MANAV RACHNA UNIVERSITY

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

The Departments of Electronics and Communication Engineering regularly conducts workshops and FDPs. The department also conducts various knowledge sharing sessions in which faculty members share their knowledge acquired recently in a new technological aspect. Few of them are listed below.

"Five day FDP on Internet of Things and Sensors " from 26th July -30th July 2021

To Commemorate 25 Years of Transforming Education and celebrate Silver jubilee under Academics Activities, The Department of Electronics and Communication Engineering Manav Rachna University, Faridabad organized 5-Day FDP On "Internet Of Things (IoT) And Sensors" from July 26, 2021- July 30, 2021. **144** participants from various deptt. and domains i.e. academia, the industry registered and attended the session. The session had a blend of theory with live working models and projects along with the practical hands-on training (online mode-do along). The experts from industry and academia were invited to deliver the sessions.

The session began with the blessings of Hon'Vice Chancellor Manav Rachna University Dr. I.K. Bhat, who shared his thoughts on the significance of the theme as in today's scenario. If we talk about Machine learning or Artificial intelligence, they work on data that can be processed and extracted using the IoT. Based on the application they are multidisciplinary.

Keynote **speaker, Mr. Arvind Dixit Director & Chief Executive Officer at Advance Tech India Pvt. Ltd- Chandigarh delivered his** talk on ***"Introduction to IoT"***. He explained the role of sensors in the Internet of things and industrial Internet of things shared many live doable projects like Smart Agriculture systems, Recording of weather, the energy consumption of a building, Smart Parking to me ***D*r. Avinash Rai from Dept. Of Electronics & Comm. Engineering RGPV, M.P. explained** *"***Applications of WSN in the medical field to enhance data automation systems.*"*** In this session, participants realized the role of wireless sensor networks in IoT applications. He also discussed how genetic algorithms and fuzzy-based decision-making systems helps in decision making within the sensors networks

Mr. K K Singh Yadav,* Assistant Director Bharat Sanchar Nigam Limited (BSNL) (Govt. Of India Enterprises) focused on** *"**Recent Protocols in IoT" with live projects developed on Traffic lights violation, LORA WAN and ZIGBEE Network. In this session participants were familiarized with various protocols used in IoT like MQTT, CoAP, LowPAN etc.

A discussion on machine learning algorithms for IoT was delivered by **Prof S. Kaushik from Sri Ramakrishna Engineering College, Coimbatore.** In this session, participants got knowledge about how Matlab can be used to develop simulation models for IoT-based Communication Systems.

Dr. Amit Mahesh Joshi, Dept. Of Electronics & Comm. Engineering, MNIT, Jaipur delivered a lecture on IoT networks for Health care. In this session, participants were acquainted with various medical sensors for diabetes, depression, and limb prosthesis applications. He demonstrated projects like Easy band (a wearable safety-aware mobility device), EMG data acquisition module for upper-limb prosthesis application, noninvasive glucose level monitoring in smart health care, and many more.
A demonstration on **CISCO Packet Tracer for IoT** was given by **Dr. K. Deepa from the Dept. of Electronics and Communication, MRU.** At first, participants were trained with the logical and physical components of the packet tracer with typical examples. Demonstrations on creating an automated Smart Home, Fire alarms, etc using packet tracer were also done.

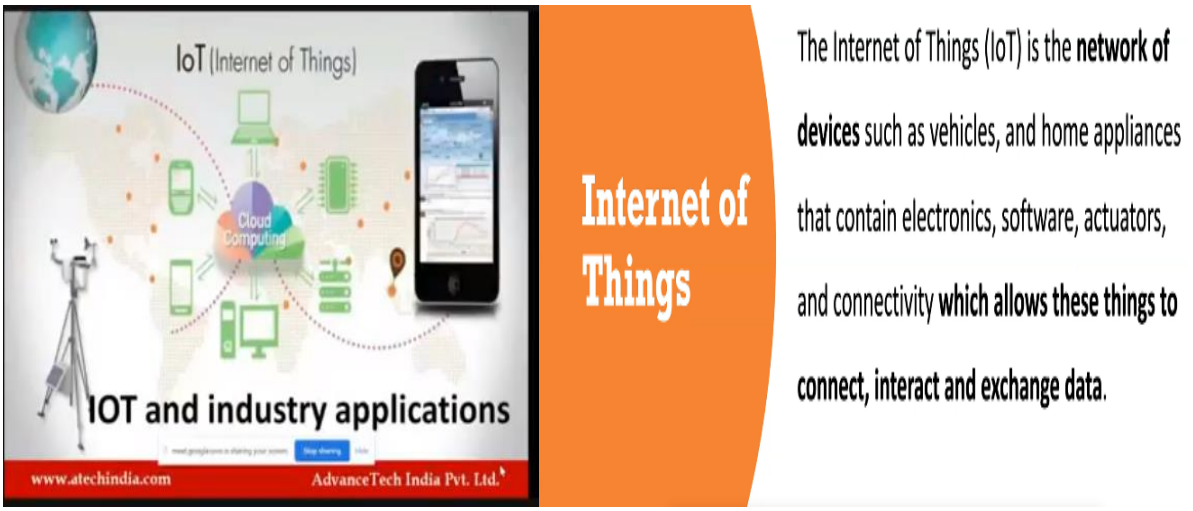
Dr. Seema Nayak HOD-ECE IIMT Group of Colleges spoke on **Embedded based IoT systems** in which she gave a brief on the Technical road map to IoT along with the latest work being carried on like NexG Helmets, depression analysis systems, and many more followed by a hands-on session by **Mr. Vijay Kumar Gill and Mr. Lokesh Bhardwaj from the Dept. of Electronics and Communication, MRU** on the tool thing Speak for development of IoT based Apps

The last speaker of the day Dr. Amrita Rai, **Prof -ECE Deptt from GL Bajaj Institute of Technology and Mgmt, Greater Noida** shared the **Role of smart sensors for IoT**. She shared few **patents** which they had developed; Robots serving medicine to the corona patients and for home sanitization

The aim of this FDP was to familiarize the participants with basic IoT Fundamentals, Applications of WSN in the medical field to enhance data automation system, Recent Protocols in IoT, Role of machine learning algorithms for IoT, Machine learning in IoT-Health care perspective, CISCO Packet Tracer for IoT and LORA for IoT, Embedded based IoT systems, Hands-on tutorial on things speak, Smart Sensors for IoT, and much more

The participants were very satisfied with the session and found it very interactive and informative. They requested more such sessions on new innovative technologies.


