration, it will be dealt separately.

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First Party

H/10/24

Principal

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

Second Party

for KASADARA TECHNOLOGY SOLUTIONS PRIVATE LIMITED

AUTHORISED SIGNATORY

Managing Director, Kasadara Technologies

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21/09/21 Kathir College of Engineering Coimbatore

MEMORANDUM OF UNDERSTANDING (MoU)

BETWEEN

KATHIR COLLEGE OF ENGINEERING, NEELAMBUR, COIMBATORE

641062

AND

YOI ROBOTICS LABORATORY, COIMBATORE 641025

This Memorandum of Understanding (hereinafter called as the 'MoU') is entered into on this the 22 day of September 2021 by and between.

22/09/21

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

22/09/21

Kathir College of Engineering, Coimbatore, the First Party represented herein by its **Principal Kathir College of Engineering, Coimbatore**, and **YOI Robotics Laboratory, Coimbatore**. The Second party, and represented herein by its Managing Director **Shri. R. Arun Balaji**

WHEREAS:

A) First Party is a Higher Educational Institution named: **Kathir College of Engineering, Coimbatore**

B) First Party & Second Party believe that collaboration and co-operation between themselves will promote more effective use of each of their resources, and provide each of them with enhanced opportunities.

C) The Parties intent to cooperate and focus their efforts on cooperation within area of Skill Based Training, Education, Placement, Industrial Visit, Expert Lecture.

D) **YOI Robotics Laboratory, Coimbatore**, - the Second Party is engaged in **Product Development in Robotics and Automation**

NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL PROMISES SET FORTH IN THIS MOU, THE PARTIES HERETO AGREE AS FOLLOWS:

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22/9/21

22/09/21

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First Party

22/9/21

Principal/Kathir College of Engineering

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Second Party

22/09/21

Centre Head, YOI Robotics Laboratory

ARUN BALAJI
Chief Executive officer
Yoi Robotics Laboratory
435/B, Opp to Avila Convent,
Thadagam Road, Venkatapuram
Coimbatore - 641 025.

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21/09/21

Kathir College of Engineering. Coimbatore

MEMORANDUM OF UNDERSTANDING (MoU)

BETWEEN

KATHIR COLLEGE OF ENGINEERING, NEELAMBUR, COIMBATORE 641062

AND

CALIBER EMBEDDED TECHNOLOGIES INDIA (P) LTD., SALEM 636 009

This Memorandum of Understanding (hereinafter called as the 'MoU') is entered into on this the 22nd day of September 2021 by and between.

Kathir College of Engineering, Coimbatore, the First Party represented herein by its Principal, Kathir College of Engineering, Coimbatore, and Caliber Embedded Technologies India Private Limited, Salem. The Second party, and represented herein by its Managing Director Shri. Parthiban Manickam

22/9/21

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

WHEREAS:

A) First Party is a Higher Educational Institution named: **Kathir College of Engineering, Coimbatore**

B) First Party & Second Party believe that collaboration and co-operation between themselves will promote more effective use of each of their resources, and provide each of them with enhanced opportunities.

C) The Parties intent to cooperate and focus their efforts on cooperation within area of Skill Based Training, Education, Placement, Industrial Visit, Expert Lecture.

D) **Caliber Embedded Technologies India Private Limited, Salem**, - the Second Party is engaged in **Embedded Product Developments**

NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL PROMISES SET FORTH IN THIS MOU, THE PARTIES HERETO AGREE AS FOLLOWS:

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CLAUSE 2 **SCOPE OF THE MoU**

2.1 Industrial Training & Visits: Industry and Institution interaction will provide an insight into the latest developments / requirements of the industries; the Second Party to permit the Faculty and Students of the First Party to visit its group companies and also involve in Industrial Training Programs for the First Party. This will provide confidence & smooth transition for students work. Also, the Second party may register on the AICTE Internship Portal for the benefit of students.

2.2 Guest Lectures: Second Party to extend the necessary support to deliver guest lecturers to the students of the First Party on the technology trends and in house requirements.

2.3 Placement of trained students: second party will actively engage to help the delivery of the training and placement of the students of the first party on the technology trends and in house requirements.

2.4 There is no financial commitment on the part of the **Kathir College of Engineering, Coimbatore**, the first party to take up any program mention in MoU. If there is any financial consideration, it will be dealt separately.

2.5 Both Parties to obtain all internal approvals, consents, permissions, and licenses of whatsoever nature required.

22/9/21

CLAUSE 3

VALIDITY

3.1 This Agreement will be valid until it is expressly terminated by either Party on mutually agreed terms, during which period, the Second Part.

CLAUSE 4

RELATIONSHIP BETWEEN THE PARTIES

5.1 It is expressly agreed that First Party and Second Party are acting under this MOU as independent contractors, and the relationship established under this MOU shall not be construed as a partnership.

First Party

22/9/21

Principal

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

Second Party

Managing Director, Caliber Embedded Technologies India (P) Limited

தமிழ்நாடு तमिलनाडु TAMIL NADU

00AC 181200

26.04.2022

Kathir College of Engineering
Cbe

N. SUMATHI
STAMP VENDOR
SARAVANAMPATTY,
COIMBATORE - 641 035.
Ref. No: 5409/81/2013

MEMORANDUM OF UNDERSTANDING (MOU)

BETWEEN

KATHIR COLLEGE OF ENGINEERING, NEELAMBUR

COIMBATORE-641062

AND

BETA TECHNOLOGIES INDIA PVT. LTD

COIMBATORE-641012

This MOU is entered between **"Beta Technologies India Pvt. Ltd"** having its registered office at No: 301, Sri Lakshmi Complex, Crosscut Road, Gandhipuram, Coimbatore, Tamil Nadu- 641012, hereinafter called **"Beta Technologies"** arc includes its assigns, legal heirs and successors of Part-I, represented by its MD

PRINCIPAL
Kathir College Of Engineering
Neelambur,
Coimbatore - 641 062.

For BETA TECHNOLOGIES INDIA PVT. LTD

Director

Kathir College of Engineering CBE

KATHIR COLLEGE OF ENGINEERING CBE-62

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

AND

Kathir College of Engineering, having its Registered Office at Wisdom Tree, Neelambur, Coimbatore - 641062, established in 2008, represented by Lamika Educational Trust, a public charitable trust, registered under the Indian Registration Act, hereinafter called the **"INSTITUTION"** interchangeably.

Beta Technologies and Kathir College of Engineering have entered into this agreement exclusively for skill development programs of Central / State governments / private sector and agreed to jointly work with commitment to benefit MSMEs/industries/organizations of Coimbatore region in particular and of the country at large and the details are reduced in to this MOU for reference.

The broad frame work of the agreement is given below:

1. Scope

This agreement is specifically for skill development programs both in government and private sector industries/ organizations subject to eligibility criteria/ terms listed for specific programs.

2. Broad areas of training programs, but not limited to the listed

a. Embedded Systems & IOT
b. PCB Designing & Fabrication
c. Sensor & Drives
d. Robotics
e. VLSI Design
f. Networking
g. Any other Electronics and Communication Engineering related program as and when need arises

3. Role of Kathir College of Engineering, i.e., INSTITUTION

The **"INSTITUTION"** will facilitate and arrange training/ skill development programs to the participants.

For BETA TECHNOLOGIES INDIA PVT. LTD.

Director

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

PRINCIPAL
Kathir College Of Engineering
Neelambur,
Coimbatore - 641 062.

The **"INSTITUTION"** will evaluate & short list the participants on the basis of attitude, working skills and technical knowledge as per the requirement by the company for Industry Projects.

The **"INSTITUTION"** will review the progress and share accomplishments of the participants to **Beta Technologies.**

4. Role of Beta Technologies

Beta Technologies may allow students to undertake Industrial Visit to their firms aimed at building confidence of the participants for smooth transition to professional working environment subject to terms and conditions of Beta Technologies.

Beta Technologies may provide the various skill development/ training programs based solely on the current trends and requirements in Electronics field.

Beta Technologies may assist the INSTITUTION in organizing Joint Venture Programmes like Technical conferences, Seminars, Symposium and student welfare Courses in the institution premises.

Beta Technologies may assist the INSTITUTION in placing the students in their known Industries/ organizations.

Beta Technologies may provide opportunities and inputs to students for doing product development at various industries

5. Monitoring

A steering committee with the mutually agreed constituents will decide policy direction for working together.

The steering committee shall meet periodically to review the progress in the terms contained in this MOU.

Two members of the steering committee, one from the INSTITUTION and one from Beta Technologies will function as its secretaries for the purpose of communication and coordination.

For BETA TECHNOLOGIES INDIA PVT. LTD.

Director

PRINCIPAL
Kathir College Of Engineering
Neelambur,
Coimbatore - 641 062.

KATHIR COLLEGE OF ENGINEERING

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

6. Validity and Termination

This MOU takes effect from **APRIL 26, 2022**and valid for the period of **three years** from the date of signing with option for automatic renewal. Thereafter either party may terminate the MOU by giving to the other party 90 days' notice in writing. In addition, either party may terminate this agreement forthwith if the other party has committed a material breach and failed to remedy the same despite 90 days written notice, but without prejudice to antecedent breaches.

This joint arrangement is aimed at providing facilities and service on mutually beneficial basis, focused towards increasing the employability of the participants.

Read, Understood and Consented

INWITNESS WHEREOF, THE PARTIESH A VEEXECUTED THIS MEMORANDUM OF UNDERSTANDIN GON APRIL 26, 2022 ATCOIMBATORE.

For Beta Technologies

For BETA TECHNOLOGIES INDIA PVT. LTD.

Director

Witness:

1. (K. BOOPATHI RAJA)
2. (B. Saranya devi)

For Kathir College of Engineering

KATHIR COLLEGE OF ENGINEERING * CBE-62 *

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

Kathir College of Engineering * CBE-62 *

PRINCIPAL
Kathir College Of Engineering
Neelambur,
Coimbatore - 641 062.

தமிழ்நாடு तमिलनाडु TAMILNADU

BX 283128

T. KAVITHA
STAMP VENDOR
1/29-A, SAKTHIEASWARNAGAR,
VELLALORE, COIMBATORE
TAMILNADU
REF. No.: 7/23/B1/2008/4

14.12.2019 Kathir College of Engineering CBE

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding Agreement (hereinafter "MoU") is effective from this 16th day of DECEMBER, 2019 (hereinafter, "EFFECTIVE DATE") by and between

INVENIRE, with office located at 4/28 A, Rajalakshmi Nagar, Peelamedu, Coimbatore - 641004, (hereinafter "INVENIRE")

and

KATHIR COLLEGE OF ENGINEERING, having its Registered Office at "Wisdom Tree, Neelambur, Coimbatore - 641062" (hereinafter "INSTITUTION").

Whereas, certain research performed at INSTITUTION resulted in the development of inventions and said INSTITUTION wishes to appoint INVENIRE for the sole purpose of filing the INTELLECTUAL PROPERTY covering the INVENTIONS.

