Report on Five days' workshop

Topic : **Five days' workshop on "Design of Electronic Circuits, Physical Design Using Cadence"**

Resource Person : **Dr. Ravi Kumar, Assistant Professor,**
Department of Electronics & Communication
S.T.J Institute of Technology, Ranebennur.

Date : **02.11.2023 to 04.11.2023 and 17.11.2023 to 18.11.2023**

Profile of the Resource Person: Dr. Srinivasarao Udara, working in S.T.J Institute of Technology, Ranebennur as Assistant Professor in the Department of Electronics & Communication. He has 16 years of teaching experience in engineering college. He expertise in MEMS/NEMS real time Fabrication and experience on Intellisuite tool. He has technical proficiency in VLSI Cadence Tool Worked On 180nm, 90nm, 45nm, Technology (Simulation, Synthesis, Digital Implementation, Physical Verification Using Genus, Innovus). He also worked on CPLD, FPGA, Altium Nano Board. His Ph.D. Research project sanctioned by DST in the year of 2015-2018 received a grant of 36lakhs. Dr. Srinivasarao published many research papers in reputed journals and attended various workshops.

About the Event: Department of Electronics and Communication Engineering in Association with department forum "Evionics" Inaugurated the Five days' workshop for 5th semester students on **"Design of Electronic Circuits, Physical Design Using Cadence"** from 2nd to 4th Nov. 2023 and 17th to 18th Nov 2023. The objective of the training was to expose the students in emerging technologies in the areas of Digital and Analog IC design flow. Participants developed a basic understanding of Full custom IC design flow along with usage of tools such as the Virtuoso, Spectre Assura, Incisive Simulator and Genus.

Total 44 students of 5th semester Electronics and Communication Engineering were registered for this program. A hands-on session was scheduled for every session which enabled the participants to learn the usage and application of Cadence tool suite in detail.

Day 1:

Date: 2nd Nov. 2023 | Time: 9:30am to 12:30pm

Key points discussed during the session:

- Introduction of VLSI and its scope in future
- Introduction, application & basic difference of following concepts like FPGA, CPLD , PLC , DSP & Micro controller.
- ALTIUM Nano board
- Universal verification methodology
- Introduction on VLSI tools like, Berkley Tool, Tanner Tool, Mentor Graphics, Synopsis, Xilinx Tool, Micro wind, Cadence Tool.

Date: 2nd Nov. 2023 | Time: 1:45pm to 04:30pm

Key points discussed during the session:

- Overview on Cadence Tool.
- Simulation for counters, Nand Gate, Adders and Multiplexers.

Day 2:

Date: 3rd Nov. 2023 | Time: 9:30am to 4:00pm

Key points discussed during the session:

- Traditional Synthesis procedure
- Synthesis using shortcut method

Day 3:

Date: 4th Nov. 2023 | Time: 9:30am to 12:30pm

Key points discussed during the session:

- Physical design and graphical design

Day 4:

Date: 17th Nov. 2023 | Time: 9:30am to 4:00pm

Key points discussed during the session:

- Introduction on analog VLSI design using Cadence
- Schematic, Symbol creation, Building test design
- Transistor level design using Spectre simulator introduction.

Day 5:

Date: 18th Nov. 2023 | Time: 9:30am to 12:30pm

Key points discussed during the session:

- Basic examples of Transistor level design using Spectre simulator like inverter, common source amplifier so on.

Students were exposed to Cadence tool suite which will enable them to perform efficiently in laboratory course.


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Report on Certification course on "LabView"

Topic : **Certification course on LabView**

Resource Person : **Dr. Ravi Kumar A V, Associate Professor,**
Chief coordinator LabView Academy
Department of Electronics & Communication Engineering,
SJB Institute of Technology, Bangalore.

Date : **6.11.2023 to 10.11.2023**

Profile of the Resource Person: Dr. Ravi Kumar, working in SJB Institute of Technology, Bangalore, as Associate Professor in the Department of Electronics & Communication. He has 20 years of teaching experience in engineering college. He expertise in integration and programming LabView. His project titled "Centre of excellence for semiconductor testing, analysis of power, Automotive, RF and protocol decoder lab" received a grant of 20lakhs sanctioned by VGST in the year of 2021-2022. He has received many awards and recognition in the field of LabView. Dr. Ravi Kumar published many research papers in reputed journals and attended various workshops.

About the Event: Department of Electronics and Communication Engineering in Association with department forum "Evionics" organized a Five days' workshop for 5th semester students on **"LabVIEW"** from 2nd to 4th Nov. 2023 and 17th to 18th Nov 2023. The objective of the training was to expose the students in emerging technologies in the areas of Digital and Analog IC design flow. Participants developed a basic understanding of Full custom IC design flow along with usage of tools such as the Virtuoso, Spectre Assura, Incisive Simulator and Genus.

Total 44 students of 5th semester Electronics and Communication Engineering were registered for this program. A hands-on session was scheduled for every session which enabled the participants to learn the usage and application of LabView in detail.

Day 1:

Date: 6th Nov. 2023 | Time: 9:30am to 12:30pm & 1.45pm to 4.30pm

Key points discussed during the session:

- Brief introduction on LabView
- About data types and operators
- Basic circuits on numeric- add, subtract, greatest of two numbers, temperature control (F to C & vice versa)
- Circuits on strings

Day 2:

Date: 7th Nov. 2023 | Time: 9:30am to 12:30pm & 1.45pm to 4.30pm

Key points discussed during the session:

- Circuits on Boolean data types
- Logarithm equations were solved using numeric data types
- Local variable usage
- Half adder, full adder & case structure

Day 3:

Date: 8th Nov. 2023 | Time: 9:30am to 12:30pm & 1.45pm to 4.30pm

Key points discussed during the session:

- Loop iterations
- For loop with examples
- Arrays -even number sorting, signal merging, digital graphicals
- While loop with examples
- Searching of array elements

Day 4:

Date: 9th Nov. 2023 | Time: 9:30am to 12:30pm & 1.45pm to 4.30pm

Key points discussed during the session:

- Shift registers in For Loop
- Illustration of For Loop on Boolean LED off/on, sum of N numbers
- Shift registers in While Loop with examples
- Mini projects on traffic signals for three way
- LED on/off implementation on Arduino UNO.

Day 5:

Date: 10th Nov. 2023 | Time: 9:30am to 12:30pm & 1.45pm to 4.30pm

Key points discussed during the session:

- Circuit designing using clusters
- Project on water level sensing circuit

Glimpse on LabView Programme

Two days Hands-on training Programme on "Get Started: MATLAB for Engineering"

Topic : **Two days Hands-on training Programme on "Get Started: MATLAB for Engineering"**

Resource Person : **Dr. Ganesh V N, Associate Professor,**
Department of Electronics & Communication Engineering
AIET, Mijar, Moodbidri.

Date : **15.11.2023 to 16.11.2023**

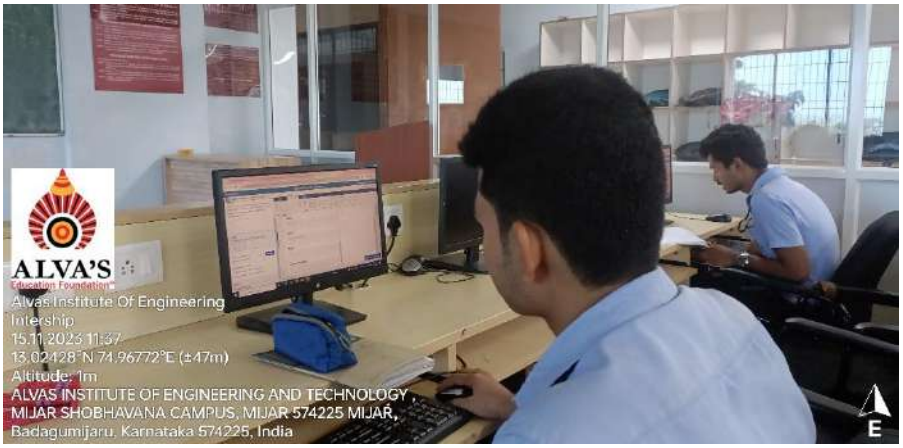
About The Session: Department of Electronics & Communication Engineering in association with "Evionics" organized a hands-on training programme on "Get Started: MATLAB for Engineering". The main objective of this training is to acquaint participants with the fundamental concepts of through signal processing, circuit simulation and image processing by the utilization of MATLAB, a versatile programming language and environment renowned for its widespread application in scientific and engineering domains. A total of 43 students from 5th semesters of E&CE Department participated in the session.

Speakers Profile: Dr. Ganesh V N, working in Alvas institute of technology & Engineering as Associate Professor in the Department of Electronics & Communication. He has 16 years of teaching experience in engineering college. He expertise in semiconductor technology, signal processing and analog communication system design. Dr. Ganesh published many research papers in reputed journals and attended various workshops in premier institutions. He has received four KSCST project grants for guiding UG students.

Brief About the Event: Getting started with signal processing, image analysis using MATLAB is a great way to explore the field of image & signal processing and computer vision. MATLAB is a proprietary multi-paradigm programming language and numeric computing environment developed by MathWorks. MATLAB allows matrix manipulations, plotting of functions and data, implementation of algorithms, creation of user interfaces, and interfacing with programs written in other languages.

MATLAB offers a comprehensive set of tools and functions for image and signal analysis. MATLAB provides a wide range of functions and toolboxes specifically designed for image processing tasks. The session commenced by providing participants with an introductory overview of both MATLAB and the field of signal processing & Image Processing. During this segment, participants gained insights into the capabilities of MATLAB for image handling and processing. Also, students are trained to familiar with MATLAB by taking MATLAB onramp course provide by MathWorks. MATLAB Onramp is a free two-hour, self-paced, interactive course that allows new users to learn MATLAB. From MATLAB Onramp, users gain confidence, become comfortable with the MATLAB environment, and acquire the basic skills needed to use MATLAB.