MANAV RACHNA UNIVERSITY
MANAV RACHNA UNIVERSITY
On the Occasion of Silver Jubilee
Department
of
Electronics & Communication Engineering
organizes
Faculty Development Program
on
Internet of Things
&
Sensors
(July 26th - 30th, 2021)



Report on "Understanding Opportunities in Electronics and Communication Industry **(29th July 2021)**

The Department of Electronics and Communication organized a session on Understanding Opportunities in Electronics and Communication Industry in association with Knowledge partner Srijan Sanchar on 29th July 2021

Srijan Sanchar is an organization Inspired by the vision "Innovations Are Ideas in Action". They have established themselves as a leading organization in the field of innovation covering the entire continuum from creativity to entrepreneurship. More than one hundred programmes on Innovation and Creativity has been conducted by Srijan Sanchar including the first of their kind on frugal and open innovation. Srijan Sanchar has hosted several Innovation challenges to crowdsource ideas. City-based innovation challenge Nagar Navrachana was launched by Hon'ble Union Minister of India Mr. Nitin Gadkari. City-based challenges have been launched for the cities of Jaipur, Vrindavan Mathura. **Recycling innovation challenges waste to wealth and Green Ash Foundation. Srijan Sanchar has established several centres of excellence on frugal innovation, power train, extended enterprise innovation, electro-optics etc along with academia. SS has interfaced with several SRIJAN SANCHAR industries in India i.e, Scooters India Limited, Central Electronics Limited, Hindustan Fibreglass limited etc for providing inputs on research and innovation.**

The resource person **Mr. Aditendra Jaiswal**, has wide experience in handling various industrial projects as well as conducting hackathons countrywide.

He explained the benefits of Creating Mutual Value Academia-Industry collaboration and how India's Electronics Industry is one Of The Fastest-Growing in the World presenting the facts and figures that indicate the electronics exports from India. He explained how even the major sports leagues and sporting events have turned to technology solutions to help athletes, improve coaching and engage fans in new ways, and the global sports technology market is expected to amass a revenue of nearly $41.8 billion by 2026, increasing the scope of the electronics industry in the market.

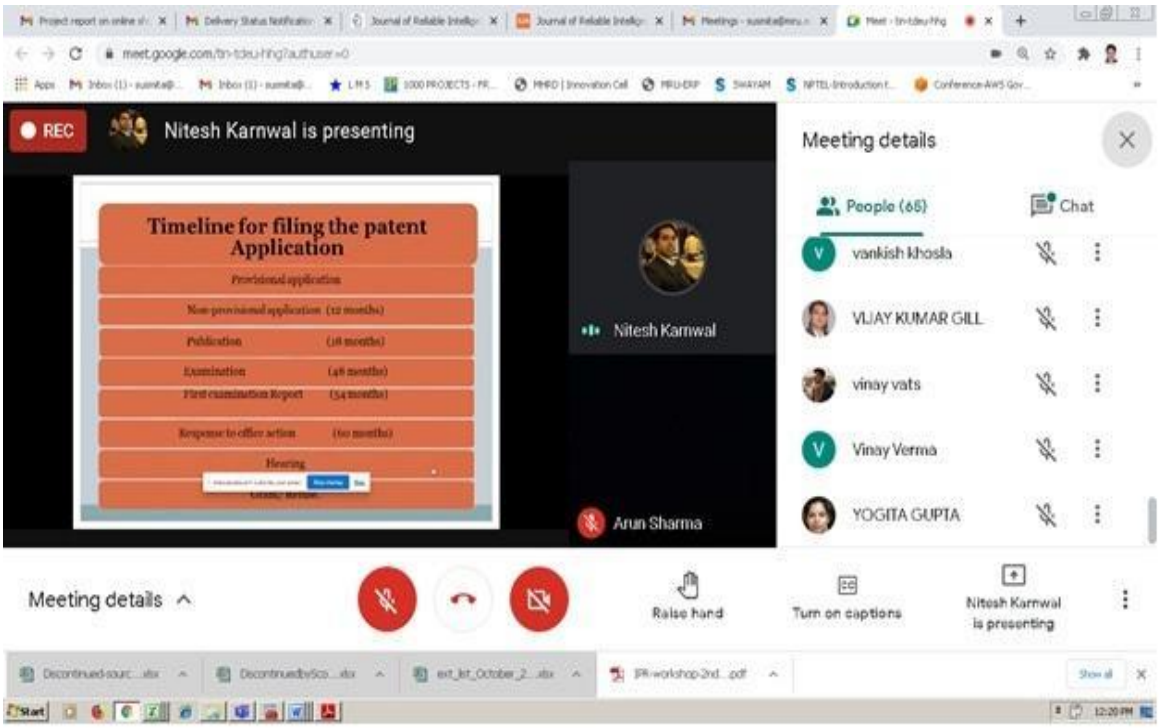
He gave a brief on the evolution of research and the route to push research products to market that are developed by academic institutions. Lastly, he focussed on how to transfer knowledge to wealth by industry-academia collaboration.

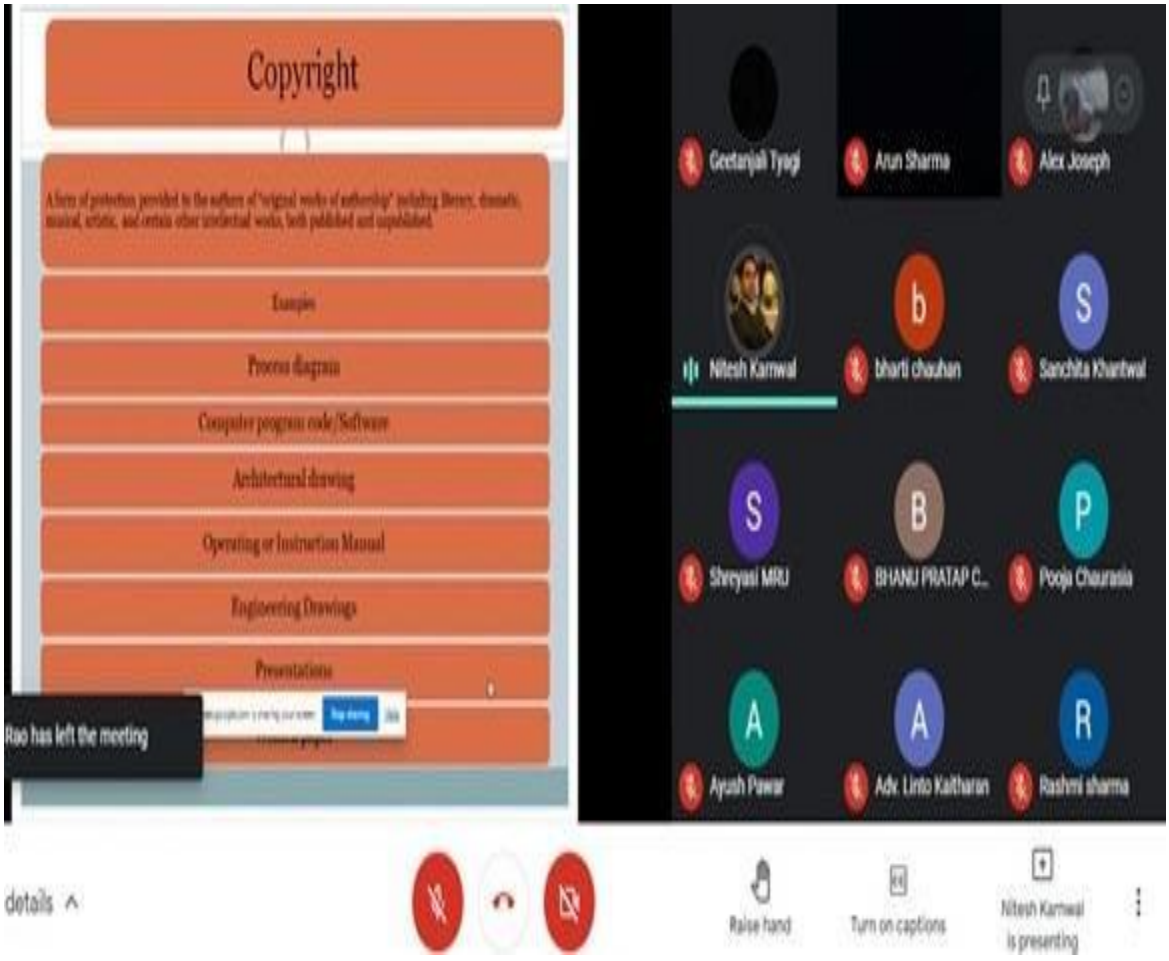
The session was very informative to break the stereotype that there are fewer jobs in the Electronics and Communication industry. With the facts and figures presented it is quite inevitable that Electronics Engineers have a huge scope in the Indian market.

