

**DR. AKHILESH DAS GUPTA
INSTITUTE OF TECHNOLOGY
& MANAGEMENT**

LECTRON

Aug, 2020 - Aug, 2021

**ELECTRONICS AND
COMMUNICATION
ENGINEERING DEPARTMENT**

Our Patrons



Late Shri Babu Banarasi Das Ji



Late Dr. Akhilesh Das Gupta



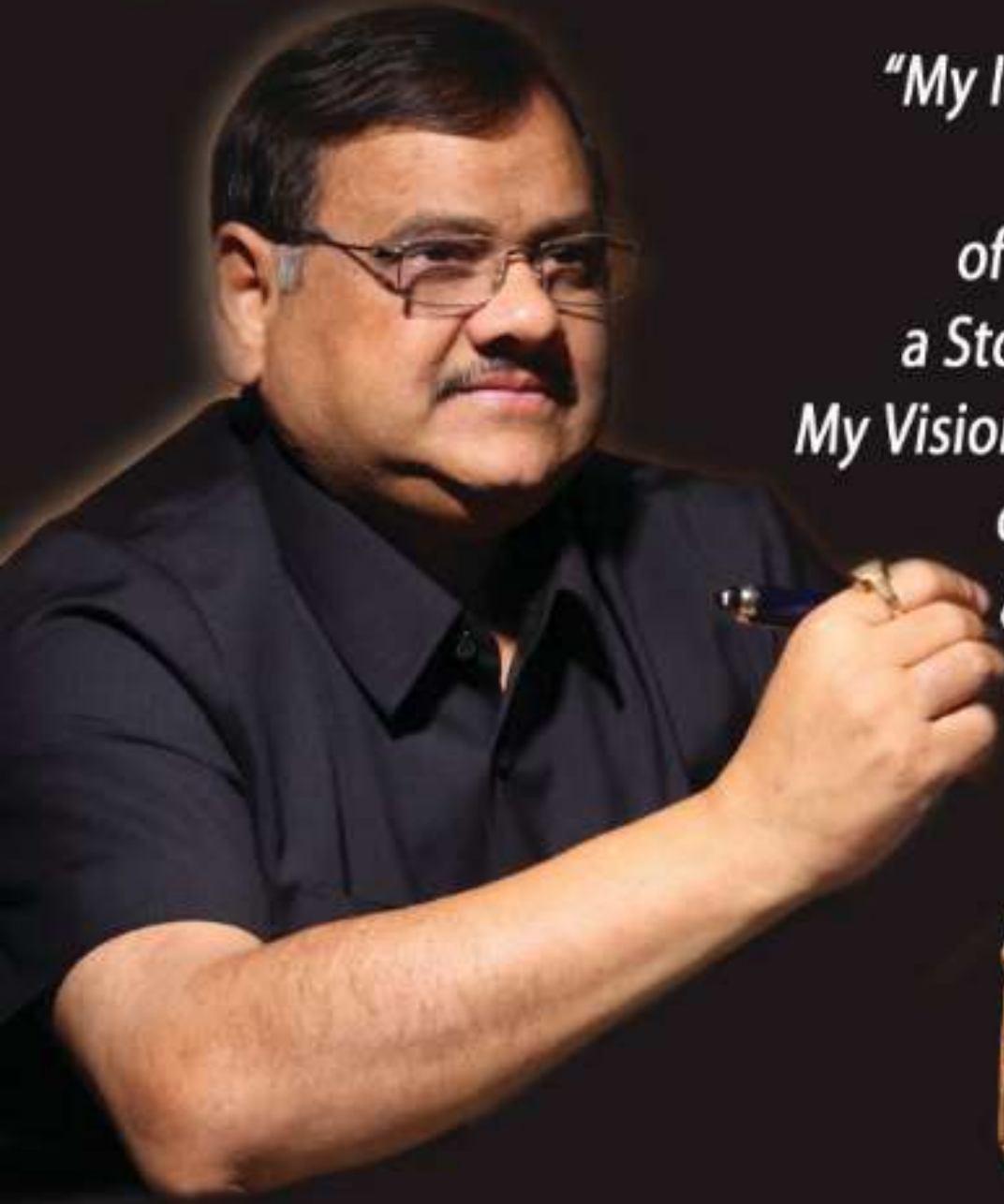
Mrs. Alka Das Gupta



Mr. Viraj Sagar Das Gupta



AKHIL JYOT



*"My Idea of a Society
is a River
of Education &
a Storm of Success.
My Vision of life is an Ocean
of Learning
& a Tide of
Humanity"*



शत शत नमन

Mrs. Alka Das Gupta

Chairperson
BBD Group of Education



Message from Chairperson

The Department of Electronics And Communication Engineering has always been the gem of the Dr. Akhilesh Das Gupta Institute of Technology and Management. The perennial zeal of the Department has never left the achievements stagnant. The Department not only gives students the exposure to the regular engineering curriculum but also to the aspirations of today's corporate world, thus inculcating a professional aptitude in them. The dedication of the faculty members has strengthened the learning process ensuring an environment of collaboration, experimentation, imagination, and creativity. It is such a prodigious delight in watching the students cutting edge in technical exploration, enhancing their analytical skills and brushing themselves up for the rapidly changing sector, and establishing themselves as entrepreneurs and engineers.