They actively engaged in hands-on exercises, which included practical tasks. In addition to these participants not only learned the theoretical underpinnings but also gained practical experience.



Glimpses of Hands-on Training

MathWorks | Training Services

Course Completion Certificate

Mr Lakshan

has successfully completed **100%** of the self-paced training course

MATLAB Onramp

DIRECTOR, TRAINING SERVICES

16 November 2023

MathWorks | Training Services

Course Completion Certificate

Mr Lakshan

has successfully completed **100%** of the self-paced training course

Signal Processing Onramp

DIRECTOR, TRAINING SERVICES

16 November 2023

Sample Certificates

Report on Industrial Visit

Name of Industry : **KARMIC Design Pvt. Ltd, Manipal**

Date of Visit : **22.11.2023**

About the Industry: KarMic Design, an ISO 9001:2015 certified, is a design services and solutions provider with an expertise in Analog, RF, Mixed Signal, Memory and High-Performance Digital domains. The company is headquartered at Manipal, Karnataka and has design centres at Bangalore and Dallas. KarMic has contributed immensely to the training and development of hundreds of youngsters, who otherwise, would never have a chance in the high-tech industry. never had a chance in the high-tech industry.

KarMic is a pioneer and leader in the semiconductor design and development industry. Recognizing the need for global expertise, KarMic pioneered the concept of developing human capital by training and creating a pool of technicians, engineers and innovators. All this, at a time when our peers were focused just on product or solution development.

KarMic has contributed immensely to the training and development of hundreds of youngsters, who otherwise, would never have a chance to work in the high-tech industry. Today, KarMic is proud of its industry-experienced professionals, many with advanced engineering degrees in the key technology disciplines of electrical engineering, computer science, mathematics, and physics.

KarMic is consistently strived to create stakeholder value by operating sustainably and profitably. Being laser focused on optimizing asset utilization and investing continuously in growth opportunities, we maintain a healthy balance between organic growth and strategic acquisitions. KarMic is proud to maintain an environment of technology excellence and innovation supported by strong management.

KarMic Design offers services namely PDK Dev, Circuit Design, Physical Layout, Full-Chip Verification, Modelling, Characterization, and Chip Test (ATE/BENCH). Our service areas are Physical layout, Verification, Modeling, PDK Development, Library (Layout/Char), and Embedded

Services. KarMic has handled the most complex projects involving power management, code ICs, charger ICs, and HDD devices.

Towards the end of the visit, the students were given an opportunity to clarify their queries. Around 44 students of 3rd year, Electronics & Communication Engineering attended, which benefited the students in understanding the working environment and career opportunities in KarMic industry.

Group photo on Industrial Visit at KarMic Design Pvt. Ltd, Manipal

Technical Talk On "RFIC- Design and Challenges"

Topic: "RFIC- Design and Challenges"

Resource Person: Dr. Sandeep Kumar, Assistant Professor, Dept of ECE, NITK, Surathkal

Date: 20-10-2023 Time: 11:00AM .

Profile of the Resource Person: Dr. Sandeep Kumar is an Assistant Professor in the Department of Electronics and communication engineering at NIT Surathkal, Karnataka. Prior to join this institute, he was Research professor and Post-doctoral researcher in Nano circuit design Lab, Inje University, South Korea. He received his Ph.D. in Electronics Engineering from Indian Institute of Technology (IIT), Dhanbad, Jharkhand in 2016. He has published more than 50 publications in referred SCI journals and more than 22 international conferences and several book chapters in IEEE, IET publishers etc., He is the technical reviewer for various International SCI indexed journals of repute like IEEE Transactions, IEEE Letters, IET Electronics Letters, IET Communications, Springer Wireless Personal Communications, etc.

About the Event: Department of ECE organized a technical talk on "RFIC- Design and Challenges" in association with Department forum "Evionics" to final year students of ECE by Dr. Sandeep Kumar, Assistant Professor, Dept of ECE, NITK, Surathkal on 20/10/2023.

Resource person pointed that RFIC is in use from cell phones and wireless internet access to radar and navigation systems. He said that world is becoming more connected using radio frequency (RF) transmissions. Since the technology continues to improve, radio frequency integrated circuits (RFICs) have become complex chips both by themselves and integrated into very large system-on-chip (SoC) solutions. An RFIC is designed to operate at high frequencies, typically in the range of several hundred MHz to several GHz. A pure analog ASIC or IC operates in the analog domain. It is usually smaller in size than a typical digital ASIC. An RFIC is distinguished by integrated circuitries such as transmitters, receivers, PLLs, modulators, frequency multipliers, RF amplifiers, RF power amplifiers, mixers, inductors, transformers, baluns etc. He described that the objective of a radio circuit design is to transmit and receive signals between the source and destination with acceptable quality and without incurring a high cost. This can be achieved by designing a circuit using proven design methods. An RFIC typically consists of amplifiers, filters, mixers, oscillators, and modulators/demodulators onto a single chip.

The demand for faster and more reliable wireless connectivity such as 5G, which requires more complex and sophisticated RFICs, is driving the development of new RF technologies. To address these challenges, designers can use advanced design methods, comprehensive simulation tools, and optimized algorithms to streamline the design process and reduce time to market.

The event concluded successfully, leaving the students inspired and equipped with knowledge to embrace the advancements in these exciting fields. Finally, Dr. Ganesh V N, Associate Professor, department of ECE gave memento to the resource person and expressed gratitude for giving such an informative talk to the students.

Technical Talk-on 'Wireless Communication'

Topic : 'Wireless Communication'

Resource Person : Dr. Veena Devi S V, Professor Department of ECE, NMAMIT, Nitte.

Date: 21-11-2023 Time: 11:00AM

Profile of the Resource Person: Dr. Veena Devi Shashrimath V is working as Professor, Dept. of ECE, NMAMIT, Nitte. She completed B.E (Instrumentation Technology) from SJCE, Mysore University, 1991 and MTech (Digital Electronics and Advanced Communications) from MIT, MAHE, Manipal, 2002. She received her Ph.D. degree on 30th May 2015, in the Field of Remote sensing and Image processing under Mangalore University. She has guided many Ph.D , UG & PG students. She published 18 International Journals and presented papers in 16 International Conferences.

About the Event: Department of ECE conducted the technical talk on 'Wireless Communication' for final year students by Dr. Veena Devi S V, Professor, Dept. of ECE, NMAMIT, Nitte, on 21/11/2023. She emphasized on Wireless communication refers to the transfer of information among two or more points without an electrical conductor. The most common wireless technologies use radio.

Dr. Veena devi, mentioned on different types and applications of wireless communication systems. We live in a World of communication and Wireless Communication, in particular, is a key part of our lives. Some of the commonly used Wireless Communication Systems in our day – to – day life is: Mobile Phones, GPS Receivers, Remote Controls, Bluetooth Audio and Wi-Fi etc.

Wireless communication takes places over free space through RF (radio frequency), one device, a Transmitter, sends signal to another device, a Receiver. Two devices (transmitter and receiver) must use same frequency (or channel) to be able to communicate with each other. If a large number of wireless devices communicate at same time, radio frequency can cause interference with each other. Interference increases as no of devices increases. wireless communication system has become an essential part of various types of wireless communication devices, that permits the user to communicate even from remote operated areas. There are different types of wireless communication devices like mobiles. Cordless telephones, Zigbee wireless technology, GPS, Wi-Fi, satellite television, and wireless computer parts. Current wireless phones include 3 and 4G networks, Bluetooth, and Wi-Fi technologies.

She discussed about handover that takes place during a call, i.e. when the mobile phone is in active (dedicated) mode. A mobile phone can also be in idle mode. In this case, the mobile phone is switched on, but no resources are allocated to it to allow transmission of user data. In this mode, the mobile phone is still listening to information, broadcasted by the base station. The mobile phone is then paged in the cell. This means the Service continuation without interruption Mobile phone is active, e.g. a call takes place 4 phone receives information that there is a mobile terminated call. A cellular system may consist of hundreds of cells. If the mobile network does not know, in which cell the mobile phone is located, it must be paged in all of them. To reduce load on networks, paging is done in small parts rather to a group of cells of a mobile network.

The event concluded successfully, leaving the students inspired and equipped with knowledge to embrace the advancements in these exciting fields. Finally, Dr. DV Manjunatha, Professor, department of ECE expressed gratitude to the resource person for giving such an informative talk to the students.

Technical Talk on "Cyber security best practices in the age of AI"

Topic : **"Cyber security best practices in the age of AI"**

Resource Person : **Mr. Darshan Dwarakanath, Cyber security Architect, Bosch Global software Technologies, Bangalore**

Date: 02-12-2023 **Time: 11:00AM**

Profile of the Resource Person: Mr. Darshan Dwarakanath completed Bachelor's in Information Science- VTU and Masters in System Software - BITS, Pilani. Presently he is working as Cyber security Architect, Bosch Global software Technologies, from 2014 and have more than 12 years of experience in Retail power tools, FMCG and Automatic domains. He delivered 25+ projects in Bosch. His role in Bosch is, Implement all Major steps in Secure Engineering policy, Document Delivery correctness, Technology correctness, Team Coordination & Discussions & Organization Policy adherence.

About the Event: Department of Electronics & Communication Engineering organized a technical talk on **"**Cyber security best practices in the age of AI" by Mr. Darshan Dwarakanath, Cyber security Architect, Bosch Global software Technologies, Bangalore on 02/12/2023 to 8th semester students of ECE.