Report on IPR Workshop Conducted Online on 2nd February 2021

IPR Cell of Manav Rachna University organized an IPR Workshop online on 2nd February 2021. Mr. Nitesh Karnwal, IPR Manager of IPR Cell, Manav Rachna Research Innovation and Incubation Centre conducted the session. Participants of the workshop were B.tech, M.tech and PhD students and Faculty members of Manav Rachna University. The workshop was conducted to enhance general awareness on Intellectual Property Laws, Patent filing Process, criteria for patentability and most importantly, the invention which can not be patented under Section 3 and 4, Indian Patent Act, 1970. The aim of the workshop was to make the participants aware of their rights about intellectual property and encourage them to file more patents so that we can create an

environment of research and innovation in premises of the University. Mr. Karnwal explained about types of IPR namely Patent, Trademark, Copyright, Industrial designs. He explained about the process and timeline for filing patent application, patentable subject matter and conditions of patentability. The workshop had an engaging Q & A session.


REC
Nitesh Karnwal is presenting
Timeline for filing the patent Application
Provisional application
Non-provisional application (12 months)
Publication (18 months)
Examination (48 months)
First examination Report (54 months)
Response to office action (66 months)
Hearing
Nitesh Karnwal
Arun Sharma
Meeting details
People (68)
Chat
vankish khosla
VIJAY KUMAR GILL
vinay vats
Vinay Verma
YOGITA GUPTA
Meeting details
Raise hand
Turn on captions
Nitesh Karnwal is presenting


Copyright
Examples
Process diagram
Computer program code/Software
Architectural drawing
Operating or Instruction Manual
Engineering Drawings
Presentations
Rao has left the meeting
Geetanjali Tyagi
Arun Sharma
Alex Joseph
Nitesh Karnwal
bharti chauhan
Sanchita Khantwal
Shreyasi MRU
BHANU PRATAP C...
Pooja Chaurasia
Ayush Pawar
Adv. Linto Kaitharan
Rashmi sharma
details
Raise hand
Turn on captions
Nitesh Karnwal is presenting

Report of Workshop on "Hardware interfacing of Arduino with MIT App"

Held on 11th Feb 2021

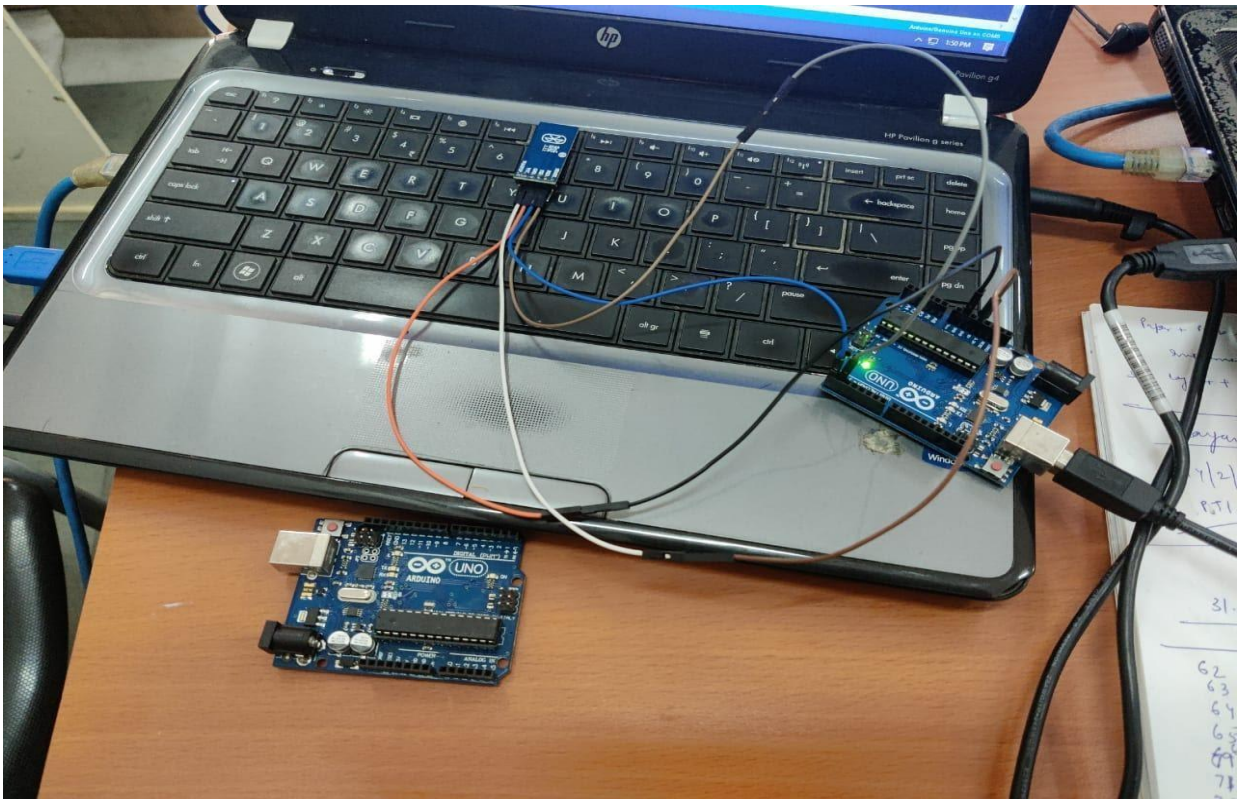
The Department of Electronics & Communication, Faculty of Engineering organized a workshop on 11th February, 2021 from 12:00 noon to 2:30 PM. The workshop was conducted by Mr. Lokesh Bhardwaj and Mr. Vijay Kumar Gill on MIT App Inventor and Arduino. The lecture was attended by faculty members of Electronics and Communication engineering department.