Therefore, in consideration of the mutual obligations set forth below, INVENIRE and INSTITUTION agree as follows:

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62.

INVENIRE
4/28A, Rajalakshmi Nagar,
Lakshmipuram, Peelamedu,
Coimbatore - 641 004.
Ph: 9500 104950

1. INVENIRE shall prepare and file appropriate Indian patent applications covering the INVENTIONS and shall provide to INSTITUTION all serial numbers and filing dates, together with copies of all the applications, including copies of all patent prosecution actions, responses and other communications.

2. INVENIRE shall direct the filing and maintenance of all Indian and foreign patent applications of the INSTITUTION.

3. If the INSTITUTION chooses to file IP applications In India OR in other countries like US or PCT (Patent Cooperation Treaty) applications, then the INSTITUTION shall bear all costs of drafting and filing an IP application and other associated costs.

4. The Applicant(s) of the patent applications shall be 'Institution' or 'Faculty members' or 'Students' of the INSTITUTION.

5. The IP services such as patent search, complete patent specification drafting and forms preparation works shall be done by INVENIRE and the charges for said consultancy service per patent application shall be paid as per Annexure I.

6. The INSTITUTION or the APPLICANT(s) shall pay the 50 % of consultancy charges to commence the work for drafting patent application and remaining 50 % of the payment shall be paid as a Postdated Cheque just before filing. The cheque will be deposited once after filing the patent application in Indian Patent office.

7. The INSTITUTION or the APPLICANT(s) shall pay all the official filing charges for the patent applications filed in India as guided in the First schedule of Indian patent Act 1970 and the Indian patent office. The official fees payable to Patent office are as mentioned in the First Schedule of Indian Patent Act 1970.

8. The other IP services such as Foreign filing, PCT Application filing and other prosecution charges are not covered in this agreement and it shall be decided on particular case.

9. The INSTITUTION OR the APPLICANTS of the INSTITUTION shall strive the Rights to market the IP (patented or non-patented) and identify potential licensee(s) for the IP to which it has ownership and INVENRIE does not involve in its decision.

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62.

INVENIRE
4/28A, Rajalakshmi Nagar,
Lakshmipuram, Peelamedu,
Coimbatore - 641 004.
Ph : 9500484950

10. This AGREEMENT shall be in effect for at least 1 year and then either party may terminate this AGREEMENT for any reason upon at least thirty (30) days written notice to the other party. Nothing herein will be construed to release either party of any obligation matured prior to the effective date of termination, or rescind any payments made or due before termination.

11. INVENIRE and INSTITUTION respectively shall hold in confidence and use only for the purposes of this AGREEMENT any written information regarding the inventions and data supplied by the INSTITUTION to INVENIRE under this AGREEMENT and marked as 'CONFIDENTIAL' using at least the same degree of care as that party uses to protect its own confidential information of a like nature. If confidential information is orally disclosed, the INSTITUTION shall reduce the proprietary information to writing or to some other physically tangible form and deliver it to INVENIRE within Ten (10) days of the oral disclosure, marked and labelled as set forth above. There shall be no liability on the part of any party to the other arising from the termination of this MoU.

12. Other than the patent filing activities contemplated by this MoU Agreement, this Agreement does not confer any right to use any name, trade name, trademark, or other designation of either party to this Agreement (including contraction, abbreviation or simulation of any of the foregoing) in advertising, publicity or other promotional activities.

13. A steering committee shall subsequently be formed to decide policy direction for working together. The steering committee shall meet at least once in a month to review the progress in the terms contained in this MoU. Two of the members of the steering committee, one each from the INSTITUTION and INVENIRE will function as its Secretaries for the purpose of communication and coordination.

14. Neither party will disclose the existence, or the terms and conditions, of this MoU or any information connected with it or any information received from the other or otherwise during the implementation of this MoU or its subsequent amendments, if any, except as may be required by law or on a strictly "need-to-know" basis for the purpose of implementing this MoU, or its subsequent amendments, if any, unless express prior written consent of the other party shall have been obtained in advance.

15. Neither party may use the other's corporate name or any trade mark or name or any other items or assets protected by intellectual property rights, including but not restricted to, use in any promotional material, press releases, advertisements, communications, stationery, web sites, or the like.

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62.

INVENIRE
4/28A, Rajalakshmi Nagar,
Lakshmipuram, Peelamedu,
Coimbatore - 641 004.
Ph : 9502424255

16. It is understood that during the course of this MoU it may be necessary for either party to disclose confidential/proprietary information to the other. The disclosure of any such information or data between the parties shall be made pursuant to an executed Confidentiality Agreement.

Each party acknowledges its acceptance of this MoU Agreement by the signature below on duplicate counterparts of the Agreement, one of which fully executed counterparts is to be retained by each party.

IN WITNESS WHEREOF, the parties hereto have executed this MoU Agreement as of the date first above written.

INSTITUTION

Signature:

PRINCIPAL

PRINCIPAL KATHIR COLLEGE OF ENGINEERING, NEELAMBUR, COIMBATORE-62.

INVENIRE

Signature:

PROPRIETOR

INVENIRE
4/28A, Rajalakshmi Nagar,
Lakshmipuram, Peelamedu,
Coimbatore - 641 004.
Ph : 9500484950

DATE : 16. Dec. 2019

PLACE: COIMBATORE

WITNESS:

1. Dr. A.R. SURESH HOD/Mech

2. HOD/ECE
Dr. M. VARATHARAJ

DEFINITIONS AS USED IN THIS MoU:

a 'Inventor' means faculty, students, staff, Researcher or visiting faculty of the INSTITUTION who has/have written or created a creative work.

b 'Invention' includes but is not limited to any new and useful design, process, formula or machine conceived or first reduced to practice in whole or in part, defined within the purview of the Patent Act. The inventions result in but not limited to Patent, copyright works, software, designs, PCB and circuit layouts. Inventor(s) are person(s) who produce an invention.

c 'Patent' means the exclusive right granted by law for making, using or selling an invention.

d 'Copyright' means the exclusive right granted by law for a certain period of time to an author to reproduce, print, publish and sell copies of his or her creative work.

e 'Design Registration' is Registration of the novel non-functional features such as shape, or ornamentation of a product.

f 'Intellectual Property' includes but is not limited to copyrights and copyrightable materials, database rights, patented and patentable inventions, tangible research results, trademarks, service marks and trade secrets.

g 'PCT Application' A PCT (Patent Cooperation Treaty) is a system of filing a patent application in several countries through a single application keeping the priority of the first filing in any of the countries within the PCT system. This is administered by the World Intellectual Property Organization (WIPO) in Geneva. It is not a patent granting system.

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62.

INVENIRE
4/28A, Rajalakshmi Nagar,
Lakshmipuram, Peelamedu,
Coimbatore - 641 004.
Ph : 9500484950

ANNEXURE – I

I. PATENT SPECIFICATION PREPARATION CHARGES

Work	SCOPE OF WORK	Institution
Patent search	Prior art Patents analysis, Infringement Analysis and Freedom-to-operate analysis including Patent search	5,000
Patent Drafting	Complete Specification Drafting (Background, Existing art, Objectives, Summary, detailed description of Invention, claims and Abstract)	20,000
Drawings	Complete drawings required for patent drafting	2,000
Forms	Forms, Deed and Power of Attorney preparation	2,000
	TOTAL (Rs)	29,000

II. PATENT OFFICE FEES - (If Individual is Applicant - As per First Schedule)

S.NO	SCOPE OF WORK	Filing charges
1.	For Patent filing	1,750
2.	For Request for Publication	2,750
3.	For Request for Examination (e-filing)	4,400
4.	Incidentals	100
	TOTAL (Rs)	9,000

III. PATENT OFFICE FEES - (If Institution is Applicant - As per First Schedule)

S.NO	SCOPE OF WORK	Filing charges (Rs)
1.	For Patent filing	8,800
2.	For Request for Publication	13,750
3.	For Request for Examination (e-filing)	22,000
4.	Incidentals	450
	TOTAL	45,000

NOTE:

1. Additional charges for complete specification (As per Fees schedule of Indian Patent office):
   - Maximum 30 pages. (Each additional page costs Rs. 500 per page for Individuals and Rs. 1,000 per page for Institution)
   - Maximum 10 claims. (Each additional claim costs Rs. 500 per page for Individuals and Rs. 1,000 per page for Institution)
2. The above-mentioned charges are excluding any applicable Taxes including TDS.
3. The Patent office Fee may vary if there is any modification in Government Policies.

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62

INVENIRE
4/28A, Rajalakshmi Nagar,
Lakshmipuram, Peelamedu,
Coimbatore - 641 004.
Ph : 9500484950

COINDIA®

Coimbatore Industrial Infrastructure Association

REF : COINDIA/ETC/GEN/2018-19

2nd January 2019

HAPPY NEW YEAR

Kathir College of Engineering
"Wisdom Tree", Avinashi Road,
Neelambur, Coimbatore - 641062.
kathirce@kathir.ac.in; kathirce@gmail.com

Kind Attn : Founder Chairman,E.S. Kathir / Mr. J. Amos Robert Jayachandran, Dean

Dear Sir,

Sub : **Renewal of MoU** - Reg.
Ref : MoU signed between COINDIA and Kathir College on 05.08.2013

Greetings.

We refer to the Memorandum of Understanding held between COINDIA and Kathir College on 05.08.2013 towards industry and institutions improvement joint initiatives.

The MoU was entered with a validity of 3 years only. Therefore, it is stale as on date. In case if the same is to be renewed, we request you to arrange to renew the same at the earliest, as per mutual consent.

In the unlikely event of we hear nothing from you with respect to renewal of the above MoU **by 21st January 2019**, the MoU between us will be considered as cancelled automatically.

COINDIA, in an effort of Cluster Development, is expecting you to team up with us and your earliest response will be appreciated

With Kind Regards

S. Kuppusamy
President

Contact Person(s) : Mr. R. Vijayanarayana, Head-Training & Development
COINDIA Training Centre
Hand Phone Number : 9597555941
Mail id : training@coindia.in

all mails may be copy marked to info@coindia.in

COINDIA®

Coimbatore Industrial Infrastructure Association

REF : COINDIA/ETC/GEN/2018-19

2nd January 2019

Kathir College of Engineering
"Wisdom Tree", Avinashi Road,
Neelambur, Coimbatore - 641062.
kathirce@kathir.ac.in; kathirce@gmail.com

Kind Attn : Founder Chairman,E.S. Kathir / Mr. J. Amos Robert Jayachandran, Dean

Dear Sir,

Sub : Intimation on Mr.D.Rajaji, Ex-Training Head is no more with COINDIA services

---

Wish you all a Happy New Year.

This is to inform you that Mr.D. Rajaji who was working with COINDIA Training Centre had resigned his job during March 2018, requesting COINDIA to relieve him as he was undergoing health issues. As such COINDIA had relieved him from his duties/position at COINDIA Training Centre from end March 2018.