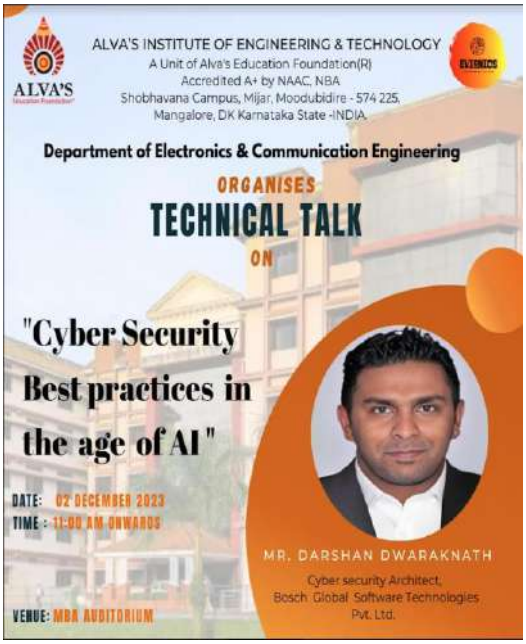
He expressed that AI is ideally suited to solve some of our most difficult problems, and cybersecurity certainly falls into that category. With today's ever evolving cyber-attacks and proliferation of devices, machine learning and AI can be used to automating threat detection and respond more efficiently than traditional software-driven approaches.

He described some challenges of cybersecurity such as, A vast attack surface, Hundreds of attack vectors, big shortfalls in the number of skilled security professionals and Masses of data that have moved beyond a human-scale problem.

A self-learning, AI-based cybersecurity posture management system should be able to solve many of these challenges. Technologies exist to properly train a self-learning system to continuously and independently gather data from across your enterprise information systems.

He explained that, while AI empowers attackers, it also plays a crucial role in defensive strategies. Machine learning algorithms can analyze vast datasets to identify emerging threats and predict attack vectors, enabling organizations to strengthen their defenses before an attack occurs. Anomaly detection systems powered by AI can identify unusual patterns and trigger alerts for rapid response. Additionally, AI can automate the analysis of attack patterns, helping security teams identify the source and take countermeasures.

He highlighted that AI models can be utilized to develop comprehensive profiles of each application within an organization's network, leveraging large quantities of endpoint data. The use of AI in autonomous hacking systems challenges traditional concepts of human responsibility in cyberattacks. Identifying the responsible party becomes complex when the attack is identified by AI, leading to the need for new legal frameworks and attribution methods. Furthermore, ethical considerations arise from the use of AI for offensive purposes. International agreements are crucial to establishing norms for the use of AI in cyber warfare, striking a balance between technological advancement and ethical responsibility.



Report on Industrial Visit

Name of Industry : **Master Control Facility (MCF), ISRO, Hassan**

Date of Visit : **4.1.2024**

OBJECTIVES of MCF: Master Control Facility (MCF) at Hassan in Karnataka and Bhopal in Madhya Pradesh monitors and controls all the geo-stationary satellites of ISRO. MCF carries out operations related to initial orbit raising of satellites, in-orbit payload testing, and on-orbit operations throughout the life of these satellites. The operations involve continuous tracking, telemetry and commanding, special operations like eclipse management, station-keeping and recovery in case of contingencies.

MCF interacts with the user agencies for effective utilization of the satellite payloads and to minimize the service disturbances during special operations.

DETAILS: A team of 54 students of final year ECE visited Master Control Facility (MCF), ISRO, Hassan along with 2 faculty members. Students gained practical knowledge on various theoretical concepts known to them, with the co-ordination of consultant guide at MCF (ISRO).

MCF controls all the Geostationary / Geosynchronous satellites of ISRO, namely, INSAT, GSAT, EOS, CMS and IRNSS series of satellites. MCF provides overall radio visibility coverage extending from Persian Gulf in the West to Australia in the East, a geo-arc of 150 degrees which makes it ideal control center in South Asian Region. MCF has the expertise in operations of Indian Geosynchronous Space assets for Communication, Navigation and Metrological Payloads. All these geosynchronous satellites are being monitored, operated and maintained in the desired orbit.

OUTCOMES of the Visit:

- Awareness among students' community is created about need of space research and satellite communication issues.
- Awareness among students' community is created about Geo-satellites and their working
- Great way to make new friends & build relationships with people who are about the space Technology.

- MCF provides a perfect platform for those aspiring to take up a career in Space Engineering and developments.

Group photo on Industrial Visit at MCF, Hassan

Industry Expert Talk on "IC design in VLSI industry"

Topic : **"IC design in VLSI industry"**

Resource Person : **Mr. Pavan Raj**
Karmic Design Pvt. Ltd, Manipal

Date : **06.01.2024**

Profile of the Resource Person: Mr. Pavan Raj, working in KarMic Design Private Ltd, Manipal, as Analog Layout Lean Engineer. He is working for 13 years. Mr. Pavan has worked on various micro controller products for MCU Dallas group (Different ADCs, PLL, DACs). He also worked on NVM team on charge pump sense amplifier and other various complex memory compiler. As an analog layout engineer is worked on high current motor drivers, battery charger related IC in Texas Instruments, Bangalore. Pavan as a lead engineer he is working in fab structures, testing team, memory layout engineer, data converters (advanced ADC architectures) Tx Rx with different channels.

About the Industry: KarMic Design, an ISO 9001:2015 certified, is a design services and solutions provider with an expertise in Analog, RF, Mixed Signal, Memory and High-Performance Digital domains. The company is headquartered at Manipal, Karnataka and has design centers at Bangalore and Dallas. KarMic has contributed immensely to the training and development of hundreds of youngsters, who otherwise, would never have a chance in the high-tech industry. never had a chance in the high-tech industry.

KarMic Design offers services namely PDK Dev, Circuit Design, Physical Layout, Full-Chip Verification, Modelling, Characterization, and Chip Test (ATE/BENCH). Our service areas are Physical layout, Verification, Modeling, PDK Development, Library (Layout/Char), and Embedded Services. KarMic has handled the most complex projects involving power management, code ICs, charger ICs, and HDD devices.

About the Event: Department of Electronics and Communication Engineering in Association with department forum "Evionics" organized a industry expert talk for final year students about "**IC design in VLSI Industry"** on 6th January 2024. The objective of the training was to expose the students in emerging technologies in the areas Analog IC design flow. Participants developed a basic understanding of Full custom IC design flow along with usage of tools such as the Virtuoso, Spectre Assura, Incisive Simulator and Genus.

He given more insight on VLSI and semiconductor technology. VLSI (Very Large-Scale Integration) design is a process of designing integrated circuits (ICs) by integrating thousands, millions or even billions of transistors on a single chip. These ICs are used in a variety of electronic devices ranging from simple handheld devices to complex supercomputers.

Mr. Pavan, heighted on difference between VLSI design and IC design. "VLSI" is a standard chip fabrication technology whereas Integrated chips are nothing but, the complete chip manufactured (fabricated) by VLSI fabrication technology. So, every electronic circuit manufactured by VLSI fabrication technology in the form of IC is, Integrated Chip only.

The semiconductor industry, also known as the VLSI (Very Large-Scale Integration) industry, plays a crucial role in the modern world by providing the building blocks for a wide range of electronic devices, including computers, smartphones, and other consumer electronics. In the future, the demand for semiconductors is expected to continue to grow as the demand for electronic devices increases.

Pavan, also Pointed out on the future of the semiconductor/VLSI industry. One trend in the semiconductor industry is the continued miniaturization of semiconductor devices, known as Moore's Law. This trend has allowed for the production of faster, more powerful, and more energy-efficient devices. However, as semiconductor devices continue to get smaller, it becomes increasingly difficult to manufacture them using traditional techniques. This has led to the development of new manufacturing technologies, such as extreme ultraviolet (EUV) lithography, which allows for the production of smaller and more complex devices.

The digitization race has asked every day for new electronic systems having low power consumption, Higher battery backup, low cost, the fastest computational speed, and very short design time. Total 54 students of 7th semester Electronics and Communication Engineering were participated in this program.


GPS Map Camera
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Long 74.967757°
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Google


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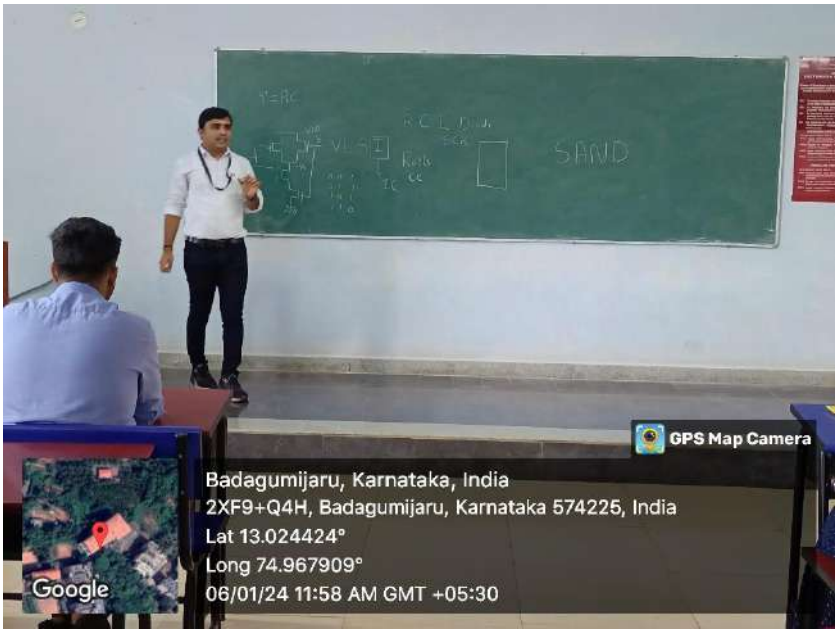
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Google

Report on Industrial Visit

Name of Industry : **HAM Radio Station Setup at Dept. of ECE, NITK, Surathkal**

Date of Visit : **22.01.2024**

About the Industry: The industrial visit to NITK Surathkal was organized for the Electronics and Communication Engineering students of Alva's Institute of Engineering & Technology. The visit aimed to provide insights into the Centre for System Design and the HAM Radio Station setup at NITK Surathkal.

Itinerary:

1. Introduction to NITK Surathkal:

- Brief overview of NITK Surathkal and its role in technological advancements.