Mr. Lokesh Bhardwaj explained the basics of MIT App Inventor and all the faculty members present designed an Android app whose task was to switch ON and OFF the LED connected with Arduino Uno.

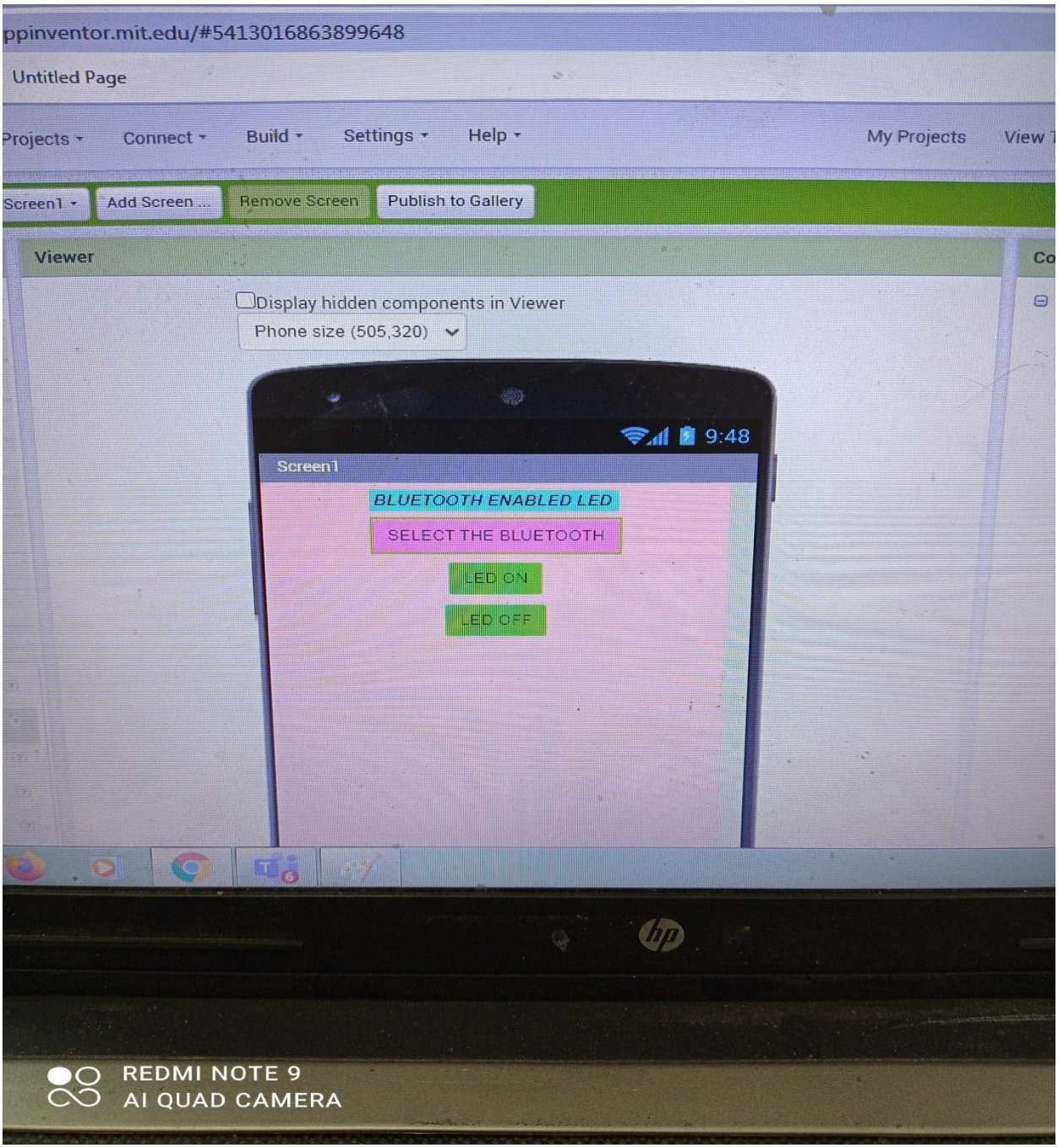
Mr. Vijay Kumar Gill explained the programming for connecting the Arduino Uno with Android App with help of Bluetooth and Serial Communication. All the attendees completed the task successfully through hardware implementation of the problem statement.

The faculty members interacted with the resource persons and gave their complete attention and provided relevant suggestions for betterment of the workshop.

A few pictures of the event are attached.


ARDUINO
UNO


REDMI NOTE 9
AI QUAD CAMERA



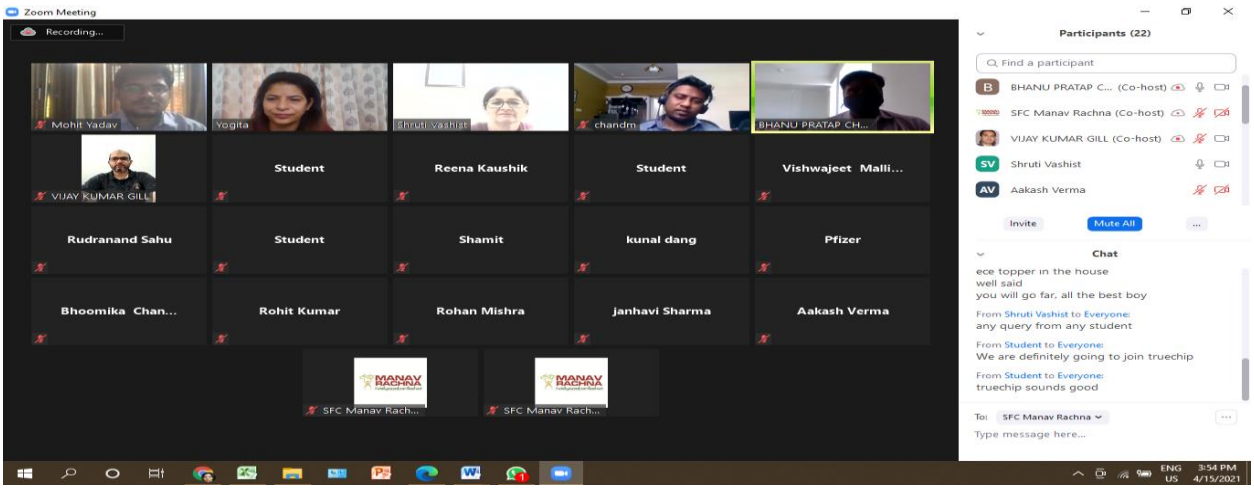
WEBINAR 15th April "Future of Software Development - From Writing Code to Model Based Designing"