Subsequently, on the request of Mr.D.Rajaji, COINDIA had considered to engage him as 'Director-Development Initiatives' from May 2018 to support Training Centre activities, on fixed term basis.

Now, the engagement of working as Director-Development Initiatives with COINDIA is closed from 29th December 2018. Hence, he is no longer with our Organization. COINDIA will not be responsible for any such training commitments by Mr. Rajaji under COINDIA banner after the said date.

You may contact the following senior faculty for COINDIA Training activities from now on.

Mr. R. Vijaynarayana, Head-Training & Development
Contact : 095975-55941, Office : 0422-4273775
E- mail : training@coindia.in under copy to info@coindia.in

With kind Regards

S. Kuppusamy
President

SIEMA Buildings II Floor 8/4 Race Course Coimbatore 641 018 Tamilnadu India
Phone 0422 4394128 / 4394227 E-mail info@coindia.in
Website www.coindia.in
GSTIN : 33AAAAC3235G1ZC

भारतीय गैर न्यायिक

बीस रुपये

Rs.20

रु.20

TWENTY RUPEES

भारत

सत्यमेव जयते

INDIA

INDIA NON JUDICIAL

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Principal Kathir College of Engineering, CJC

ந. ஜெயமணி... முத்திரைத் தாள் விற்பனையாளர்
... மாவட்ட நீதி மன்றம்
கோயமுத்தூர், தமிழ்நாடு.
எண் : 14/82/B1/84

MEMORANDUM OF UNDERSTANDING (MoU)

This MoU is entered between "Mech Tech Engg Centre" having its registered office at S.F. No. 2/198-C, Muthalipalayam Privu, M.G. Pudur (PO), Coimbatore - 641 062 hereinafter called **'Mech Tech EC'** and includes its assigns, legal heirs and successors of Part-I, represented by its CEO

AND

Kathir College of Engineering,Coimbatore-641062, established in 2008, represented by Lamika Educational Trust, a public charitable trust, registered under the Indian Registration Act, having its Registered Office at Kathir College of Engineering, Wisdom Tree, Neelambur, Coimbatore-641 062.

'Mech Tech EC' and Kathir College of Engineering have entered into this agreement to their mutual intentions to jointly work on projects required for industries and research work, benefiting MSME's of Coimbatore region and the details are reduced into this MoU for future reference.

PREAMBLE

'Mech Tech EC' and the **INSTITUTION**, which has learned faculty with good industrial experience and promising students, jointly agree to exchange their expertise for mutual benefit and growth, on the areas specified here under:

1. Industrial Visit
2. In plant Training & special training
3. Guest Lectures

PREAMBLE

Mech Tech Engg Centre and the **INSTITUTION**, which has learned faculty with good industrial experience and promising students, jointly agree to exchange their expertise for mutual benefit and growth, on the areas specified here under:

1. Industrial Visit
2. In-plant Training & special training
3. Guest Lecture
4. Project Work
5. Research & Development
6. Problem Solving
7. Studies & Survey
8. Placements
9. Development of Training Programmes to others

Terms Agreed

1. Industrial Visit

Subject to operational feasibility, Mech Tech Engg Centre will facilitate industrial visits for students to provide practical exposure on hi-tech machines and equipments.

2. In-plant Training & special training

Mech Tech Engg Centre will help the students by providing in plant training and arrange for special trainings in CNC machine operations, 3 & 5 axis machines, quality related areas, Tool and Die making (if any) in their facilities to get first hand practical experience. Interested students may have the opportunity to join in value addition programs of Mech Tech Engg Centre for future employment and opportunities.

To facilitate the students, Mech Tech Engg Centre will also conduct onsite training programs to students for knowledge up gradation at a cost mutually agreed upon.

3. Guest Lecture

Mech Tech Engg Centre will facilitate and arrange guest lectures on mutual consent, to students (including students who have joined skill development courses) periodically to get them motivated to become successful entrepreneurs and to pursue career; the Institution will provide expertise and its facilities to Mech Tech Engg Centre. It is agreed to have periodical presentation of papers from the learned faculty members of the Institution and Mech Tech Engg Centre, on mutual consent.

4. Project Work

Mech Tech Engg Centre may provide opportunities to the students of the INSTITUTION to take part in industrial projects aimed at building confidence to the students for smooth transition from academic to a professional working environment subject to terms and conditions on case to case basis.

5. Research & Development

Mech Tech Engg Centre may collaborate with students and faculty members of the INSTITUTION in Research and Development work related in their fields.

6. Problem Solving

Problems identified in thrust areas during the course of interaction between the INSTITUTION and Mech Tech Engg Centre will be addressed through collaborative work and financial modalities will be finalized based on the nature of specific problem resolution.

7. Studies and Survey

Mech Tech Engg Centre may provide opportunities and inputs to the students of the INSTITUTION to undertake field studies and provide inputs for surveys related to the field of management, technology development and marketing.

8. Placements

As and when deemed necessary, Mech Tech Engg Centre may assist the students of the INSTITUTION in getting job placements.

9. Development of Training Programmes to others

As and when the need arises, Mech Tech Engg Centre and the INSTITUTION may develop and deliver the required training modules to the industrial participants and students of other institutes and the terms of which will be worked out on case to case basis.

Monitoring

A steering committee will subsequently be formed to decide policy direction for working together. The steering committee shall meet at least once in six months to review the progress in the terms contained in this MoU. Two of the members of the steering committee, one each from the INSTITUTION and Mech Tech Engg Centre will function as its Secretaries for the purpose of communication and coordination.

Validity and Termination

This MoU takes effect from 20.08.2018 and valid for the period of three years from the date of signing with option for automatic renewal. Thereafter either party may terminate the MoU by giving to the other party 90 days notice in writing. In addition, either party may terminate this agreement forthwith if the other party has committed a material breach and failed to remedy the same despite 14 days written notice, but without prejudice to antecedent breaches.

This joint arrangement is aimed at providing facilities and service on mutually beneficial basis, focused towards increasing the employability of the Students and makes them suitable to pursue their career in industries including Micro Small and Medium Enterprises (MSMEs). While the common facilities are intended for Common Use of Members and others, wherever applicable, any cost will have to be borne by the benefiting students or others. The said cost in the form of fees etc will be finalized upon mutual consent.

Loss of Property and Accidents

In the event of any damage or loss incurred by Mech Tech Engg Centre by reason of allowing students to take up training during the course of training, the students of the INSTITUTION have to reimburse the same on a cost to cost basis and the INSTITUTION will NOT be liable for the same.

Due to improper / negligent acts of Students, if any accident occurs to the students during the training period in whatever nature, Mech Tech Engg Centre will NOT be held responsible or reimburse any of the loss or cost involved to the institution or students and their parents and relatives. The students need to adhere strictly the company rules and regulations. Mech Tech Engg Centre provides the opportunities to the Students to enhance their professional competence and the same need to be used by the students in right earnest by strictly adhering to the company rules and regulations.

Read, Understood and Consented

IN WITNESS WHEREOF, THE PARTIES HAVE EXECUTED THIS MEMORANDUM OF UNDERSTANDING ON 20.08.2018 AT COIMBATORE.

For Mech Tech Engg Centre

For MECH TECH Engg Centre

CEO

For Kathir College of Engineering

Principal

PRINCIPAL
Kathir College Of Engineering
Neelambur,
Coimbatore - 641 062.

Witness

1. Dr. A R SURESH

2. P. RAVIKUMAR

भारतीय गैर न्यायिक

बीस रुपये भारत Rs.20

रु.20 TWENTY RUPEES

सत्यमेव जयते

INDIA

INDIA NON JUDICIAL

Rs20/-

தமிழ்நாடு तमिलनाडु TAMIL NADU

42AB 832229

max cadd
CBE

10550
02.08.17

V. RADHAMANI
VENDOR
L.No : 7833 / B1 /2016

MEMORANDUM OF UNDERSTANDING (MoU)

This MoU is entered between **MaXCADD ,** having its Registered Office at , 409C Dev Regnanat, 1st Floor Crosscut Road ,Gandhipuram ,Coimbatore -641 102, hereinafter represented by its Director Mr.Harish.P

AND

Kathir College of Engineering ,Coimbatore-641062, hereinafter referred as **INSTITUTION** established in 2008, an education institution administered by Lamika Educational and charitable Trust, a public charitable trust, registered under the Indian Registration Act, having its Registered Office at Neelambur, Avinashi Road,Coimbatore-641062.

MaXCADD and the **INSTITUTION** have entered into this agreement to their mutual intentions to jointly work on projects required for industries and research work, benefiting the students and the industries. The details of the **MoU** are given below.

MAX CADD
Dev Regnant 1st Floor
No. 409-C, Cross Cut Road
(Opp to Josco)
Gandhipuram Coimbatore-4. 012

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING
NEELAMBUR,
COIMBATORE-62.

PREAMBLE

MaXCADD and the **INSTITUTION** which has learned faculty with good experience and promising students, jointly agree to exchange their expertise for mutual benefit and growth, on the areas specified here under:

1. Software Training
2. Industrial Visit
3. In plant Training & Special training
4. Guest Lectures
5. Research & Development
6. Problem Solving & Consultancy
7. Studies & Survey
8. Project related activities
9. Placement Assistance/Assurance

Terms Agreed

1. Software Training

MaXCADD will provide software training to the students on latest software's including AutoCAD, Solid works, CATIA, Pro-Engineer Wildfire, Uni graphics, Solid Edge ,Master CAM, Ansys, Nastran for knowledge up gradation at a cost as mutually agreed upon.

2. Industrial Visit

Subject to operational feasibility, **MaXCADD** will facilitate industrial visits for the students to gain practical exposure on hi-tech machines and equipments.

3. In-plant Training & Certificate and other necessary training

MaXCADD will help the students to undertake in-plant training and allow them to gain industrial experience. Interested students may have to join in PG Diploma courses of **MaXCADD** and Projects for future employment and opportunities.

4. Guest Lecture

MaXCADD will arrange guest lectures on mutual consent to students periodically to get them motivated to become successful career in industries and to become entrepreneurs. It is agreed to have periodical presentation of technical papers from the learned faculty members of the Institution and **MaXCADD**, on mutual consent.

MAX CADD
Dev Regnant 1st Floor
No. 409-C, Cross Cut Road
(Opp to Josco)
Gandhipuram Coimbatore-641 012
Tel: 077080 833 5[illegible]6

..2..

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62.

This joint arrangement is aimed at providing facilities and service on mutually beneficial basis, focused towards increasing the employability of the Students and makes them suitable to serve Micro Small and Medium Enterprises (MSMEs). While these common facilities of **MaXCADD** are intended for Common Use of Members, wherever applicable, any cost will have to be borne by the benefiting students. The said cost in the form of fees etc will be finalized by **MaXCADD** & the Institution upon mutual consent.

To the benefit of the students the Institution may utilize the services of **MaXCADD** in the outbound learning and training related activities. In the event of any damage or loss incurred by **MaXCADD** by reason of allowing students to take up training during the course of training, the students will be wholly responsible for it.