2. Centre for System Design:

- Presentation on the objectives and functions of the Centre for System Design.
- Overview of on-going research projects and collaborations.
- Interaction with faculty members and researchers.

3. HAM Radio Station Setup:

- Explanation of the HAM Radio Station setup and its significance.
- Demonstration of radio communication equipment and technologies.
- Q&A session with the HAM Club members.

4. Interactive Session:

- A chance for students to ask questions and engage with NITK faculty and researchers.
- Discussions on potential collaborations and opportunities for students.

Observations and Learning's:

1. Centre for System Design:

- Witnessed state-of-the-art laboratories and infrastructure.
- Learned about on-going research in the field of system design and development.

2. HAM Radio Station:

- Gained insights into the functioning of the HAM Radio Station.
- Explored the applications and importance of amateur radio in emergency communication.

Towards the end of the visit, the students were given an opportunity to clarify their queries. Around 34 students of 2nd year and 3rd year, Electronics & Communication Engineering attended. The industrial visit to NITK Surathkal was an enriching experience for the students of Alva's Institute of Engineering & Technology. It provided a valuable opportunity to explore cutting-edge research at the Centre for System Design and understand the practical applications of HAM radio communication. The interactions with faculty members and researchers opened avenues for future collaborations and knowledge exchange.

Group photo on Industrial Visit at HAM Radio Station, NITK, Surathkal

Title : **Inaugural function of Department Forum "EVIONICS" Activities 2023-24**

Chief Guest : **Mr. Shreyas P Bhat, Principal Engineer (Yield and Integration), GlobalFoundries, Bangalore.**

Date & Time : **03/01/2024 & 2.15 PM**

Profile of the Guest: Mr. Shreyas P Bhat, Principal Engineer (Yield and Integration) at GlobalFoundries, Bangalore. He is a proud alumnus of batch 2015 and VLSI MTech graduate with 8 years of work experience in research and industry. He Worked as Technologist in National Nanofabrication Centre at Indian Institute of Science for 4 years, cultivated expertise in fabrication tools and process for MEMS devices, sensor, transistor fabrication on Silicon. He has Six publications in international journals and conferences during research on the topics revolving around transparent flexible strain gauges, thin films development for MEMS application etc. Mr. Shreyas has more than 3 years of semiconductor manufacturing industry experience involving wafer level electrical test and parametric data evaluation for a range of 55nm to 22nm CMOS technologies. His Present role in GlobalFoundries revolves around Electrical Test data evaluation for wafers shipment, Yield analysis of wafers, leading a team for Electrical Test Disposition of wafers. Invited speaker at Industry-Academia workshops at National Nanofabrication Centre, IISc and also delivered technical talks at Indian Nanoelectronics Users Program at Centre for Nanoscience and Engineering, IISc.

Program Details: The inaugural ceremony of "EVIONICS Activities 2023-2024" was held on 03/01/2024. Ms. Shreya, welcomed the Chief guest Mr. Shreyas P Bhat, Principal Engineer at GlobalFoundries, Bangalore, Mr. Vivek Alva, Managing Trustee, AEF, Dr. Peter Fernades, Principal, Dr. Dattathreya, Dean planning, Dr. Siddesh G K, Head of the Department, Dr. Manjunath D V, Dr. Ganesh V N, Forum Coordinator, Heads of other Departments, and Faculty members of E&CE Department. The newly elected forum President, Mr. Mnajunath Sajjan, introduced Office bearers of EVIONICS and welcomed the second-year students. Ms. Spoorthi and team, began the session by an invocation of God which was followed by the lighting of the lamp. Mr. Manjunath briefed upcoming events for 2023-24. Ms. Soumya, Secretary, briefed about chief guest profile. The Chief Guest, Mr. Shreyas shared his words of wisdom with students. He congratulated the new office bearers and explained the responsibilities to fulfill. He shared a brief thought on the corporate life and student life.

He also presented how to bridge the gap between industry and academia. He suggested the students to cultivate the habits of working on new technology and to update them with the present industry era. Addressing the forum, Dr. Siddesh G K, Head of the Department, welcomed the 2nd year students to the department. He highlighted the achievements of ECE students in his speech. Further, he italicized that the illiterates of this century are not the ones who do not know to read and write but are those who do not know to keep themselves updated on the changing trends. He motivated the students by briefing the importance of team work towards the achievement. At the outset, He urged the students to start the preparations to strengthen the resume with the active participation. Mr. Vivek Alva, Managing Trustee, motivated the students in his presidential address. He briefed about the roles of an individual in an association where it plays a very important role in giving opportunities to each and every one. He reminded the students to have an active participation in academic as well as extra-curricular activities and suggested to get individual recognitions for the lifetime. He suggested to have many more achievements in industry related competitions. He wished everyone a great successful academic year. To conclude the session, Ms. Sristi Shetty, Vice Secretary, EVIONICS, offered the vote of thanks to all & expressed his gratitude to Chief Guest, Mr. Shreyas for gracing the occasion with his solemn presence. The students from 2nd, 3rd, and 4th years of Electronics & Communication Engineering and faculty members had attended the EVIONICS inaugural event.

Inaugural function of "EVIONICS Activities 2023-24" by Mr. Shreyas P Bhat


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Shobhavana Campus, Mijar-574225, Moodubidire,D.K.


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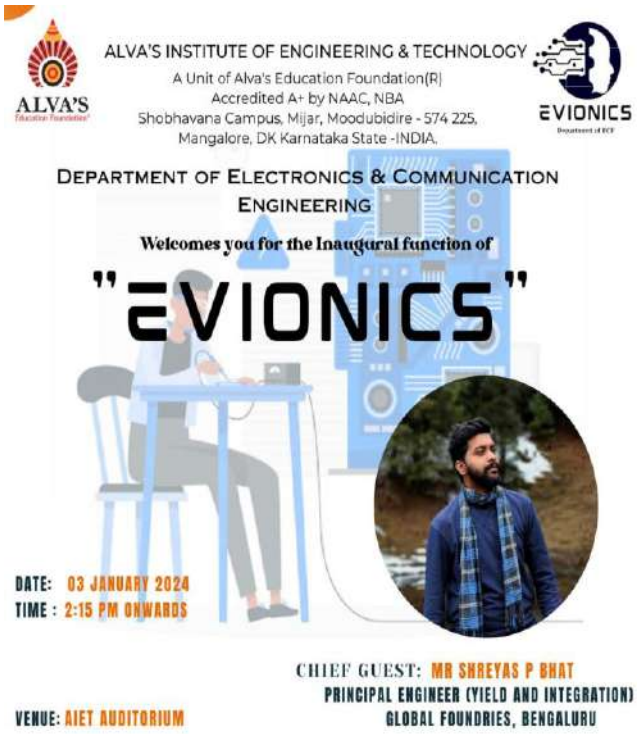
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Mangalore, DK Karnataka State -INDIA.
EVIONICS
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
Welcomes you for the Inaugural function of
"EVIONICS"
DATE: 03 JANUARY 2024
TIME : 2:15 PM ONWARDS
CHIEF GUEST: MR SHREYAS P BHAT
PRINCIPAL ENGINEER (YIELD AND INTEGRATION)
GLOBAL FOUNDRIES, BENGALURU
VENUE: AIET AUDITORIUM


ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY
Shobhavana Campus, Mijar-574225, Moodubidire,D.K.

Invited talk on "Overview of Semiconductor Manufacturing and Opportunities"

Title : "**Overview of Semiconductor Manufacturing and Opportunities**"

Chief Guest : **Mr. Shreyas P Bhat**, **Principal Engineer (Yield and Integration), GlobalFoundries, Bangalore.**

Date & Time : **03/01/2024 & 3.15 PM**

Profile of the Guest: Mr. Shreyas P Bhat, Principal Engineer (Yield and Integration) at GlobalFoundries, Bangalore. He is a proud alumnus of batch 2015 and VLSI MTech graduate with 8 years of work experience in research and industry. He Worked as Technologist in National Nanofabrication Centre at Indian Institute of Science for 4 years, cultivated expertise in fabrication tools and process for MEMS devices, sensor, transistor fabrication on Silicon. He has Six publications in international journals and conferences during research on the topics revolving around transparent flexible strain gauges, thin films development for MEMS application etc. Mr. Shreyas has more than three years of semiconductor manufacturing industry experience involving wafer level electrical test and parametric data evaluation for a range of 55nm to 22nm CMOS technologies. His Present role in GlobalFoundries revolves around Electrical Test data evaluation for wafers shipment, Yield analysis of wafers, leading a team for Electrical Test Disposition of wafers. Invited speaker at Industry-Academia workshops at National Nanofabrication Centre, IISc and also delivered technical talks at Indian Nanoelectronics Users Program at Centre for Nanoscience and Engineering, IISc.

Brief About the Event: Mr. Shreyas briefed about the overview of semiconductor manufacturing and need for promoting semiconductor industry. Semiconductor industry comprises of four main product categories. Namely, microprocessors, standard chips, memory and system on a chip. It is relatively young but very dynamic and fast-growing industry. With the invention of transistor (semiconductor) and integrated circuits, in the mid twentieth century, this industry was born. Since semiconductors started to be used in rapidly growing electronic industry, their production doubled almost every single year. From the USA, this industry quickly spread on Japan and some other Asian, as well as European countries. By the time, semiconductors became smaller and smaller and more powerful in order to meet

growing demand for superior chips, used in wide range of electronic devices. Number of transistors on chips approximately doubled every year or two (Moore's law). He also mentioned about the significance and the challenges about high investment & lack of fabrication capacities concerned. Semiconductor chips are the lifeblood of the modern information age. They enable electronic products to compute and control actions that simplify our lives. These semiconductor chips are the drivers for ICT (Information and Communication Technologies) development and one of the key reasons for the current flattening of the world. They are used in critical infrastructures such as communication, power transmission, etc., that have implications for national security. Development of the semiconductor and display ecosystem will have a multiplier effect across different sectors of the economy with deeper integration to the global value chain. There are not many countries in the world that manufacture these chips. The industry is dominated by the United States of America, Taiwan, South Korea, Japan, and the Netherlands. Germany is also an emerging producer of ICTs. Mr. Shreyas also addressed the gathering about his experience in semiconductor industry. He also mentioned that, as there is a need of Semiconductors as well as a global demand also to which India can cater to but that would require building upon the existing capabilities, putting robust policy mechanisms and ecosystems in place. It is also required for the industry academia and the government to work together.