Electronics and Communication Engineering is one of the major engineering fields that is responsible for the development of electronic devices and gadgets. From healthcare to entertainment, Electronics engineers have crafted some cutting edge technology and have made fantastic electronic devices for the simplification and perfection of human efforts. They work for transmission of information across channels like coax cable, optical fibers or wireless communication. They work for fabrication as well as designing of electronic components for the

sectors like hospitals, industries, defense and many more utilizing efficiently components like microprocessors & microcontrollers, solid-state devices, antennas etc. It is a forever growing branch where highly skilled professionals get lucrative job opportunities. As computer programming in its curriculum, the engineers have the chance of working as programmers or software developers in the software industry. The research industry demands the services of electronics engineers for managing large scale research, designing, conceptualizing, developing and testing of the latest electronics and communication devices. We at Manav Rachna offer such environment that makes you industry ready by giving exposure to various platforms and tools.
Two speakers had been invited to give insight for Future of Software Development - From Writing Code to Model Based Designing
The first speaker Mr. Chandru Kumar works as a Sr. Application Specialist with Altair and is involved in the Technical aspects on Model Based Design Software as well as Pre sales & Post sales Activities. He is the major resource person in e-Mobility /Automotive /Aerospace OEMs and industrial Automation domain. He also provides technical support in the centre of Excellence at Manav Rachna University for Altair Hyper-Works and products on Model Based Design for Embedded system Application. He gave a brief insight on various platforms of Altair that are used to simulate the product or the circuit designing. He discussed Altair Compose and Activate platform for design problems and also some case studies such as simulation of drone and its flight in virtual environment. He also discussed the utilization of tools for 0D to 3D design problems

Mr.Mohit alumnus, Manav Rachna University currently working at **True chip Solutions, Noida** as a **Design Engineer is** working on the **CXL Protocol** which is an Interconnect for Processors, Memory Expansion and Accelerators. He is using **System Verilog** which is a hardware verification language and **UVM** (Universal Verification Methodology) which is a standardized methodology for verification. The simulators that are being used are QuestaSim by Mentor Graphics, Xcelium by Cadence and VCS by Synopsys. .

Mr. Mohit briefed about the True chip projects and platforms. He discussed about the ever-growing the demand of the VLSI engineer in India and how students can focus from the very first semester to achieve their goals.
The session ended with the queries from the students regarding scope of Electronics and Communication domain along with its various specializations. Overall session was very informative and interactive



Workshop on ARDUINO and Solar technology

A very informative workshop was conducted for a group of students from Government Boys School NIT-I Tikona park, by Innovation and Incubation Centre (IIC) and centre for smart energy on 17.10.20.

The students were divided in groups of two. While the first group was attending the Arduino workshop, the second group was attending another workshop which was about solar technology.

The event started with a short introduction on Arduino covering the basic components used and their working. Many projects such as the robotic car, blind stickand home automation were showcased to the students so that they can understand the working of Arduino in a better way.

A brief explanation of the making, importance and the use of Arduino was given so that the students can understand the role of Arduino in real world and how are they going to change the present scenario of the world. They were also given a little information on different kinds of sensors that are used with the Arduino like the humidity sensor, air quality sensor, ultrasonic sensor, etc. and some 3D printed objects were also presented.

The other session was on Solar technology which covered the basics of DC devices and Installing PV panels. The basic difference between AC and DC battery storage, and the relative advantages and disadvantages were briefed upon. The students were informed about (DC) electricity what solar panels produce and what batteries hold in storage, while alternating current (AC) electricity is the type used on the grid and in most household devices. Students were also given practical exposure to the inverter.
The workshop concluded with questions that were asked by the curious minds of the students, they had a lot to take away from this workshop and they enjoyed learning about a lot of new things.


IIC


3 Watt
SOLAR GRID TIE INVERTER
Now Save & Sell Your Solar Power
with Our Solar Grid-tie Inverter
POWER GUARD
THE INTELLIGENT STABILIZER
BMS

Workshop on ARDUINO and Solar technology

A very informative workshop was conducted for a group of students from government school by Innovation and Incubation Centre (IIC) and centre for smart energy on 5th Oct 2019.

The students were divided in groups of two. While the first group was attending the Arduino workshop, the second group was attending another workshop which was about solar technology.

The event started with a short introduction on Arduino covering the basic components used and their working. Many projects such as the robotic car, blind stickand home automation were showcased to the students so that they can understand the working of Arduino in a better way.

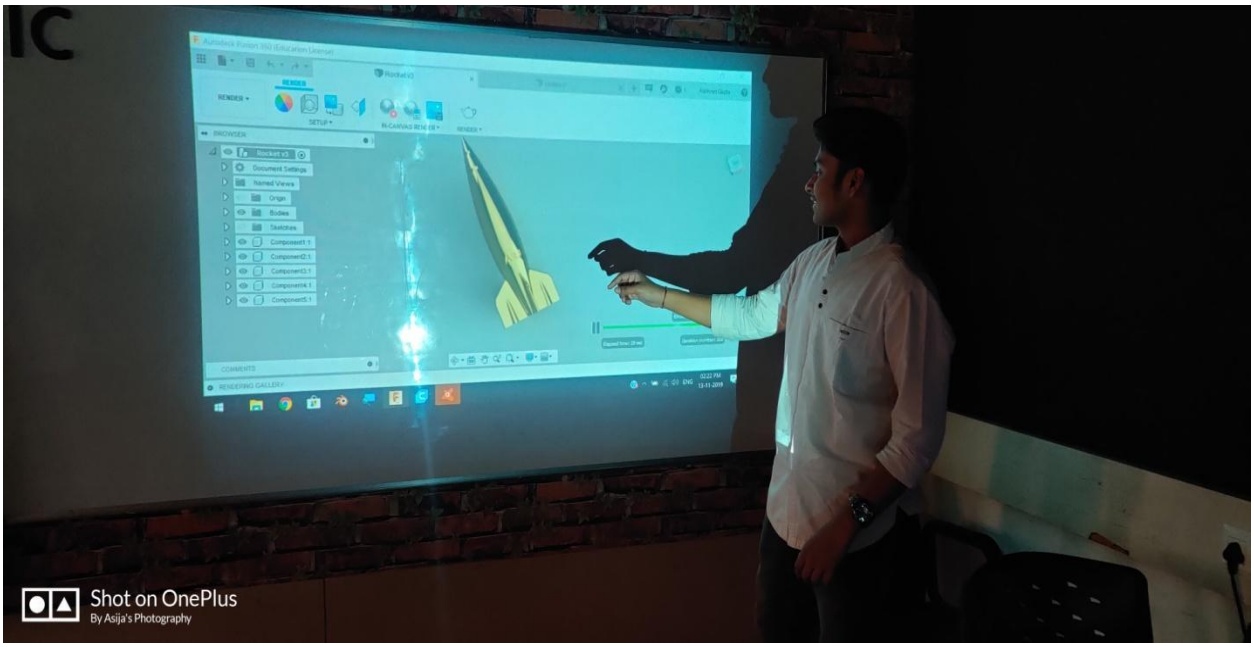
A brief explanation of the making, importance and the use of Arduino were given so that the students can understand the role of Arduino in real world and how are they going to change the present scenario of the world. They were also given a little information on different kinds of sensors that are used with the Arduino like the humidity sensor, air quality sensor, ultrasonic sensor, etc. and some 3D printed objects were also presented.