Read, Understood and Consented

IN WITNESS WHEREOF, THE PARTIES HAVE EXECUTED THIS MEMORANDUM OF UNDERSTANDING ON 07.08.2017, AT COIMBATORE.

For

Director

MAX CADD
Dev Regnant Ist Floor
No. 409-C, Cross -ul Road
(Opp to Josco)
Gandhipuram, Coimbatore-641 012
Tel: 077080 83315/16

Witness:

1) GANESH.V

2) P.RAVIKUMAR

Principal

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62.

5. Research & Development

MaXCADD may allow students and faculty members of the INSTITUTION for Research and Development work related in their fields.

6. Problem Solving

Industrial problems identified in thrust areas during the course of interaction between the INSTITUTION and **MaXCADD**, will be addressed through collaborative work between the INSTITUTION and **MaXCADD** for further research and consultancy activities.

7. Studies and Survey

MaXCADD may provide opportunities and inputs to the students of the INSTITUTION to undertake field studies and provide inputs for surveys related to the field of management, technology development and marketing.

8. Project related activities

MaXCADD will facilitate industrial projects and related activities in emerging engineering and technological domain.

9. Placements

As and when deemed necessary, **MaXCADD** may assist the students of the INSTITUTION in getting job placements.

Monitoring

A steering committee will subsequently be formed to decide policy direction for working together. The steering committee shall meet at least once in six months to review the progress in the terms contained in this MoU. Two of the members of the steering committee, one each from the INSTITUTION and **MaXCADD** will function as its Secretaries for the purpose of communication and coordination.

Validity and Termination

This MoU takes effect from August 07, 2017 and valid for the period of three years from the date of signing with option for automatic renewal. Thereafter either party may terminate the MoU by giving to the other party 90 days notice in writing. In addition, either party may terminate this agreement forthwith if the other party has committed a material breach and failed to remedy the same despite 14 days written notice, but without prejudice to antecedent breaches.

MAX CADD
Dev Regaal 1st Floor
No. 408-C, Cross Cut Road
(Opp to Jaico)
Gandhipuram, Coimbatore-641 012
Tel: 077 [illegible] 5116

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62.

தமிழ்நாடு तमिलनाडु TAMILNADU 51AB 331848

R.SHANTHI
STAMP VENDOR
L.No: 7323/B1/2008/36
12/123, MUTHALIAR STREET
SUNDARAPURAM, COVAI-24.

19/4/ Kathir College of Engineering. Coimbatore
14.12.17

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding **(MoU)** entered into and executed at Coimbatore on 21.12.2017.

BETWEEN

M/s. Sree Saradhambal Automobiles private limited (hereinafter referred to as "**SSA**"), having its office at Iyer hospital premises, Trichy road, Singanallur, Coimbatore-641005 represented by its Training Manager **Mr. K.B.Sibimon,**

AND

KATHIR COLLEGE OF ENGINEERING (hereinafter referred to as "**KCE**"), is an educational institute established in 2008, represented by Lamika Educational and Charitable Trust, registered under the Indian Registration Act, having its registered office at SF.No.806 Kathir College of Engineering, Wisdom Tree, Neelambur,Coimbatore-641062 represented by its Principal, **Dr. P. Banumathi.**

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62

WHEREAS

SSA is an authorized dealer for M/s Maruti Suzuki India Ltd, Gurugram India. SSA is involved in sales and servicing of cars having offices in Coimbatore, Erode and Namakkal districts of Tamilnadu, India. SSA was established in the year 1998 and it has a work force of about 1700 employees. An exclusive training division is eventually established by SSA to impart and update technical knowledge to the participants of training session so that they could provide best quality of service to their customers.

AND WHEREAS

KCE is a well established institution at Coimbatore, has their faculty having technical expertise/core competence from different technical disciplines namely, Mechanical Engineering, Civil Engineering, Computer Science and Engineering, Electrical and Electronics Engineering, Electronics and Communication Engineering, and Master of Business Administration. KCE is willing to provide its faculty and infrastructure belonging to Department of Mechanical Engineering for doing R & D work in a mutually agreed time frame.

KCE has a vision to bridge the Industry – Institute gap, to increase the employability of the students, to make them meet the expectations of the industry and prepare the budding engineers for a successful career.

The parties herein now intend to enter into this MoU to facilitate the above objectives for their mutual benefit and the society at large.

NOW THEREFORE THE PARTIES HEREIN REDUCE INTO WRITING THEIR RESPECTIVE OBJECTIVES AND THE STRUCTURE AND FUNCTIONING OF THIS UNDERSTANDING.

I. AIMS AND OBJECTIVES

SSA hopes to develop a unique collaboration with KCE, which would be long-lasting and beneficial to both.

Following are the objectives of this MoU:

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62.

a. SSA (Academic teaching division) shall provide to KCE, the technical resource persons with accompanying tutorials and demo material for teaching the students in the Department Mechanical Engineering.

b. Teaching being the core competency of academic institution, KCE wishes to provide the students with high-end training concerning core engineering concepts through various seminars and webinars.

c. Both parties agree mutually to carry works in basic engineering and applied research with the involvement of the students.

II Resource deployment by KCE

i) KCE hereby agrees to provide its faculty having expertise in the field of engineering for the works carried jointly with SSA in the following areas:-

1. Computational Fluid Dynamics.
2. Heat Transfer.
3. 3D Modeling and Aerodynamics.

ii) KCE shall assign a faculty member from Department of Mechanical Engineering who will be responsible for interaction, correspondence with SSA towards successful achievement of the aims and objectives of this MoU in a mutually agreed time frame.

iii) KCE further agrees to provide their students for market survey and feasibility study analysis work etc., to connect with the Industry in mutually agreed time frame.

iv) KCE will provide their expertise in finding solutions for various problems faced by the SSA.

v) KCE will permit the SSA to utilize their library facilities.

III Resource deployment by SSA

i) SSA will facilitate the students to undertake in plant training and allow them to get first hand practical experience. SSA may admit interested students to join the courses of SSA and projects, for future employment and opportunities.

ii) SSA is committed to collaborate with KCE to increase and developing the technical knowledge and skills of the students through guest lectures, workshops and training.

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62.

IV SSA AND KCE HAVE FURTHER AGREES AS FOLLOWS.

KCE shall assure that the designated faculty members posses the knowledge and technical expertise to coordinate and execute the aims and objectives listed in the MoU.

SSA assures to give the technical inputs and support to the students of KCE in improving their technical and managerial activities.

SSA will collaborate with KCE and its faculty for physical model validation either by theoretical or experimental analysis as a part of joint consultancy works.

SSA may also involve the services of the faculty of KCE for verification or quality assurance of the results obtained in any industrial projects anywhere in the world through mutually agreed conditions.

SSA wishes to form a long-term relationship with faculty members of KCE to engage in high-end training. The training courseware will be built by both of the parties for the knowledge up-gradation of students and participants from industry.

V DURATION OF THIS MOU

It is agreed by KCE and SSA that the terms of this MoU shall be in force for a period of **Three years** from the date signed, which may on mutual consent be extended for further periods with or without modifications to this MoU.

VI TERMINATION

This MoU may be terminated by either party, upon providing the other an advance notice of three months.

This MoU may be termed as terminated upon non-receipt of renewal request from either party after its tenure.

However, the parties hereto agree that this MoU shall be immediately terminated upon either party in case of breaching any of the conditions of this MoU and being unable to rectify the same within a reasonable period from the date of notice.

21/12/12

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62.

IN WITNESS THEREOF THE PARTIES HERETO HAVE AFFIXED THEIR SIGNATURES TO THIS AGREEMENT ON 21.12.2017, AT COIMBATORE.

For M/s. Sree Saradhambal Automobiles private limited.
Mr. K.B.Sibimon
Training Manager,
Iyer Hospital Premises
Trichy road, Singanallur,
Coimbatore 641005.

For M/s. Kathir College of Engineering
Dr. P. Banumathi
Principal,
Kathir College of Engineering,
Neelambur,
Coimbatore - 641062

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62.

WITNESSES

1.

2.

1. (E. KRISHNAKUMAR)

2. (T.PRADEEP)

தமிழ்நாடு तमिलनाडु TAMILNADU 51AB 331847

R.SHANTHI
STAMP VENDOR
L.No: 7323/B1/2008/36
12/123, MUTHALIAR STREET
SUNDARAPURAM, COVAI-24.

19140
14-12-17

Kathir College of Engineering Coimbatore

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding **(MoU)** entered into and executed at Coimbatore on 21.12.2017.

BETWEEN

M/s. Sree Saradhambal Automobiles private limited (hereinafter referred to as "**SSA**"), having its office at Iyer hospital premises, Trichy road, Singanallur, Coimbatore-641005 represented by its Training Manager **Mr. K.B.Sibimon,**

AND

KATHIR COLLEGE OF ENGINEERING (hereinafter referred to as "**KCE**"), is an educational institute established in 2008, represented by Lamika Educational and Charitable Trust, registered under the Indian Registration Act, having its registered office at SF.No.806 Kathir College of Engineering, Wisdom Tree, Neelambur,Coimbatore-641062 represented by its Principal, **Dr. P. Banumathi.**

21/12/17

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE

WHEREAS

SSA is an authorized dealer for M/s Maruti Suzuki India Ltd, Gurugram India. SSA is involved in sales and servicing of cars having offices in Coimbatore, Erode and Namakkal districts of Tamilnadu, India. SSA was established in the year 1998 and it has a work force of about 1700 employees. An exclusive training division is eventually established by SSA to impart and update technical knowledge to the participants of training session so that they could provide best quality of service to their customers.

AND WHEREAS

KCE is a well established institution at Coimbatore, has their faculty having technical expertise/core competence from different technical disciplines namely, Mechanical Engineering, Civil Engineering, Computer Science and Engineering, Electrical and Electronics Engineering, Electronics and Communication Engineering, and Master of Business Administration. KCE is willing to provide its faculty and infrastructure belonging to Department of Mechanical Engineering for doing R & D work in a mutually agreed time frame.

KCE has a vision to bridge the Industry – Institute gap, to increase the employability of the students, to make them meet the expectations of the industry and prepare the budding engineers for a successful career.

The parties herein now intend to enter into this MoU to facilitate the above objectives for their mutual benefit and the society at large.

NOW THEREFORE THE PARTIES HEREIN REDUCE INTO WRITING THEIR RESPECTIVE OBJECTIVES AND THE STRUCTURE AND FUNCTIONING OF THIS UNDERSTANDING.

I. AIMS AND OBJECTIVES

SSA hopes to develop a unique collaboration with KCE, which would be long-lasting and beneficial to both.

Following are the objectives of this MoU:

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62

a. SSA (Academic teaching division) shall provide to KCE, the technical resource persons with accompanying tutorials and demo material for teaching the students in the Department Mechanical Engineering.

b. Teaching being the core competency of academic institution, KCE wishes to provide the students with high-end training concerning core engineering concepts through various seminars and webinars.

c. Both parties agree mutually to carry works in basic engineering and applied research with the involvement of the students.