All second, third and final year electronics and communication engineering students were present on this occasion.

Mr. Shreyas Bhat addressing the students on "overview of semiconductor manufacturing and opportunities"

Glimpse on invited talk

Technical Talk On "Disruption in Technology and Adaptation"

Title : "**Disruption in Technology and Adaptation**"

Chief Guest : **Mr. Shankarnarayan Bhat, Senior Director, Analog Devices, Bangalore.**

Date & Time : **19/01/2024 & 11.00 AM**

Profile of the Guest: Mr. Shankarnarayan Bhat, Senior Director, engineering at analog devices, India. Currently he is leading digital business unit team for India. He also worked in Intel corporation, India for 5 years as Senior Director of Engineering. He expertise in architecture, SOC design, verification, DFT, PD modelling, post & pre silicon verification. He worked for 12 years Qualcomm India Pvt. Ltd as director engineering. He worked on verification and validation lead for Modem SOC projects, from RTL verification, gate level verification, Emulation and Silicon validation, Customer support, RMA analysis, DPPM reduction, AUC reduction, Verification and Validation lead for fourth-generation 3G/LTE multimode solutions - Qualcomm® Gobi™9x35,9x45, worked on 65nm, 45nm, 28nm, 20nm and 14nm technology nodes. He also worked in Wipro technologies as project manager for 6 years.

Brief About the Event: Mr. Shankarnarayan Bhat, discussed majorly on the change in technology, what are the latest trends in VLSI, what are the skills needed for the changing technology. He covered the Sub-domains in VLSI, Skills required for each domain, Resume preparation, soft skills development with interactive sessions.

IBM Skills Build Program Boot Camp on Cloud Computing
In association with IQAC and Edunet Foundation, Noida

The IBM skill build program boot camp was conducted from 13th Feb 2024 to 17th Feb 2024. The IBM Skills Build Boot Camp on Cloud Computing at Alvas Institute of Engineering and Technology, Mijar, Moodbidri, demonstrated significant success in achieving various outcomes, fostering skill development, and enhancing the overall learning experience for the participants.

The outcomes of the IBM Skills Build Boot Camp underscore its success in imparting valuable skills, fostering collaboration, and preparing students for the challenges and opportunities in the field of cloud computing.

Participating in the IBM Skills Build Program brings about a profound transformation in participants' skill sets, elevating them from a foundational level to a state of advanced proficiency. Before the program, participants typically possess a basic understanding of relevant technologies; however, after completion, they emerge with enhanced technical skills, a deeper comprehension of industry-specific practices, and a heightened ability to apply theoretical knowledge in practical scenarios.

The hands-on learning experiences and exposure to real-world projects enable participants to navigate complex challenges with confidence. Moreover, the program cultivates soft skills such as effective communication, collaboration, and problem-solving, essential for thriving in a professional setting. The impact is not only reflected in the acquisition of technical prowess but also in the participants' increased adaptability to the dynamic landscape of technology. Graduates of the program are better equipped to contribute meaningfully to their respective fields, positioning themselves as valuable assets in the workforce. The holistic skill enhancement achieved through the IBM SkillsBuild Program transcends traditional education, making participants well-prepared for the demands of the ever-evolving technological landscape.

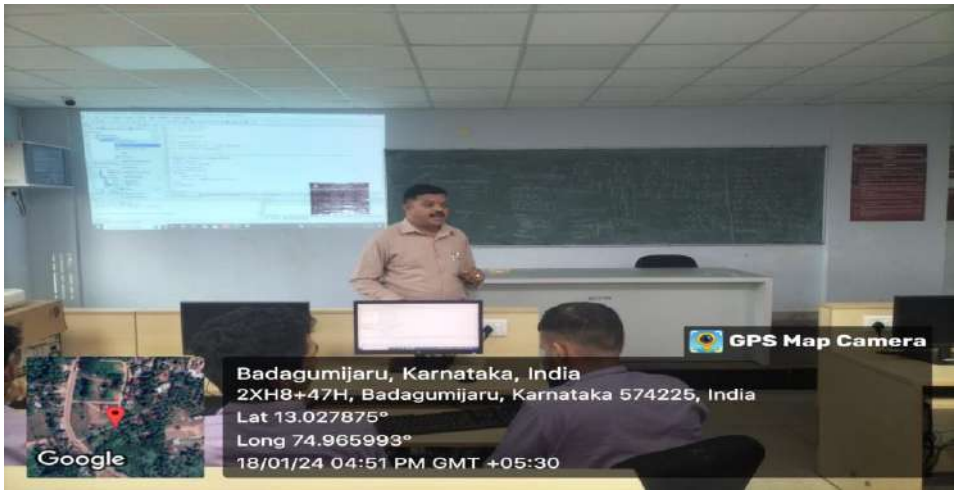
Technical Talk on Innovative Developments in MEMS Gas Sensors

Inaugural Function: The technical talk on "Innovative Developments in MEMS Gas Sensors" commenced on 27th Feb. 2024 at 10:30 AM. The prestigious event was inaugurated by Dr. Siddesh G K, Dr. D V Manjunatha, Dr. Veerpratap V, and Udayakumar. The event took place at department seminar hall, organized by the MEMS CLUB at AIET, Moodbidri.

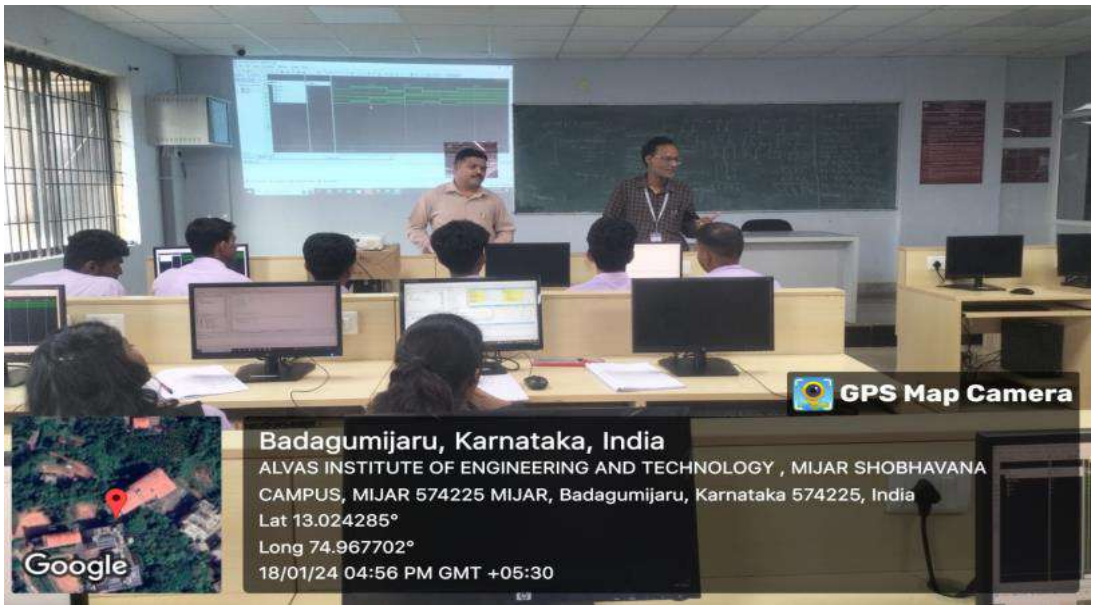
Keynote Speaker: Dr. Shwetha H R (JNNCE Shimoga): Dr. Shwetha H R, a renowned expert in the field of MEMS (Micro-Electro-Mechanical Systems), graced the occasion as the resource person. Dr. Shwetha H R brought a wealth of knowledge and experience to the event, setting the stage for an insightful discourse on the latest innovations in MEMS gas sensors.

Event Overview: The technical talk delved into the cutting-edge advancements in MEMS gas sensors, a crucial component in various industries such as environmental monitoring, healthcare, and industrial safety. Dr. Shwetha H R provided a comprehensive overview of the current state of MEMS gas sensor technology and its implications for the future.

The workshop Report on Verilog HDL



Workshop Codncudted for 3rd A/B Section Students scheduled on 17th to 18th of January, 2024 and 22nd to 23rd January, 2024. The program was aimed to provide participants with comprehensive knowledge and hands-on experience in Verilog coding in VLSI Design, covering both theoretical concepts and practical applications.



The Four-day workshop on Verilog HDL by Dr. D V Manjunatha. Sr. Professor was a resounding success, providing participants with a comprehensive understanding of HDL.

A Four-day workshop on Verilog HDL coding was organized by Dr. D V Manjunatha, Professor by Department of Electronics and Communication Engineering (ECE) and VLSI Club Coordinator at Alvas Institute of Engineering and Technology.

The invited talk on "VLSI - The Present and Future" commenced as scheduled at 11.00 AM at VLSI Lab on 02-03-2024

The invited talk on "VLSI - The Present and Future" commenced as scheduled at 11.00 AM at VLSI Lab on 02-03-2024.

Invited Talk On "IEEE: Enhancing Your Career"

Topic : **"IEEE: Enhancing Your Career"**
Resource Person : Dr. Dhanukumar Pattanashetti
IEEE INDIA office
Date & Time : **28-05-2024 at 11:00 AM**

Profile of the Resource Person: Dr. Dhanukumar Pattanashetti, Librarian working for a Technical Society at Bengaluru. He has done his Ph.D. in Library and Information Science from University of Mysore in 2018. An expert in the field with extensive experience in IEEE and professional development, delivered the keynote address on enhancing career prospects through IEEE involvement. Over 18 years of experience in the field of libraries, information, knowledge management, customer relations; Over a decade of experience in the enhancing user engagement in the digital publishing world.