The other session was on Solar technology which covered the basics of DC devices and Installing PV panels

The workshop concluded with questions that were asked by the curious minds of the students, they had a lot to take away from this workshop and they enjoyed learning about a lot of new things.

3D Workshop on 14.11.19

Team IIC (Innovation and Incubation Centre) of Manav Rachna University organized a Workshop on **"3D Designing and 3D Printing"** where students got an exposure to the 3D world. The workshop was divided in two parts, first, they learnt how to design anything by the use of **"Fusion 360"** and later on they worked on their printing. A small competition was also held in the workshop, the best design would be printed and get the space on the IIC wall of fame.



Report on Webinar on "Introduction to Robotics and Automation"

Mechanical Engineering Department, MRU organized a webinar on **"Introduction to Robotics and Automation"** in collaboration with ECE Department on 22nd April 2021. The session was attended by in-house faculty members and students and also engineering faculty from other institutions. The webinar started with a welcome address by **Dr Sujata Nayak, Head of Mechanical Engg.** to the participants.

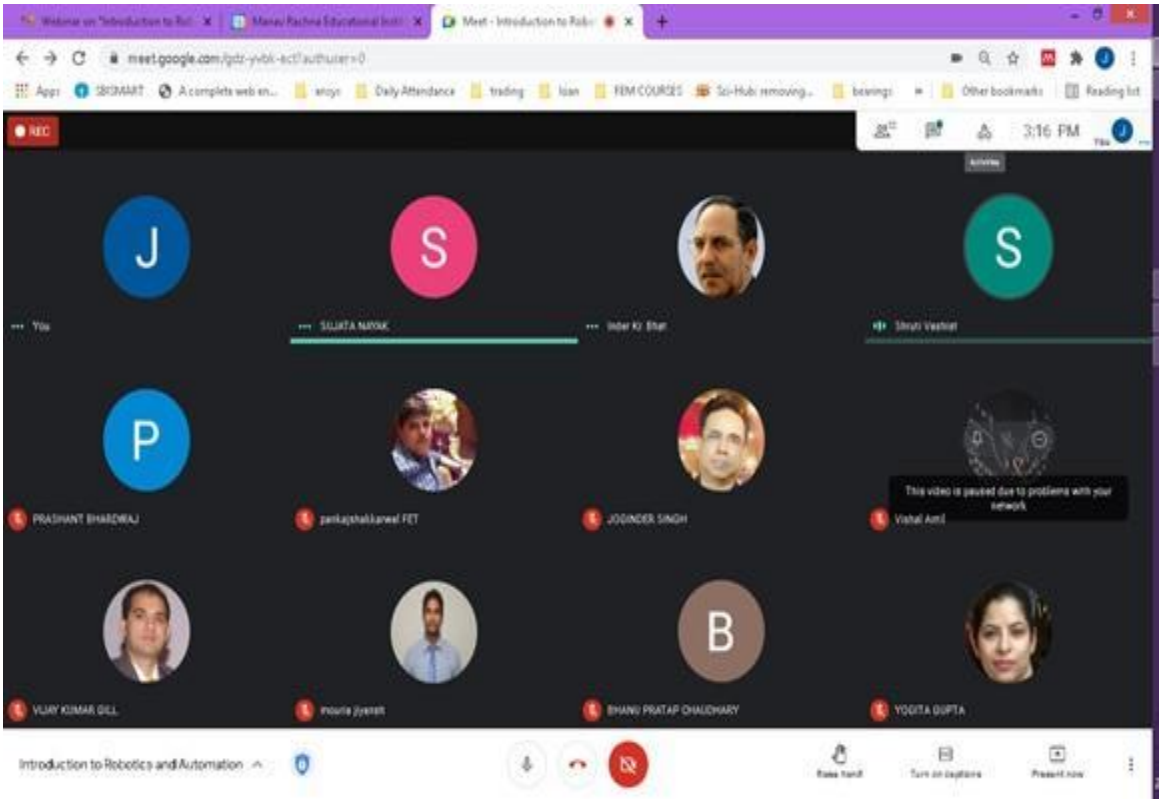
Mr. J P Sharma, Asst. Prof of ME Department started the session with an introduction to the first commercially used robot "Unimate", which was developed by Joseph Eagleburger and George Devol and used in the Automobile sector in 1973. It was continued with different configurations of robots and types of joints used for various applications with artificial intelligence and vision systems for sorting of products. He also explained basic mathematical calculations such as the principal axis frame and how different parameters are evaluated based on Denavit and Hertenberg. He also discussed how validation can be done through use of software **Roboanalyser**. An articulated robotic arm which was developed by the use of 3D modelling software and printed through the use of a 3D printer was shown to participants.

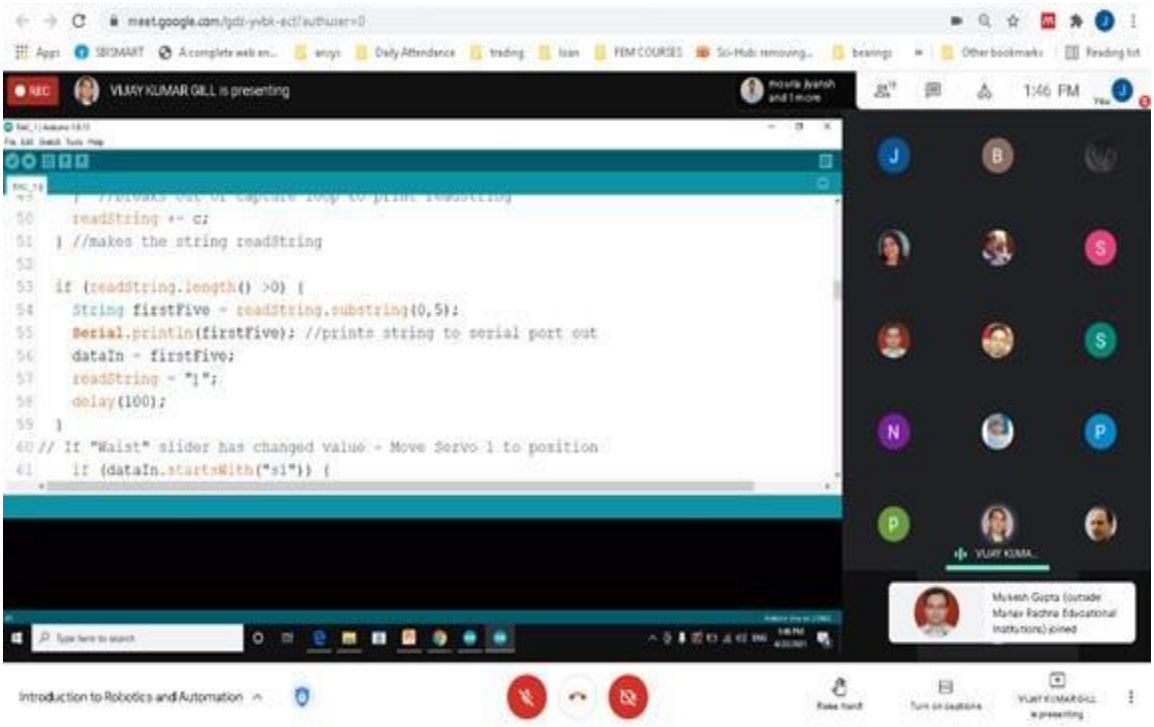
The Automation session was taken by Mr. Vijay Gill, Asst. Prof of ECE Department. He explained how the motion of different joints of a robot can be controlled by a fraction of rotation through use of servo at the joints with its programming using **Arduino software**. A little glimpse was also shared with the participants of how this can be done with the help of electronic circuits and can be controlled wirelessly using Bluetooth components within the circuit. At the end of session, he also briefed about the MIT app related to an articulated robot, which can control its motion using a mobile.