II Resource deployment by KCE

i) KCE hereby agrees to provide its faculty having expertise in the field of engineering for the works carried jointly with SSA in the following areas:-

1. Computational Fluid Dynamics.
2. Heat Transfer.
3. 3D Modeling and Aerodynamics.

ii) KCE shall assign a faculty member from Department of Mechanical Engineering who will be responsible for interaction, correspondence with SSA towards successful achievement of the aims and objectives of this MoU in a mutually agreed time frame.

iii) KCE further agrees to provide their students for market survey and feasibility study analysis work etc., to connect with the Industry in mutually agreed time frame.

iv) KCE will provide their expertise in finding solutions for various problems faced by the SSA.

v) KCE will permit the SSA to utilize their library facilities.

III Resource deployment by SSA

i) SSA will facilitate the students to undertake in plant training and allow them to get first hand practical experience. SSA may admit interested students to join the courses of SSA and projects, for future employment and opportunities.

ii) SSA is committed to collaborate with KCE to increase and developing the technical knowledge and skills of the students through guest lectures, workshops and training.

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62

21/12/12

IV SSA AND KCE HAVE FURTHER AGREES AS FOLLOWS.

KCE shall assure that the designated faculty members posses the knowledge and technical expertise to coordinate and execute the aims and objectives listed in the MoU.

SSA assures to give the technical inputs and support to the students of KCE in improving their technical and managerial activities.

SSA will collaborate with KCE and its faculty for physical model validation either by theoretical or experimental analysis as a part of joint consultancy works.

SSA may also involve the services of the faculty of KCE for verification or quality assurance of the results obtained in any industrial projects anywhere in the world through mutually agreed conditions.

SSA wishes to form a long-term relationship with faculty members of KCE to engage in high-end training. The training courseware will be built by both of the parties for the knowledge up-gradation of students and participants from industry.

V DURATION OF THIS MOU

It is agreed by KCE and SSA that the terms of this MoU shall be in force for a period of **Three years** from the date signed, which may on mutual consent be extended for further periods with or without modifications to this MoU.

VI TERMINATION

This MoU may be terminated by either party, upon providing the other an advance notice of three months.

This MoU may be termed as terminated upon non-receipt of renewal request from either party after its tenure.

However, the parties hereto agree that this MoU shall be immediately terminated upon either party in case of breaching any of the conditions of this MoU and being unable to rectify the same within a reasonable period from the date of notice.

21/12/15

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62.

IN WITNESS THEREOF THE PARTIES HERETO HAVE AFFIXED THEIR SIGNATURES TO THIS AGREEMENT ON 21.12.2017, AT COIMBATORE.

For M/s. Sree Saradhambal Automobiles private limited.
Mr. K.B.Sibimon
Training Manager,
Iyer Hospital Premises
Trichy road, Singanallur,
Coimbatore 641005.

21/12/17

For M/s. Kathir College of Engineering
Dr. P. Banumathi
Principal,
Kathir College of Engineering,
Neelambur,
Coimbatore - 641062

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING
NEELAMBUR,
COIMBATORE-62.

WITNESSES

1.

2.

1. E. Krishna 21/12/17
E. KRUSHNAKUMAR

2. 21/12/17
(T. PRADEEP)

தமிழ்நாடு TAMIL NADU

THE PRINCIPAL, KCE
COIMBATORE-06 L.

31AB 028653

61456
5.8.2016

MEMORANDUM OF UNDERSTANDING (MoU)

This MoU is entered between **SS Technovation,** having its Registered Office at SS technovation, 7 th Street ,GES Complex ,Gandhipuram ,Coimbatore -641 102, hereinafter called **'SST'** and includes its assigns, legal heirs and successors of Part-I, represented by its Technical Head Mr. T. Suresh and Corporate Project Head Mr. R. Mohan kumar

AND

Kathir College of Engineering, Neelambur, Coimbatore-641062, established in 2008, hereinafter called 'Institution' represented by Lamika Educational Trust, a public charitable trust, registered under the Indian Registration Act, having its Registered Office at Neelambur, Avinashi Road,Coimbatore-641062 .

07/09/16

SST and **Institution** - have entered into this agreement to their mutual intentions to jointly work on projects required for industries and research work, benefiting MSME's of Coimbatore region and the details are reduced into this MoU for future reference.

PREAMBLE

SST and the **INSTITUTION**, which has learned faculty with good industrial experience and promising students, jointly agree to exchange their expertise for mutual benefit and growth, on the areas specified here under:

1. Industrial Visit
2. In plant Training & Training on advanced technologies
3. Guest Lectures
4. Project Work - Assistance
5. Research & Development
6. Problem Solving
7. Technical studies & Survey
8. Placement assistance

Terms Agreed

1. Industrial Visit

Subject to operational feasibility, SST will allow students for industrial visits for the benefit of practical exposure on hi-tech machines and equipments.

2. In-plant Training & Training on advanced technologies

SST will facilitate the students to undertake in plant training and allow them for special trainings in FANUC CNC machine operations, Robotics, 3 & 5 axis machines, quality related areas, Tool and Die making (if any) in their facilities to get first hand practical experience. Interested students may have to join in PG Diploma courses of SST and Projects for future employment and opportunities.

To facilitate the students, SST will also conduct onsite training using softwares like AutoCAD, Creo-2.0,Catia , Solid Works, Unigraphics NX, Solid Works, MasterCAM, Ansys for knowledge upgradation at a cost as mutually agreed upon.

3. Guest Lectures

SST will facilitate and arrange guest lectures on mutual consent, to students periodically to get them motivated to become successful entrepreneurs and vice versa; the Institution will provide expertise and its facilities to SST. It is agreed to have periodical presentation of papers from the learned faculty members of the Institution and SST, on mutual consent.

4. Project Work

SST may allow students of the INSTITUTION for live project works aimed at building confidence to get prepared for smooth transition from academic to a professional working environment subject to basic fees to be paid by students.

5. Research & Development

SST may allow students and faculty members of the INSTITUTION for Research and Development work related in their fields.

6. Problem Solving

Problems identified in thrust areas during the course of interaction between the INSTITUTION and SST, will be addressed through collaborative work between the INSTITUTION and SST for further research and problem solving.

7. Studies and Survey

SST may provide opportunities and inputs to the students of the INSTITUTION to undertake field studies and provide inputs for surveys related to the field of management, technology development and marketing.

8. Placements

As and when deemed necessary, SST may assist the students of the INSTITUTION in getting job placements.

Monitoring

A steering committee will subsequently be formed to decide policy direction for working together. The steering committee shall meet at least once in six months to review the progress in the terms contained in this MoU. Two of the members of the steering committee, one each from the INSTITUTION and SST will function as its Secretaries for the purpose of communication and coordination.

Validity and Termination

This MoU takes effect from 07.09.2016 and valid for the period of Five years from the date of signing with option for automatic renewal. Thereafter either party may terminate the MoU by giving to the other party 90 days notice in writing. In addition, either party may terminate this agreement forthwith if the other party has committed a material breach and failed to remedy the same despite 14 days written notice, but without prejudice to antecedent breaches.

This joint arrangement is aimed at providing facilities and service on mutually beneficial basis, focused towards increasing the employability of the Students and makes them suitable to serve Micro Small and Medium Enterprises (MSMEs) of this region. While these common facilities of SST is intended for Common Use of Members and others, wherever applicable, any cost will have to be borne by the benefiting students or others. The said cost in the form of fees etc will be finalized by SST upon mutual consent.

The Institution is to ensure that the students are such people aimed to get benefited and the Institution has to give priority to SST in the routine outbound learning and training related activities. In the event of any damage or loss incurred by SST by reason of allowing students to take up training during the course of training, the same has to be reimbursed on a cost to cost basis by the Institution.

Read, Understood and Consented

IN WITNESS WHEREOF, THE PARTIES HAVE EXECUTED THIS MEMORANDUM OF UNDERSTANDING ON 07.09.2016, AT COIMBATORE.

For SST

1. **Mr. T. Suresh**
   Technical Head

2. **Mr. R. Mohan kumar**
   Corporate Project Head

SS TECHNOVATION
No.401, Ges Complex
7th Street, Gandhipuram,
Coimbatore - 641 012

For Institution

The Principal
Kathir College of Engineering
Coimbatore-641062

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62.

Witness:

1) HEAD OF THE DEPARTMENT
DEPARTMENT OF MECHANICAL ENGG
KATHIR COLLEGE OF ENGINEERING
Neelambur, Coimbatore - 641062

2)

தமிழ்நாடு तमिलनाडु TAMIL NADU 62

32AB 263042

14907/ 29.11.2016

KATHIR COLLEGE OF ENGINEERING, CBE-62.

உ.எண் : 3770/G/86
ஆர்.கே. முத்துசாமி,
முத்திரைத்தாள் விற்பனையாளர்
இராசியபுரம், நாமக்கல் Dt., தமிழ்நாடு

MOU signed between Kathir Institutions, Coimbatore and International Society for Research and Development

This MoU is entered between "International Society for Research and Development" having its registered office at " **7 Sector, 6B Sanpada, Navi Mumbai-400 705** " hereinafter called **'ISRD'** and includes its assigns, legal heirs and successors of Part-I, represented by its CEO

AND

Kathir Institutions which includes Kathir College of Engineering,Coimbatore-641062, established in 2008, represented by Lamika Educational Trust, a public charitable trust, registered under the Indian Registration Act, having its Registered Office at Kathir College of Engineering, Wisdom Tree,Neelambur,Coimbatore-641 062.

For ISRD

Executive

S.BHARATH

16.12.16

P. MURTHI

PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62.

தமிழ்நாடு तमिलनाडु TAMIL NADU

32AB 256988

14906/29.11.2016

KATHIR COLLEGE OF ENGINEERING, CBE-62

Kathir College of Engineering, Coimbatore has entered into a Memorandum of Understanding (MoU) with International Society for Research and Development for promoting and reinforcing cooperation, mutual exchange of Information and Technological know- how, joint collaborative work in R&D activities, improvement of research activities and academic events like conferences/workshops/seminars, exchange of experts & researchers and publication in Journals.

Mutual Understanding

Based on the discussions and mutual agreement, both the parties agree to work together to achieve the following objectives:

1. Parties understand and acknowledge that they are making a significant commitment to this collaborative effort. Accordingly, parties agree to expand their best efforts on their implementation and successful continuation of the said venture.

For ISRD

Executive.

S. BHARATH

P. MURTH

PRINCIPAL

KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62.

2. To exchange the technical ideas through Conferences, workshops, seminars, etc., for dissemination of knowledge.

3. To develop a relation between professional associations and Academic/ educational institutes to upkeep knowledge and advancements in emerging fields.

4. To support the institute in Publication activities.

5. To facilitate industries to derive advantages in the field of Engineering, Technology, Management and Marketing by involving services of students through project and Internship.

6. To enlist the Speakers from industries / academic for all seminars / workshops / conferences organized by both parties.