About the Event: The programme is organized by the Department of Electronics & Communication in association with IEEE Chapter, AIET, Mijar on 28th May 2024 in MBA seminar hall. The talk was attended by students from the E&CE department, faculty members, and IEEE representatives, including the Head of the Department Dr. Siddesh G. K., Dean of Planning Dr. Dattathreya, IEEE Branch Counsellor Dr. Manjunath Kothari, and Dr. Guruprasad. The event was well-received, with active participation and engagement from the audience. The event was meticulously organized by Dr. Ganesh K., who ensured that all logistical arrangements were in place for a smooth and successful session.

Dr. Pattanashetti highlighted how IEEE membership can open doors to numerous professional opportunities, including access to a wide network of professionals, industry-leading publications, and exclusive educational resources. The Institute of Electrical and Electronics Engineers (IEEE) is a leading professional association dedicated to advancing technological innovation and excellence. Founded in 1963 through the merger of the American Institute of Electrical Engineers (AIEE) and the Institute of Radio Engineers (IRE), IEEE is now a global organization with over 400,000 members in more than 160 countries.

The talk emphasized the various career development tools available through IEEE, such as workshops, certifications, and networking events that can significantly impact career advancement.

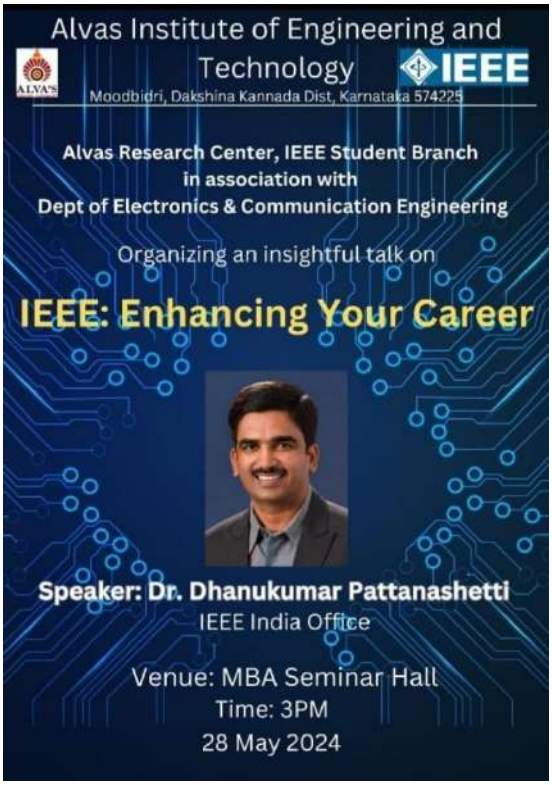
IEEE develops and promotes internationally recognized standards for a wide range of technologies, including electrical, electronic, and computer engineering. IEEE provides numerous opportunities for members to enhance their skills and knowledge through conferences, workshops, and educational resources. The IEEE publishes a vast array of journals, magazines, and conference proceedings that cover the latest research and developments in engineering and technology. IEEE facilitates professional networking through local chapters, technical societies, and global events.

Dr. Pattanashetty sharing his knowledge on "IEEE: Enhancing Your Career"

Dr. Pattanashetty shared real-life examples of professionals who have leveraged IEEE resources to enhance their careers, providing practical insights and inspiration to the attendees. IEEE offers certifications and awards that recognize professional achievements and contributions to the field. Members gain access to job boards, career counselling, and mentoring opportunities. IEEE provides access to webinars, online courses, and technical papers to help professionals stay updated with the latest trends and technologies.

The "IEEE - Enhancing Your Career" talk provided valuable insights into how IEEE can be a significant catalyst for career growth and professional development. Dr. Pattanashetty's presentation equipped attendees with practical knowledge on leveraging IEEE resources to advance their careers

and highlighted the importance of active involvement in professional organizations. The event successfully fulfilled its objective of informing and inspiring students and professionals about the benefits of IEEE membership and engagement.



Technical Talk On "Exploring Antenna Innovations"

Topic : **"Exploring Antenna Innovations"**

Resource Person : **Dr. Karthik Rudramuni,**
Antenna Designer, WIPRO Research Lab, Bengaluru.

Date & Time : **15-06-2024 at 11:00AM**

Profile of the Resource Person: Dr. Karthik Rudramuni, is Antenna Designer at WIPRO Research Lab, Bengaluru. He is a dedicated Design Researcher with extensive experience in RF Systems and Antenna Design, currently spearheading initiatives in the 5G Research Group at Wipro Technologies. He has a proven track record of innovative research contributions and practical applications in the field of Radio Frequency Engineering. He has work Experience as Design Researcher in 5G R&D Group, Wipro Technologies, Bengaluru. He is Leading the design and development of RF Power Amplifiers for high-efficiency performance in 5G networks. He worked as Radio Frequency Design Engineer in CIPL (deputed to Aeronautical Development Establishment-DRDO), Bengaluru. He Designed antennas for UAV Drones data link systems, contributing to advancements in TAPAS & RUSTOM UAVs. Conducted practical field testing and troubleshooting of SATCom Systems and other RF links.

About the Event: Department of ECE organized a technical talk on "Exploring Antenna Innovations" by Dr. Karhik Rudramuni, Antenna Design Engineer, Wipro Research lab, Bangalore on 15/06/2024 to 6th and 8th Semester students of ECE. Resource person started with Antenna Fundamentals such as Operating Frequency, Bandwidth, Radiation Pattern, Directivity, Gain, Efficiency and Polarization. He explained Antenna Design steps and pointed that engineering life is so basic that developers don't always pay adequate attention to the antenna choice.

He explained following key advantages of antenna:

- Predictable antenna performance: IoT devices operate the same in the field as they do in the lab.
- Agility: A single product design can be easily re-tuned across multiple radio frequencies.
- Greater thermal latitude: Stable operations
- Less performance variance: Greater efficiency across the IoT frequency

- Real-world previews: Accurate in-field simulations prior to product manufacturing.

Dr. Karthik Rudramuni, suggested that Antenna Innovations and new requirements are expanding the antenna applications by increased capacity demand, spectrum scarcity, and denser networks. Selecting the right antenna from the wide range available can yield significant increases in both capacity and spectrum efficiency.

He described that Antennas are now, more than ever, playing a key role in getting the most out of microwave links. The diverse set of antenna options and innovations discussed produce the positive impacts that decide choices of antennas can have on capacity, hop length, spectral efficiency, network densification. He advised students to do the following to enhance chances to get selected in core companies like Do projects by own, Acquire Skills, learn programming (Must), Do internship and learn Simulation tools (MATLAB, LTSpice, ADS etc….).

In his talk, he described recent Advances and trends and highlighted a Reconfigurable Intelligent Surface (RIS) is programmable surface structure that can be used to control the reflection of electromagnetic (EM) waves by changing the electric and magnetic properties of the surface. He addressed Challenges and Future Directions such as,

- **Bandwidth Limitations**: Increasing demand for higher data rates exceeds current spectrum allocations.

- **Size and Form Factor**: Antenna size constraints in compact devices like wearables and IoT sensors.
- **Interference and Crosstalk**: Mitigating signal interference in densely populated frequency bands.
- **Environmental Factors**: Performance degradation due to weather conditions and physical obstacles.
- **Integration with Advanced Technologies**: Ensuring compatibility with AI, IoT, and 5G/6G networks.
- **5G and Beyond**: Antennas tailored for ultra-high-frequency bands and massive MIMO systems.
- **IoT and Smart Cities**: Antennas optimized for low-power, long-range communication in IoT networks.

Finally, Mr. Sudhakara HM, Associate Professor, department of ECE gave memento to the resource person and expressed gratitude for giving such an informative talk to the students.

Technical Talk On "FPGA and ASIC"

Topic : **"FPGA and ASIC"**

Resource Person : **Dr. Srinivasa Rao Udara,**
Associate Professor, STJIT &
Managing Director BJV Tech, Ranebennur.

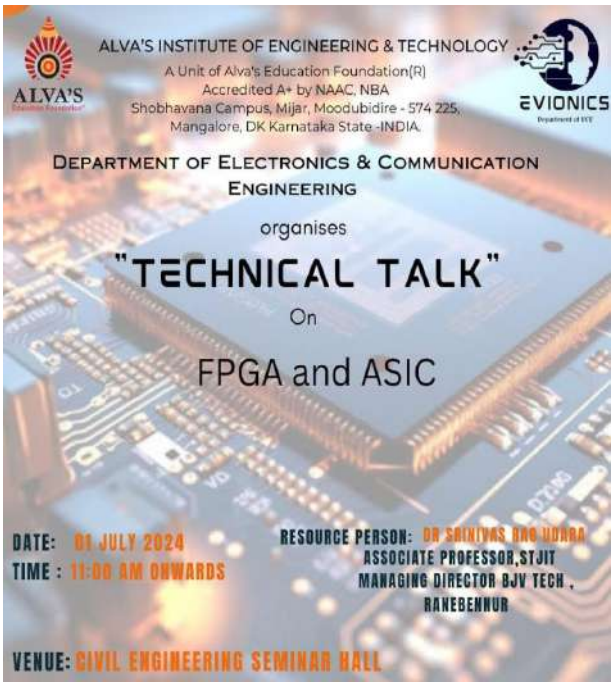
Date & Time : **01-07-2024 at 11:00AM**

Profile of the Resource Person: Dr. Srinivasa Rao Udara presently working as Associate Professor and R&D Head in the Department of Electronics and Communication Engineering, S T J Institute of Technology, Ranebennur, He carried out Research work from IISC Bangalore and IIT Bombay. He received Distinguished Scientist award from Elsevier. He was Programme Advisory Committee Member for NIE, Andhra Pradesh . He worked as Session Chair of 2nd International Conference on Advances in Computer Engineering & Communication Technology, Andhra Pradesh. He is the director of "BJV TECH HUB, which is a core VLSI based company and offers the learning environment for the research scholar to learn by the practical hand. It has their own electronics project and team to deliver the project on time and by working on the live project offer the learning environment for the research scholar.