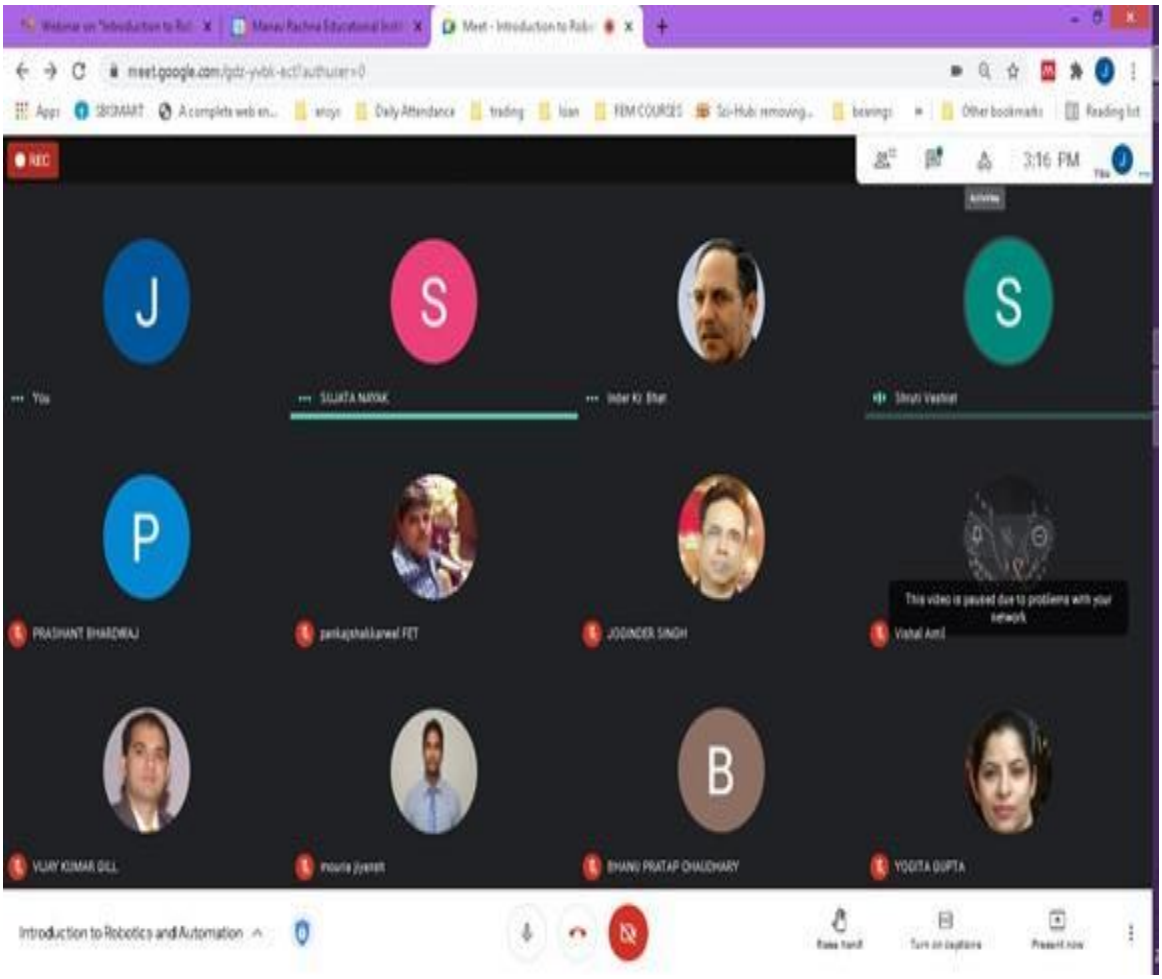
Dr. Shruti Vashist, Dean Student Welfare & HoD –ECE gave her feedback about the webinar and appreciated the combined efforts of both faculty members for conducting a wonderful & informative session.

The session concluded with feedback and suggestions from **Dr. I. K. Bhat, Hon'ble Vice chancellor of MRU**. He motivated us to organize such a workshop every 15 days in collaboration

with all engineering and non engineering departments for a “multi-disciplinary” approach in conducting these sessions which will provide suggestions and solutions towards sustainable societal benefits.