7. Both parties agree to use their logo in the events jointly organized in the certificates and advertising media.

8. To constitute a steering committee which will monitor the activities and appraise the developments to their management and the staff.

9. ISRD agrees to provide some percentage discount to the staff of Kathir guest in the registration fees for the events conducted jointly by ISRD elsewhere, and agrees to provide advance information of such events by email.

10. This MoU takes effect from (16.12.2016) and valid for the period of four years from the date of signing with option for automatic renewal. Thereafter, either party may terminate the MoU by giving to the other party 90 days notice in writing. In addition, either party may terminate this agreement forthwith if the other party has committed a material breach and failed to remedy the same despite 14 days written notice, but without prejudice to antecedent breaches.

Read, Understood and Consented

IN WITNESS WHEREOF, THE PARTIES HAVE EXECUTED THIS MEMORANDUM OF UNDERSTANDING ON (16.12.2016) AT COIMBATORE.

For ISRD

S. BHARATH

Executive Head
South Zone

For Kathir College of Engineering

P. MURTHI

Principal
PRINCIPAL
KATHIR COLLEGE OF ENGINEERING,
NEELAMBUR,
COIMBATORE-62.

For and behalf of kathir college of Engineering and ISRD

Name of Person concerned
Affiliation
Kathir College of Engineering, Coimbatore

ISRD - Technical Lead
South Zone

Witness

1. 16.12.16
HEAD OF THE DEPARTMENT
DEPARTMENT OF MECHANICAL ENGG
KATHIR COLLEGE OF ENGINEERING
Neelambur Coimbatore - 641062

2. FOR ISR...
Executive
K. G. SIVA CHANDRAN

தமிழ்நாடு तमिलनाडु TAMIL NADU 93AB 406706

R.SHANTHI
STAMP VENDOR
L.No: 7323/B1/2008/36
12/123, MUTHALIAR STREET
SUNDARAPURAM, COVAI-24.

21/09/21 Kathir College of Engineering Coimbatore

MEMORANDUM OF UNDERSTANDING (MoU)

BETWEEN

KATHIR COLLEGE OF ENGINEERING, NEELAMBUR, COIMBATORE 641062

AND

ZENGAGE TECHNOLOGIES, COIMBATORE 641035

This Memorandum of Understanding (hereinafter called as the 'MoU') is entered into on this the 22 day of September 2021 by and between.

For ZENGAGE TECHNOLOGIES

22/9/21

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

Kathir College of Engineering, Coimbatore, the First Party represented herein by its **Principal Kathir College of Engineering, Coimbatore**, and **Zengage Technologies, Coimbatore**. The Second party, and represented herein by its Proprietor **Shri. M Prabhu**

WHEREAS:

A) First Party is a Higher Educational Institution named: **Kathir College of Engineering, Coimbatore**

B) First Party & Second Party believe that collaboration and co-operation between themselves will promote more effective use of each of their resources, and provide each of them with enhanced opportunities.

C) The Parties intent to cooperate and focus their efforts on cooperation within area of Skill Based Training, Education, Placement, Industrial Visit, Expert Lecture.

D) **Zengage Technologies, Coimbatore**, - the Second Party is engaged in **IT and ITES Services**

NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL PROMISES SET FORTH IN THIS MOU, THE PARTIES HERETO AGREE AS FOLLOWS:

CLAUSE 1 **CO-OPERATION**

1.1 Both Parties are united by common interests and objectives, and they shall establish co-operation.

1.2 First Party and Second Party co-operation will facilitate effective utilization of the intellectual capabilities.

1.3 The parties shall co-operate with each other and shall as promptly as is responsibly practical, relevant agreement.

CLAUSE 2 **SCOPE OF THE MoU**

2.1 Industrial Training & Visits: Industry and Institution interaction will provide an insight into the latest developments / requirements of the industries; the Second Party to permit the Faculty and Students of the First Party to visit its group companies and also involve in Industrial Training Programs for the First Party. This will provide confidence & smooth transition for students work. Also, the Second party may register on the AICTE Internship Portal for the benefit of students.

2.2 Guest Lectures: Second Party to extend the necessary support to deliver guest lecturers to the students of the First Party on the technology trends and in house requirements.

2.3 Placement of trained students: second party will actively engage to help the delivery of the training and placement of the students of the first party on the technology trends and in house requirements.

For ZENGAGE TECHNOLOGIES

22/9/21

2.4 There is no financial commitment on the part of the **Kathir College of Engineering, Coimbatore**, the first party to take up any program mention in MoU. If there is any financial consideration, it will be dealt separately.

2.5 Both Parties to obtain all internal approvals, consents, permissions, and licenses of whatsoever nature required.

CLAUSE 3 **VALIDITY**

3.1 This Agreement will be valid until it is expressly terminated by either Party on mutually agreed terms, during which period, the Second Part.

CLAUSE 4 **RELATIONSHIP BETWEEN THE PARTIES**

5.1 It is expressly agreed that First Party and Second Party are acting under this MOU as independent contractors, and the relationship established under this MOU shall not be construed as a partnership.

First Party

22/9/21

Principal

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

Second Party

For ZENGAGE TECHNOLOGIES

Proprietor, Zengage Technologies

தமிழ்நாடு तमिलनाडु TAMIL NADU 93AB 406707

R SHANTHI
STAMP VENDOR
L.No: 7323/B1/2008/36
12/123, MUTHALIAR STREET
SUNDARAPURAM, COVAI-24

21/09/21 Kathir College of Engineering Coimbatore

MEMORANDUM OF UNDERSTANDING (MoU)

BETWEEN

KATHIR COLLEGE OF ENGINEERING, NEELAMBUR, COIMBATORE 641062

AND

RAVAAN TECHNOLOGIES (P) LTD., COIMBATORE 641062

This Memorandum of Understanding (hereinafter called as the 'MoU') is entered into on this the 22 day of September 2021 by and between.

22/9/21 Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

Ravaan Technologies
Kathir IT Park, Neelambur
Coimbatore - 641062

Kathir College of Engineering, Coimbatore, the First Party represented herein by its **Principal Kathir College of Engineering, Coimbatore**, and **Ravaan Technologies Private Limited, Coimbatore**. The Second party, and represented herein by its Director **Shrimathi. R Shobana**

WHEREAS:

A) First Party is a Higher Educational Institution named: **Kathir College of Engineering, Coimbatore**

B) First Party & Second Party believe that collaboration and co-operation between themselves will promote more effective use of each of their resources, and provide each of them with enhanced opportunities.

C) The Parties intent to cooperate and focus their efforts on cooperation within area of Skill Based Training, Education, Placement, Industrial Visit, Expert Lecture.

D) **Ravaan Technologies Private Limited, Coimbatore**, - the Second Party is engaged in **Software and Service**

NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL PROMISES SET FORTH IN THIS MOU, THE PARTIES HERETO AGREE AS FOLLOWS:

CLAUSE 1 **CO-OPERATION**

1.1 Both Parties are united by common interests and objectives, and they shall establish co-operation.

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CLAUSE 2 **SCOPE OF THE MoU**

2.1 Industrial Training & Visits: Industry and Institution interaction will provide an insight into the latest developments / requirements of the industries; the Second Party to permit the Faculty and Students of the First Party to visit its group companies and also involve in Industrial Training Programs for the First Party. This will provide confidence & smooth transition for students work. Also, the Second party may register on the AICTE Internship Portal for the benefit of students.

2.2 Guest Lectures: Second Party to extend the necessary support to deliver guest lecturers to the students of the First Party on the technology trends and in house requirements.

2.3 Placement of trained students: second party will actively engage to help the delivery of the training and placement of the students of the first party on the technology trends and in house requirements.

22/9/21

Ravaan Technologies
Kathir IT Park, Neelambur
Coimbatore - 641062

2.4 There is no financial commitment on the part of the **Kathir College of Engineering, Coimbatore**, the first party to take up any program mention in MoU. If there is any financial consideration, it will be dealt separately.

2.5 Both Parties to obtain all internal approvals, consents, permissions, and licenses of whatsoever nature required.

CLAUSE 3 **VALIDITY**

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5.1 It is expressly agreed that First Party and Second Party are acting under this MOU as independent contractors, and the relationship established under this MOU shall not be construed as a partnership.

First Party

22/9/21

Principal

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

Second Party

Director, Ravaan Technologies India (P) Limited

Ravaan Technologies
Kathir IT Park, Neelambur
Coimbatore - 641062

தமிழ்நாடு तमिलनाडु TAMIL NADU 93AB 406705

R.SHANTHI
STAMP VENDOR
L.No: 7323/B1/2008/36
72/123, MUTHALIAR STREET
SUNDARAPURAM, COVAI-24.

21/09/21 Kathir College of Engineering Coimbatore

MEMORANDUM OF UNDERSTANDING (MoU)

BETWEEN

KATHIR COLLEGE OF ENGINEERING, NEELAMBUR, COIMBATORE 641062

AND

AURA HR SOLUTION (P) LTD., COIMBATORE 641062

This Memorandum of Understanding (hereinafter called as the 'MoU') is entered into on this the 22 day of September 2021 by and between.

22/9/21

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

For Aura HR Solutions Private Ltd

Authorised Signatory

Kathir College of Engineering, Coimbatore, the First Party represented herein by its **Principal Kathir College of Engineering, Coimbatore**, and **Aura HR Solution Private Limited, Coimbatore**. The Second party, and represented herein by its Director **Shri. K. S. Mithilesh**

WHEREAS:

A) First Party is a Higher Educational Institution named: **Kathir College of Engineering, Coimbatore**

B) First Party & Second Party believe that collaboration and co-operation between themselves will promote more effective use of each of their resources, and provide each of them with enhanced opportunities.

C) The Parties intent to cooperate and focus their efforts on cooperation within area of Skill Based Training, Education, Placement, Industrial Visit, Expert Lecture.

D) **Aura HR Solution Private Limited**, - the Second Party is engaged in **Software Development and Human Resource Provider**

NOW THEREFORE, IN CONSIDERATION OF THE MUTUAL PROMISES SET FORTH IN THIS MOU, THE PARTIES HERETO AGREE AS FOLLOWS:

CLAUSE 1 **CO-OPERATION**

1.1 Both Parties are united by common interests and objectives, and they shall establish co-operation.

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2.3 Placement of trained students: second party will actively engage to help the delivery of the training and placement of the students of the first party on the technology trends and in house requirements.

For Aura HR Solutions Private Ltd

Authorised Signatory

22/9/21

2.4 There is no financial commitment on the part of the **Kathir College of Engineering, Coimbatore**, the first party to take up any program mention in MoU. If there is any financial consideration, it will be dealt separately.

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First Party

22/9/21

Principal

Dr. R. UDAIYAKUMAR, ME.,Ph.D.,
Principal
Kathir College of Engineering
"Wisdom Tree" Avinashi Road,
Neelambur,Coimbatore - 641 062.