About the Event: Department of ECE conducted the technical talk on "FPGA and ASIC" by Dr. Srinivasa Rao Udara, Associate Professor, STJIT & Managing Director BJV Tech. Ranebennur on 01/07/2024 for 4th Semester students of ECE.

In his talk, Dr. Udara, pointed that creating and implementing a suitable hardware design defines the operability and efficiency of the entire product. Today, the range of integrated circuits and their design processes has considerably expanded, complicating the choice for product engineering and manufacturing. He said that FPGA is a field programmable gate array comprising numerous configurable interconnected logic blocks. It is possible to program this integrated circuit to perform the expected function like a graphics card or reprogram it so that the same circuit performs another action like a microprocessor. Such capabilities allow changing the existing product functionality by updating software without any manufacturing and physical design change. He discussed Advantages of FPGA such as,

- Capable of capturing more than one lakh designed gates.
- Standard interfaces are provided.
- It also provides built-in memories, processor cores, and many other things.
- It is cheap for small volumes because one does not need to pay for fabrication.
- Quite flexible.



In this talk, he described that ASIC stands for Application Specific Integrated Circuit, built especially for a specific application or any purpose. If one compares this with any other device, it is having improved speed. Basically, it is an integrated circuit that is specified for one specific purpose. He discussed Advantages of ASICs such as, It has improved speed when compared to any other logic device, it is quite efficient and it reduces space requirements.

Resource person concluded that, the choice of the right approach depends on project specifications, business requirements, and capabilities. The core characteristics you need to take into account are product complexity, expected production volume, available budget, prototype necessity, and market launch deadlines.

Finally, Dr. Ganesh V. N, Associate Professor, department of ECE gave memento to the resource person and expressed gratitude for giving such an informative talk to the students.

Technical Talk On "Biomedical Signals and Its Applications in Machine Intelligent Automation and Robotic Control"

Topic : **"Biomedical Signals and Its Applications in Machine Intelligent Automation and Robotic Control"**

Resource Person : **Dr. Roshan Joy Martis,**
Dr. Roshan Joy Martis, Associate Professor
Department of Computer Science and Engineering,
Global Academy of Technology, Bengaluru

Date & Time : **23-07-2024 at 11:00AM**

Profile of the Resource Person: Dr. Roshan Joy Martis, Associate Professor in the Department of Computer Science and Engineering at Global Academy of Technology, Bengaluru. He did his Ph.D in Medical Science and Technology from IIT Kharagpur. He has appeared consecutively for four years (since 2020 till 2023.) as one among the top 2 percent meritorious researchers of the world as per the survey conducted by the Stanford University, CA, USA . The survey is based on the citations and the derived parameters from Scopus: an eye on global research database which is the world's leading scientific publication indexing service.

He is currently serving as Associate Editor in the International Journal titled "Frontiers in Digital Health", Frontier Publisher, which is a leading journal in Biomedical Engineering. He has published more than 80 research publications in the reputed, peer reviewed, high impact factor international journals and conferences. He is known globally for his research in the field of Biomedical Signal Processing and application of Artificial Intelligence in medicine and healthcare.

About the Event: Department of ECE organized an Technica talk on "Biomedical Signals and Its Applications in Machine Intelligent Automation and Robotic Control" in association with "E-Yantra" to Fourth Semester students of ECE by Dr. Roshan Joy Martis on 23rd July 2024 in Civil Engineering seminar Hall. Mr. Uday Kumar, "E Yantra" Co-Ordinator, Dr. Duttathreya G, Dean Planning & HoD, were present on the dais for the program. Ms. Shravani, 4th semester ECE, did the master of ceremony and greeted the chief guest. Ms. Thrisha P Hegde, 4th semester ECE, provided the introduction of the

chief guest. The goal of the talk is to provide a comprehensive overview of how biomedical signals are utilized in modern technology, highlight current innovations, and foster discussion on future developments in the field.

Dr. Duttathreya (Dean planning & HoD, ECE) florally welcoming the Chief Guest Dr. Roshan

Biomedical signals are critical indicators of physiological processes in the human body. These signals, which include electrocardiograms (ECG), electromyograms (EMG), electroencephalograms (EEG), and others, provide essential insights into health conditions, neurological activity, and muscular function. With advancements in machine learning and robotic technologies, the integration of biomedical signals into intelligent automation and robotic control systems has become increasingly relevant. He discussed on the nature of biomedical signals, their processing techniques, and their applications in intelligent automation and robotic control.

Dr. Roshan elaborated various Types of Biomedical Signals like, Electrocardiogram (ECG): Measures the electrical activity of the heart and is used to diagnose cardiac conditions, Electromyogram (EMG): Records electrical activity in muscles and is used in diagnosing neuromuscular disorders and Electroencephalogram (EEG): Captures electrical activity in the brain, essential for studying brain

disorders and cognitive functions. He also discussed on their signal characteristics with amplitude, frequency, duration and noise.

He explained various Signal Processing Techniques with Preprocessing and feature extraction methods. The Preprocessing method includes, Filtering: Removes noise from the signal. Common filters include low-pass, high-pass, and band-pass filters, Normalization: Adjusts the signal amplitude for consistency across different recordings, Segmentation: Divides the signal into segments for detailed analysis. The Feature Extraction includes, Time-Domain Features: Direct measurements from the signal, such as peak amplitude and intervals, Frequency-Domain Features: Derived from the signal's frequency components, using methods like Fourier Transform, Time-Frequency Domain: Uses techniques like Wavelet Transform to capture both time and frequency characteristics. Dr. Roshan explained on classification analysis with Machine Learning Models (SVM, CNN & RNN) and statistical methods (PCA).

Technica talk on "Biomedical Signals and Its Applications in Machine Intelligent Automation and Robotic Control"

As a conclusion, the Biomedical signals provide a wealth of information crucial for health monitoring, diagnostics, and robotic control applications. The integration of these signals into intelligent automation and robotics enhances the capabilities and effectiveness of these systems. As technology

continues to advance, future developments in signal processing, machine learning, and sensor technology will further expand the applications and impact of biomedical signals in various domains.

Dr. Roshan Joy Martis Addressing audience

Finally Prof. Udayakumar S, Assistant Professor, department of ECE gave memento to the resource person and expressed gratitude for giving such an informative talk to the students.

Industry Expert Talk On "Applications of IoT in advance manufacture Technology"

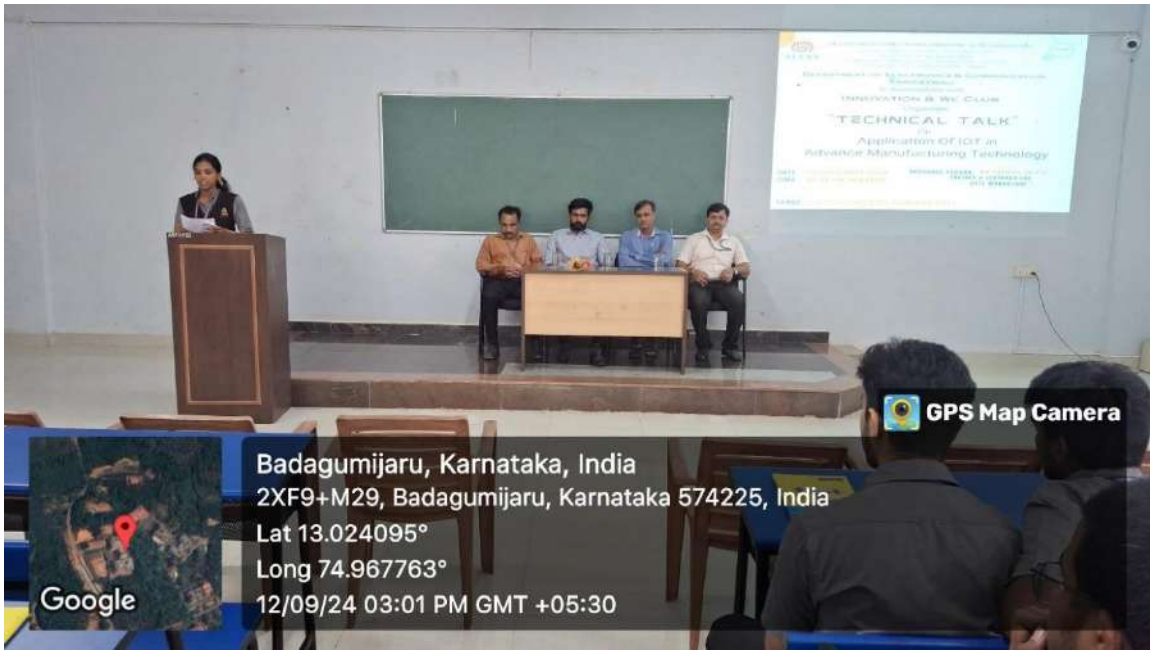
Topic : **"Applications of IoT in Advance Manufacture Technology"**
Resource Person : **Mr. Pramith Shetty,** Trainer and Lecturer COE GTTC, Mangalore.
Date & Time : **12-09-2024 at 03:00PM**

Profile of the Resource Person: Mr. Pramith Shetty is a Trainer and Lecturer COE, GTTC, Mangalore. He has 1.5 years of industrial experience and 2 years of teaching experience. He expertise in industrial applications of IoT and manufacturing technology. He has delivered guest lectures in various institutes.