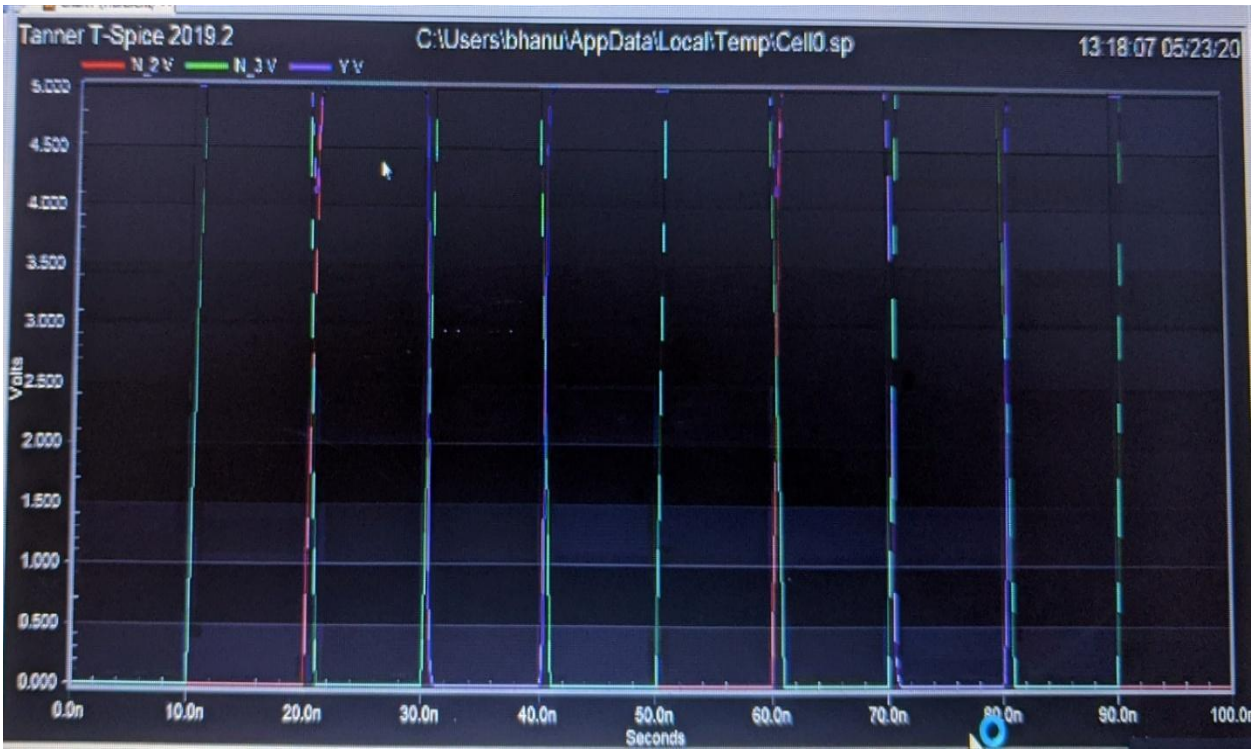


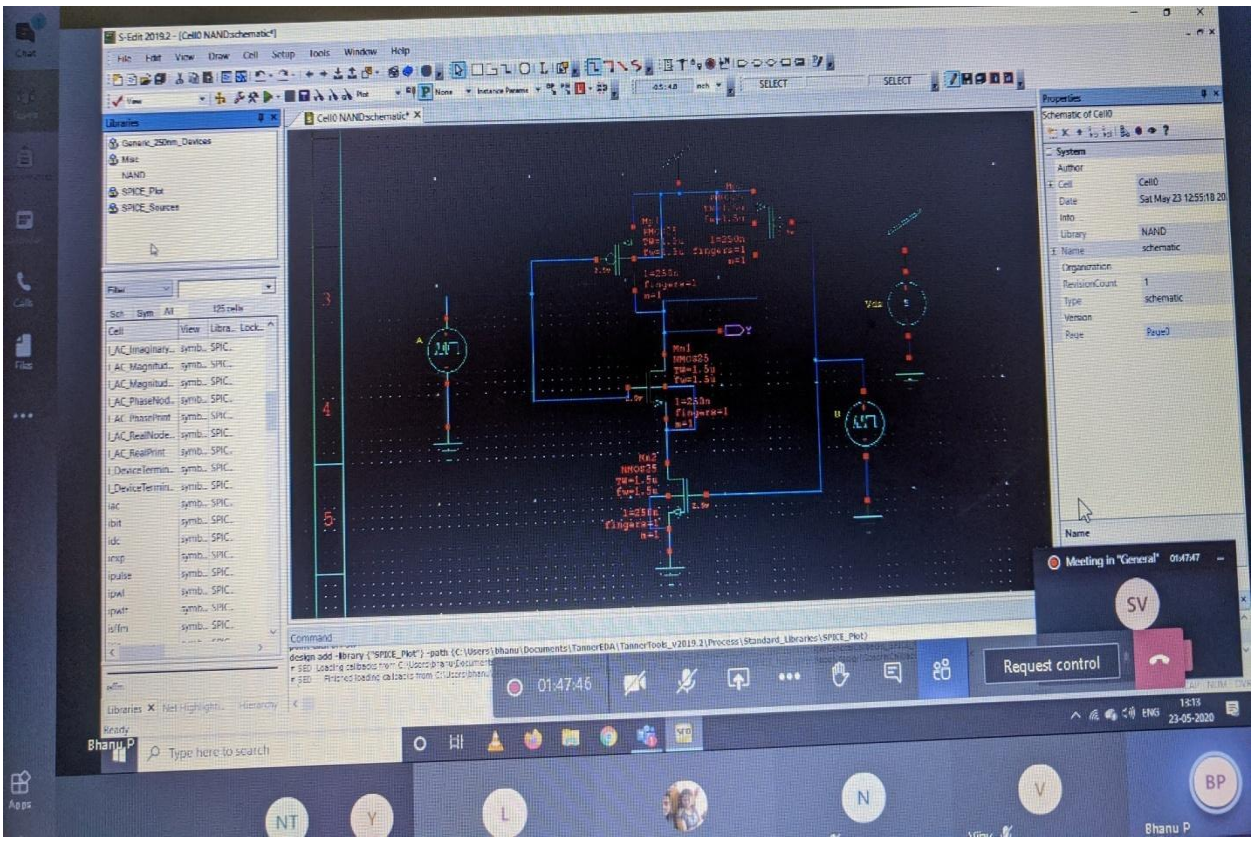


Report on Tanner workshop held on 23rd may 2020

Department of Electronics and Communication Engineering, Manav Rachna University conducted a workshop on" **Logic design using CMOS logic & Familiarization with Tanner EDA tool** on 23-05-2020 using MS Team. The facilitator for the workshop was Mr.BhanuPratap
The aim of this workshop was to provide hands-on experience on Tanner EDA tool for VLSI design and to share domain knowledge with all the faculty members. The faculties had an exposure to the digital Circuit Design using CMOS & their simulation using Tanner EDA tool. The workshop included some theoretical session on logic families focusing on CMOS, designing a logic using CMOS and practice sessions of the logic designs on Tanner EDA tool.

Tanner EDA tools are high-performance, powerful user interface that enhances the design of the design team. Electronic design automation (EDA), also called electronic assist-design design is a set of software tools for designing electrical systems such as integrated circuits and boards. This is a modern tool for computers and electronics companies, Since a modern semiconductor chip contains billions of objects. EDA tools are essential for their design. Electronic automation design has really improved the design of electronic components, especially with universal design techniques that remove different types of bugs or errors on chips, circuit boards, etc. In general, these tools have adopted and directed the construction of circuit boards and chips through automated processes.


Tanner T-Spice 2019.2
C:\Users\bhanu\AppData\Local\Temp\Cell0.sp
13:18:07 05/23/20
N_2 V
N_3 V
Y V
5.000
4.500
4.000
3.500
3.000
2.500
2.000
1.500
1.000
0.500
0.000
Volts
0.0n
10.0n
20.0n
30.0n
40.0n
50.0n
60.0n
70.0n
80.0n
90.0n
100.0n
Seconds


S-Edit 2019.2 - [Cell0 NAND:schematic*]
Cell0 NAND:schematic*
Libraries
Properties
Schematic of Cell0
Meeting in "General"
SV
Request control
01:47:46
Bhanu P
Type here to search
BP
Bhanu P