Second Party

For Aura HR Solutions Private Ltd

Director, AURA HR Solution (P) Ltd.
Authorised Signatory

KATHIR COLLEGE OF ENGINEERING

[Approved by AICTE and affiliated to Anna University]

Wisdom Tree, Avinashi Road, Neelambur,

Coimbatore 641062

Web: www.kathir.ac.in. Email: kathir.c@kathir.ac.in

Summary for Innovation Ecosystem

S. No.	Activity	Description
1.	KCARDS Laboratory	Embedded system research and development 1. Training programs conducted on PCB Technology and Design – 50 Students benefitted 2. Certificate course on Signal Processing using MATLAB SIMULINK – 15 Students benefitted
2.	National Instruments for innovations using Lab view	Graphical programming environment to develop automated research, validation, and production test systems 1. Training programs conducted for Labview software – 35 students benefitted
3.	Texas instruments for Industrial Automation	To design intelligent, flexible and efficient factory automation applications 1. Training programs on Factory automation and control – 43 students benefitted
4.	Kalam Interdepartmental Innovation Centre	The innovation centre is established to develop innovative Interdisciplinary projects
5.	Institution Innovation Council	Institution Innovation Council (IIC) an Initiative of MHRD to foster culture of innovation is established in the Institution
6.	Patent publications	1. Artificial Intelligence based prediction of driving behaviour with passenger while driving 2. Artificial Intelligence based smart E-Cart vehicle for blind people in shopping mall 3. Iot Based Mobile App To Control Home Appliances Remotely Ensuring Safety And Cost Reduction
7.	NIT Surathkal – Virtual Labs	Active nodal centre for Virtual Labs is established in collaboration with NIT Surathkal
8.	AICRA	The Institution is enrolled as an Institute member of All India Council for Robotics and Automation

Dr. R. UDAIYAKUMAR, ME., Ph.D.,

KATHIR COLLEGE OF ENGINEERING

COIMBATORE – 641 062

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

Brief Report on Training Program

Name of the Course	**PCB Technology & Design**
Date	March-Apr 2021
Duration of the course	42 Hours
Venue	Class – 406 & KCARDS Lab
Department	Department of EEE
No. of Students Participated	IV EEE and IV ECE students
Name of the Trainer	Surenderkumar.S, Assistant,Professor & NSDC Trainer, EEE, KCE
Outcome of the Training	Exposure to PCB technology and understanding its importance in the Electronics field. It is a technical skill which may be useful to improve placement opportunities. Students will be able to • Identify the parts of a PCB • Draw the mechanical drawing of PCB • Design drill and pad sizes • Draw layer stack up • To design schematic and PCB layout in Eagle or ORCAD Design tools.
Programme Coordinators	Surenderkumar.S
Program Outcomes	Engineering Knowledge, Modern tool usage, Individual & team work, Lifelong learning

PRINCIPAL
Kathir College Of Engineering
Neelambur
641 062

Training Module and Schedule:

PCB TECHNOLOGY AND DESIGN	
Target Audience: *IV year EEE & ECE students*	***Venue:*** *KCARDS LAB*
Planned Dates: *11th March to 29th April 2021*	
Days : 15 days *[Mondays and Thursdays]*	***Time:*** *9.15AM – 12.15PM*
Prerequisite: *Circuit Theory, Electronic Devices and Circuits, Digital Electronics, Linear Integrated Circuits*	

Course Outcomes:

Upon successful completion of the course the student will be able to:

- ***Draw the given circuit in the schematic entry tool and create net-list.***
- ***Create component symbols, library components and assign footprints for the components used.***
- ***Create footprints and manage the footprint library.***
- ***Import the net-list in layout tool and place the components.***
- ***Connect the components by routing as per the required specifications.***

1	**INTRODUCTION**	**[9 Hrs]**
2	**SCHEMATIC ENTRY AND LIBRARY**	**[9 Hrs]**
3	**SYMBOL AND FOOTPRINT LIBRARY**	**[9 Hrs]**
4	**COMPONENT PLACEMENT**	**[9 Hrs]**
5	**ROUTING AND EXPORT FILES**	**[6 Hrs]**
		Total = 42 Hrs

Hands-on Projects:

1. Bridge rectifier circuit with voltage regulator.
2. Active filter circuit using transistors and IC.
3. Water level indicator and motor on/off controller circuit.
4. Amplifier circuit using IC.

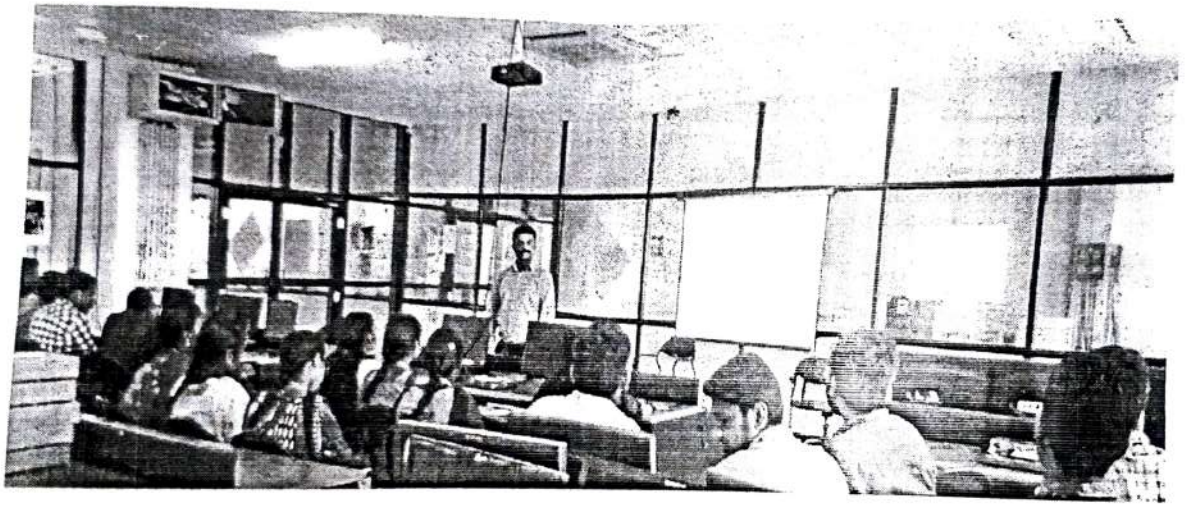
PRINCIPAL
Kathir College Of Engineering
Neelambur,
Coimbatore - 641 062.

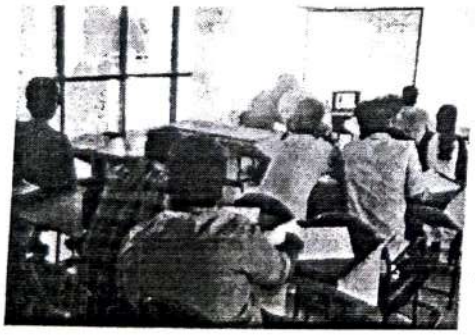
Implementation Report about the Program:

Department of Electrical & Electronics Engineering have taken an initiative to improve the basic skills of the students. One of which is a training program on PCB technology which they had done as co-curricular activity for the IV year students of EEE and ECE during March - April of 2021, which was successfully completed. Students showed positive and enthusiastic response towards this training program. The students actively participated performed well in the interactive sessions. This was a platform for the students to improve their skills in PCB technology and designing.

PCB Training Gallery:

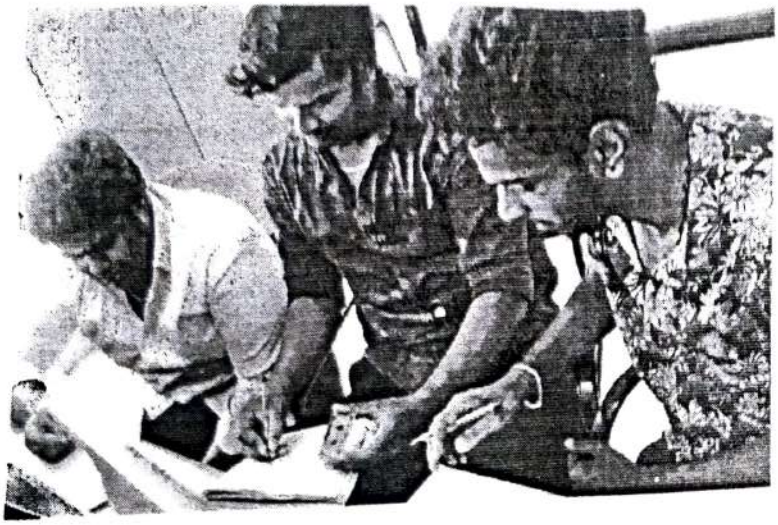
Theory Sessions:





PRINCIPAL
Kumaraguru College Of Engineering
Neelambur
Coimbatore 641 062.

Practical & Interactive Sessions:



PRINCIPAL
Kathir College Of Engineering
Neelambur,
Coimbatore - 641 062

KATHIR COLLEGE OF ENGINEERING

Department of Electrical & Electronics Engineering

Training on PCB Technology and Design

List of IV ECE (Batch: 2017-21) Participants Academic Year: 2020-21

S.NO	REG. NUMBER	STUDENT NAME
1	711617106001	AATHERSH N
2	711617106002	ANITHA A
3	711617106004	ASHWIN S
4	711617106005	BALAMURUGAN A
5	711617106007	DINESH S
6	711617106008	DIVYA R
7	711617106009	GOWTHAM BALAJI T
8	711617106010	INDHU S
9	711617106011	JEBASTA S
10	711617106013	KAVIYA K
11	711617106014	KISHOREKUMAR M
12	711617106015	KOUSIK C
13	711617106016	LOGAKRISHNAN N
14	711617106017	LOSHANA SRI K
15	711617106018	MUTHU VASANTHA KUMAR V
16	711617106019	NAVEEN KUMAR S
17	711617106020	PAVITHRA K
18	711617106021	PRASANTH S
19	711617106023	PRAVEEN KUMAR M
20	711617106024	PREETHI J
21	711617106025	RAMYA NANDHINI M
22	711617106026	RANJITHKUMAR V
23	711617106027	SAKUNTHALA P
24	711617106028	SARATH R
25	711617106029	SOWMIYA K
26	711617106031	SURENDAR R
27	711617106033	VINOTHA K
28	711617106034	VIVEK S
29	711617106301	GOPIKRISHNA K T
30	711617106302	KIREN KUMAR R
31	711617106303	NATARAJAN S
32	711617106304	PRABHAKARAN K
33	711617106305	YOKESHWARI V
34	711617106701	VISHWADEEP B

COORDINATOR

PRINCIPAL
Kathir College Of Engineering
Neelambur,
Coimbatore - 641 062.