About the Event: Department of ECE organized an industry expert talk on **"Applications of IoT in Advance Manufacture Technology"** in association with "Innovation & We Club" to second year students of ECE by Mr. Pramith Shetty, Trainer and Lecturer COE GTTC, Mangalore, on 12th September 2024 in Civil Engineering seminar Hall. Dr. Satyanarayana, HOD, Mechanical Engineering and "I& We club" Co-Ordinator, Mr. Sudhakar H M, Associate Professor, ECE department and Dr. Ganesh V N, Associate professor, "Evionics" Co-Ordinator, were present for the program. Ms. Supritha H R, 2nd year ECE, did the master of ceremony and greeted the chief guest. Ms. Shrusti Sardar, 2nd year ECE provided the introduction to the chief guest. The objective of the talk was to introduce the students to emerging technologies in Manufacturing Technology using IOT.

The Internet of Things (IoT) is revolutionizing advanced manufacturing by enhancing efficiency, productivity, and flexibility. Participants developed a basic understanding of IOT real time applications in various fields of engineering. Total 113 students of 3rd semester of various department students were attended in this program. Ms. Suraksha Shetty, 2nd year ECE, conveyed the vote of thanks.

The Internet of Things (IoT) represents a paradigm shift in manufacturing by integrating physical systems with digital networks. This transformation enables real-time data exchange, advanced analytics, and autonomous decision-making, leading to substantial improvements in efficiency, quality, and flexibility within advanced manufacturing environments. Mr. Pramith Shetty discussed on key technical applications of IoT in advanced manufacturing and their impacts.



Industry expert talk on "Applications of IoT in Advance Manufacture Technology"

Mr. Pramith Shetty, focused on Predictive Maintenance, smart manufacturing, supply chain visibility, customization & flexibility and industry 4.0. Where, Predictive maintenance leverages IoT sensors and data analytics to forecast equipment failures before they occur. This proactive approach minimizes unplanned downtime and extends the lifespan of machinery with Sensors (Install on equipment to monitor parameters such as temperature, vibration, and acoustic emissions).

Smart manufacturing involves the use of interconnected devices and systems to optimize production processes. This includes real-time monitoring, automated adjustments, and enhanced control over manufacturing operations. By using, IoT Devices (Sensors and actuators on machines and production lines), Communication Protocols (Utilize protocols like MQTT, OPC UA, and HTTP for data exchange) , and Control Systems (Implement advanced control algorithms to adjust machine settings based on real-time data).

IoT enhances supply chain visibility and management through real-time tracking and smart logistics. This leads to more efficient inventory management and streamlined supply chain operations. This leads to more efficient inventory management and streamlined supply chain operations with Technical Components of, RFID Tags & Sensors **(**Track raw materials and finished goods), Data Platforms

(Centralized systems for data integration and analytics) and Automated Systems (Use IoT-enabled robots for inventory management and warehousing).

IoT facilitates adaptive manufacturing processes, allowing for rapid customization and flexible production. IoT is a cornerstone of Industry 4.0, which integrates digital technologies into manufacturing processes to create smart factories.

Mr. Pramith Shetty sharing his knowledge on "Applications of IoT in Advance Manufacture Technology"

The integration of IoT in advanced manufacturing technology brings transformative benefits, including enhanced operational efficiency, improved quality control, and greater flexibility. By leveraging real-time data and advanced analytics, manufacturers can achieve higher productivity, cost savings, and safety improvements, driving the future of industry practices.

This program outlines the essential technical applications of IoT in manufacturing, highlighting the significant advancements and benefits that this technology provides.

Mr. Pramith Shetty Adessing the Audience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I & We
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
In Association with
INNOVATION & WE CLUB
Organises
"TECHNICAL TALK"
On
Application Of IOT in
Advance Manufacturing Technology
DATE: 12 SEPTEMBER 2024
TIME : 03:00 PM ONWARDS
RESOURCE PERSON: MR PRAMITH SHETTY
TRAINER & LECTURER COE
GTTC MANGALORE
VENUE: CIVIL ENGINEERING SEMINAR HALL

Technical Talk On "Introduction to Product Development Life Cycle"

Topic : **"Introduction to Product Development Life Cycle"**
Resource Person : **Dr. Guruprasad,** Sr. Asst. Professor, Department of ECE, AIET, Mijar.
Date & Time : **05-10-2024 at 11:00 AM**

Profile of the Resource Person: Dr. Guruprasad has completed his UG studies from GMIT Davanagere and PG studies from JNNCE Shivamoga. he has received his PhD from SJCE, Mysore under VTU. His research interests are manufacturing of micro sensors for customized applications. he has published sci journals on the design and fabrication of mems cantilever sensors for the detection of VOCs. He also extended his work for the carbon dioxide sensors using MEMS cantilevers under INUP IISc, Bangalore. Presently he is working as Senior Assistant Professor in the department of ECE, Alvas institute of engineering and technology, Moodbidri. He has 8 years of teaching experience and 2 years of industrial experience. Along with teaching with his interest in entrepreneurial ideas the esteemed organization has given opportunity to start the micro-embedded product based startup V sense Technologies under the patronage of AEF.

About the Event: Department of ECE organized a technical talk on "Introduction to Product Development Life Cycle" in association with "Innovation & We Club" to second year students of ECE by Dr. Guruprasad, Sr. Asst. Professor, Department of ECE, AIET, Mijar on 5th October 2024 in VLSI lab. Dr. Ganesh V N, Associate professor, "Evionics" forum Co-Ordinator and "I & We club" department Co-Ordinator, Dr. Manjunath D V, Senior Professor, ECE department and were present for the program. Total 57 students of 2nd year ECE were present for the event. The objective of the Product Development Life Cycle (PDLC) is to provide a structured framework that guides organizations through the complex process of creating and launching new products.

The Product Development Life Cycle (PDLC) is a systematic process that guides organizations in creating new products, from initial ideas to market launch and beyond. Understanding each phase of the PDLC is crucial for minimizing risks, optimizing resources, and meeting customer expectations effectively. This report outlines the key stages of the PDLC, discusses Technology Readiness Levels (TRL), and presents relevant case studies to illustrate practical applications.

Dr. Guruprasad addressing the audience about "Introduction to product development life cycle"

Dr. Guruprasad, highlighted the various steps involved in product devolvement cycle. idea generation is the first step in the PDLC, where potential product ideas are created. This can occur through various methods:

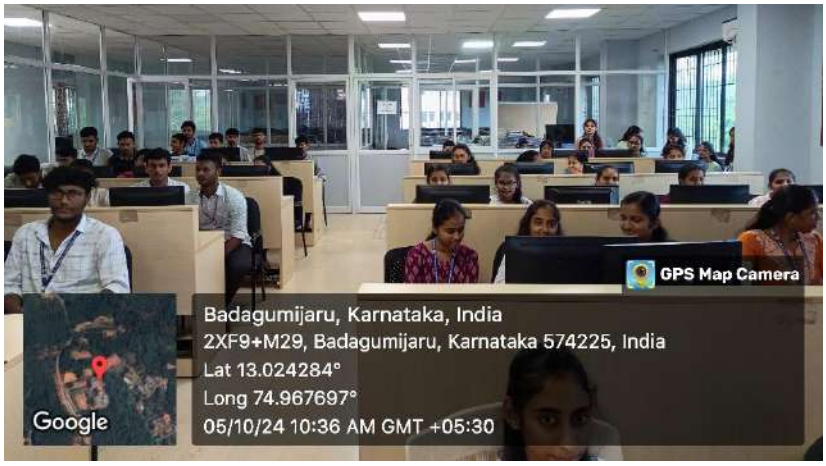
- **Market Research:** Surveys, focus groups, and trend analysis help identify customer needs and gaps in the market.
- **Brainstorming Sessions:** Collaborative meetings encourage creative thinking among team members.
- **Competitor Analysis:** Studying competitor products can inspire new ideas or improvements on existing ones.

Successful idea generation relies on diverse input and an open environment that fosters innovation. He also mentioned about feasibility analysis to assesses their viability. It includes various phases like Technical Feasibility (Evaluating whether the idea can be developed with available technology and resources), Market Feasibility (Analysing potential demand, market size, and competitive landscape) and Financial Feasibility (Estimating costs, pricing strategies, and potential return on investment (ROI)).

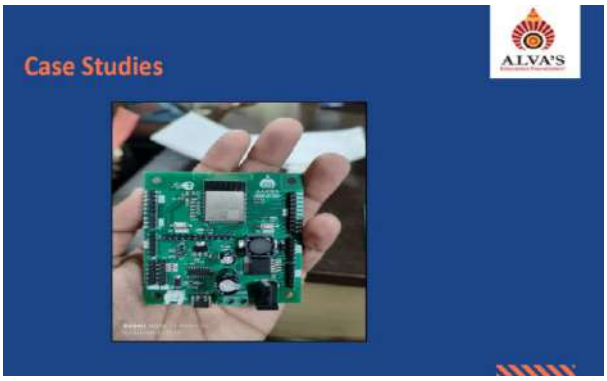
Once the concept is validated, the next step is to create a prototype. This involves:

- **Designing the Prototype:** Developing a working model that embodies the product's specifications.
- **Iterative Testing:** Continuously testing and refining the prototype based on user feedback and performance assessments.

- **Functionality Evaluation:** Ensuring that the prototype meets the intended design and functionality before moving forward.



Prototyping is essential for visualizing the product and identifying any issues early in the development process. Testing and validation are critical to ensuring the product meets quality standards and customer expectations. This phase includes, User Testing, Performance Testing and Regulatory Compliance. Thorough testing helps mitigate risks and prepares the product for a successful launch. He finally concluded with case studies like "Apple iPhone" and "Coca cola's new products".



The Product Development Life Cycle is a vital framework for successfully bringing new products to market. Each phase, from idea generation to testing and commercialization, plays a crucial role in ensuring product viability and market fit. By leveraging methodologies like Technology Readiness Levels and learning from case studies, organizations can enhance their product development processes, reduce risks, and achieve sustainable growth.