KATHIR COLLEGE OF ENGINEERING

Department of Electrical & Electronics Engineering

Training on PCB Technology and Design

List of IV EEE (Batch: 2017-21) Participants

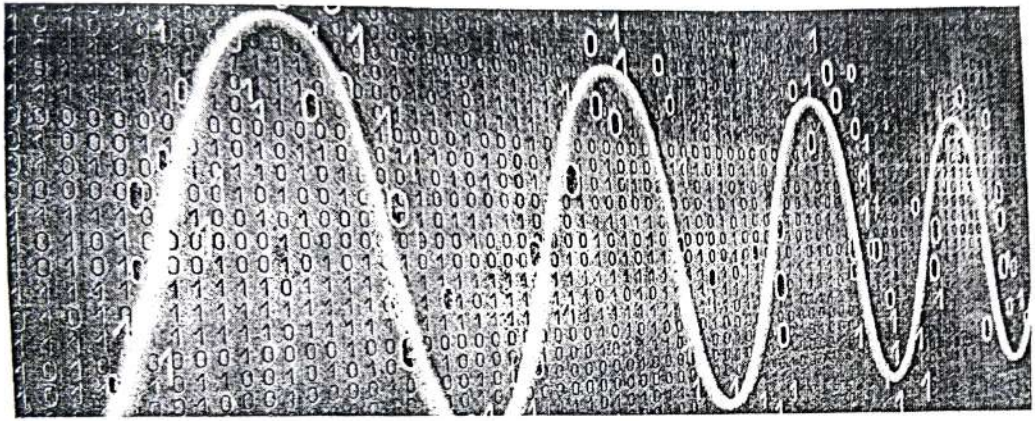
Academic Year: 2020-21

S.NO	REG. NUMBER	STUDENT NAME
1	711617105002	BALAVIGNESS
2	711617105003	CONCILIYA S
3	711617105004	DESING D
4	711617105005	HARIHARAN R
5	711617105006	KABILAN M
6	711617105007	KALPANA T
7	711617105008	KAVIYARASU C
8	711617105010	PACHAIYAPPAN K
9	711617105012	PRAVEEN KUMAR K
10	711617105013	TAMILARASAN J
11	711617105015	VISHWA E
12	711617105301	KANONJEE
13	711617105302	MANIKANDAN
14	711617105303	MUTHUMUGUNTHAN M
15	711617105304	TAMILVANAN
16	711617105701	DHESINGAN

COORDINATOR

S.Surendarkumar

AP/EEE



Kathir College of Engineering

Department of Electronics and Communication Engineering

Certificate Course on

"Signal Processing using Matlab Simulink"

Resource Person

Dr. K. Gavaskar
Assistant Professor
Kongu Engineering College

Venue : K CARDS Lab

11th to 15th october 2020

PRINCIPAL
Kathir College Of Engineering
Neelambur,
Coimbatore - 641 062

Kathir College of Engineering

[Approved by AICTE | Affiliated to Anna University | Accredited by NAAC]

Wisdom Tree, Neelambur, Avinashi Road, Coimbatore-62

Report on "Texas Instruments Innovation Laboratory"

The Texas Instruments Innovation Lab is ready to support educators, researchers, and students in incorporating TI analogue and embedded processing into engineering classrooms, teaching and research labs design projects, and course curriculum.

It organizes seminars and workshops for the students to make them industry ready. Industries prefer students having more practical knowledge along with theoretical knowledge. TI Innovative Lab assist students to come up with their own new project ideas and build them using TI kits.

Objectives

The main objective of Texas Instruments Innovative Lab is

- To bridge the gap between industry and academics.
- To provide a competitive edge by helping students to learn, analyze and apply theoretical concepts and develop Industry level technology.
- To provide experiential learning where students can solve real world problems using state of the art technical material.

Benefits

- Exposure to real industrial products.
- Hand on training on Texas Instruments product & certification with Texas Instruments logo.
- Employability for students will increase.

Features

- TI innovation lab trains and gives hands-on experience for students and faculty with
- Latest products of Texas Instruments used in industry.
- TI innovation lab empowers students and faculty to showcase their innovations in terms of projects and products.
- TI innovation lab provides opportunity to the faculty and student to work on the
- Industry 4.0 technology, Advanced Digital Signal Processors and latest Embedded processing technology.
- TI innovation lab enables faculty and students to do research and develop solutions to the industry problems in collaboration with industry.

PRINCIPAL

Kathir College of Engineering

PRINCIPAL
Kathir College Of Engineering
Neelambur,
Coimbatore - 641 062.

HOD/ECE

Kathir College of Engineering

Coimbatore -641062

Department of Electrical and Electronics Engineering

We Cordially Invite you all for the

Inauguration

of

"KALAM - INTERDEPARTMENTAL INNOVATION CENTRE"

On

15th Oct 2020

Time: 10.00 A.M

Venue: IIT Bombay Hall

RESOURCE PERSON

Dr.Pradeep Kumar, CIO, Amphisoft Technologies, Coimbatore

Kathir College of Engineering

[Approved by AICTE | Affiliated to Anna University | Accredited by NAAC]

Wisdom Tree, Neelambur, Avinashi Road, Coimbatore-62

12.10.2020

REQUISITION LETTER

From

The Head of the Department,
Department of EEE,
Kathir College of Engineering
Coimbatore - 641062

To

The Principal,
Kathir College of Engineering
Coimbatore - 641062

Respected Sir,

Subject: Requisition to organize the Inauguration of "Kalam Interdepartmental Innovation Centre"- Regarding

We have planned to inaugurate "Kalam Interdepartmental Innovation Centre" on 15.10.2020 for the students and members of faculty of our Institution. Kindly approve this event and allow us to proceed further.

Thanking You

Yours Faithfully

PRINCIPAL
Kathir College of Engineering
Neelambur
Coimbatore - 641 062.

PRINCIPAL
Kathir College of Engineering
CBE-62

Kathir College of Engineering

[Approved by AICTE | Affiliated to Anna University | Accredited by NAAC]

Wisdom Tree, Neelambur, Avinashi Road, Coimbatore-62

12.10.2020

CIRCULAR

The Department of Electrical and Electronics Engineering is planned inaugurate "Kalam Interdepartmental Innovation Centre" on 15.10.2020 at IIT Bombay Seminar hall. All the members of faculty and students are encouraged to participate in the event.

HoD/EEE

Kathir College of Engineering
Neelambur
Coimbatore - 641 062.

Copy to:

Department File
All HoD's & Faculty Members
Administrative officer
Notice Board

Kathir College of Engineering

[Approved by AICTE | Affiliated to Anna University | Accredited by NAAC]

Wisdom Tree, Neelambur, Avinashi Road, Coimbatore-62

INAUGURATION OF
"KALAM – INTERDEPARTMENTAL INNOVATION CENTRE"-
EVENT REPORT

Kalam Inter departmental Research Innovation Center

Kathir College of Engineering Kalam Inter-departmental innovation collaboration center facilitates the dream of prospective innovators from conceiving the idea to the development of technology /inventions, developed by the Faculty Members, Students & Staff or in collaboration with outside industry partners. Inter-departmental innovation collaboration facilitates innovation performance. Incubation will ensure that incubates have access to technological assistance which will be generated through mentors with multidisciplinary expertise.

Objectives:

- To develop a critical mass of motivated students & faculties with entrepreneurial orientation & skills
- To strengthen the Inter-Departmental, Inter-Institutional and Industrial linkage, Incubators and other Ecosystems at different levels to improve employability
- Encouraging students and faculties to bring innovative ideas
- Attracting the small scale investments into the incubation and start up ecosystem within the institute
- Motivating students for self-employment which in turn leads to entrepreneurships

12/10/22

PRINCIPAL

Virtual Labs

An MoE Govt of India Initiative

CERTIFICATE OF RECOGNITION

It is hereby certified that

Kathir College of Engineering

has been an active Nodal Centre of Virtual Labs under the National Mission on Education through Information and Communication Technology during the period

from **02-03-2022 to 31-12-2022**

with National Institute of Technology Karnataka (NITK), Surathkal as the mentor Participating Institute.

We look forward to your active collaboration along the road ahead for this novel initiative.

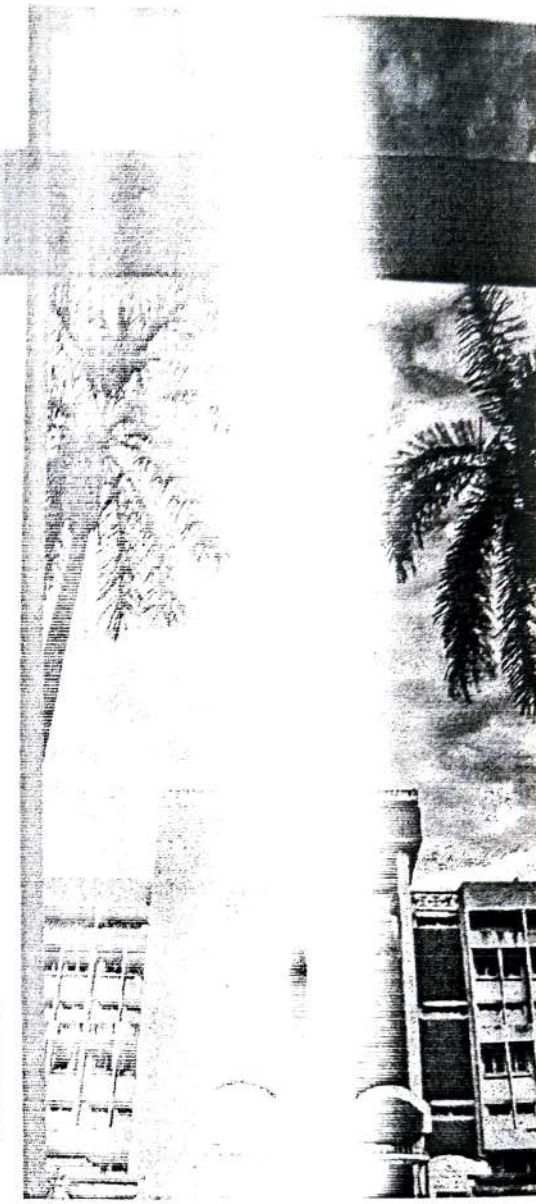
Dr. K. V. Gangadharan
Participating Institute Coordinator
Virtual Labs Project
NITK Surathkal.

Dr. Sheena
Institute Outreach Coordinator
Virtual Labs Project
NITK Surathkal.

PARTICIPATING INSTITUTES

IIT DELHI · IIT KANPUR · IIT BOMBAY · IIT KHARAGPUR · IIT GUWAHATI · IIT ROORKEE · IIT HYDERABAD · AMRITA VISHWA VIDYAPEETHAM · DAYALBAGH EDUCATIONAL INSTITUTE · NITK SURATHKAL · COE PUNE

Evolve with CSD



All India Council For Robotics & Automation

CERTIFICATE

OF MEMBERSHIP

This is to certify that

Kathir Institutions

Kathir College of Engineering, Wisdom T
Avinashi Rd, Coimbatore - 641062
Tamil Nadu.

has been enrolled as Institute Member
All India Council for Robotics & Automat

Membership ID AM00240
Issue Date 11th April 2022
Valid Till 10th April 2023

President