The Department has always reached new heights and I am looking forward to more wonders and achievements. I wish the very best to the Department of ECE for the launch of the **LECTRON**, the official technical magazine of the Department. The magazine beautifully provides an overview of academic programs, research activities, various laboratories, training and the other fields explored by our faculty members and students.

Mr. Viraj Sagar Das Gupta

President, BBD Group



Message from President

I am extremely happy to witness the shaping up of the next volume of **LECTRON**.

A special mention to the Editorial Board, who were able to capture the noteworthy proceedings of the ECE Department of Dr. Akhilesh Das Gupta Institute of Technology and Management and were also able to present it in an alluring manner. I thoroughly enjoyed myself going through the pages of this technical magazine.

This issue of the technical magazine is an insight to what campus life truly means, the surfeit events together represent the opportunities that one can take and augment their personalities up to the brim and be glorious predominantly.

I hope students and faculty members find this Edition as sound as I did. I congratulate the Department and the Editorial Board for this achievement.

Shri S. N. Garg

Chief Executive Officer



Message from CEO

Even after so many batches passing under my supervision, the joy and happiness remain constant. ADGITM is exemplary both from the point of view of merit as well as from the placement perspective. Our students have been placed in the best organisations of the country and we strive to maintain such decorum by which the students are benefited the most. With an aim to remain quality conscious ADGITM has put in efforts for providing the best industrial exposure along with a professionally ethical environment, where one can develop himself / herself on multiple levels. As technology is advancing at a very rapid rate, we have an experienced and well-qualified faculty panel to adjust to the market requirements and guide the students as and when required. The only way to become technically stimulated is by receiving the proper exposure to the world and that is what we inculcate in our students. Our institution is technology-friendly and we don't restrain students from experimenting new technologies and work styles, that is how we inculcate self-reliance and tech-savvy mind.

Prof. (Dr.) Sanjay Kumar

Director, ADGITM



Message from Director

"Engineering is not only the study of the technical subjects, but it is about living an intellectual life."

As the Director of Dr. Akhilesh Das Gupta Institute of Technology and Management, I strongly believe that education is not only about imparting knowledge but more about opening the individual's mind to self-expression. I have been personally encouraging students to develop an overall sensibility and awareness. Encouraging them to, not try, but make it happen. I saw an overwhelming response by the students in not only technical domain but also in the branch of sports, art, dance, photography, music and a lot more. Students are our partners in our mission to set a new benchmark in the field of engineering. I am confident that with such a positive and progressive attitude they would be able to justify the credibility of the Department as well as the college by bringing laurels and what not.

I am immensely proud to observe a team of such enthusiasts. The next volume of the technical magazine of the Department of Electronics and Communication Engineering - **LECTRON**, has been able to make a count of all the achievements, hard work and dedication of the faculty members and students alike. I wish them luck.

Dr. Yamini S.

Principal, ADGITM



Message from Principal

When it comes to the real world, everybody needs to be a go-getter. The onus of our institution is to enable the students not only to adapt to changes for the betterment of the society but also be the catalyst to make it more equitable. Dr. Akhilesh Das Gupta Institute of Technology and Management believes in this maximand the institution has always worked to provide quality education.

We believe that the best way to learn something is actually by doing it, therefore practical education is of utmost importance to us which makes the students well fortified with contemporary techniques and innovative practices.

Our staff is highly committed and dedicated to provide an environment where one can freely think and burgeon their persona and also to help them encourage others to bloom.

The ADGITM family will stay united to bring glory to the institution and serve for the betterment of the society.

One of my beliefs is a very famous quote by Albert Einstein that still motivates brilliance, "Never regard study as a duty, but as the enviable opportunity to learn".

Prof. (Dr.) Niranjan Bhattacharyya
HOD, ECE Department



Message from HOD

A child's psychology is the most difficult to understand. We at Dr. Akhilesh Das Gupta Institute of Technology and Management believe in imparting quality education to the students at a level where they can easily retain the knowledge and clear their basics to the pinnacle. Our staff members have been incessantly redefining the standard of erudition in a manner through which the students are equipped to face the challenges of future with their technical proficiency and scientific knowledge. The institution is highly esteemed with reference to its innovative endeavours, keen involvement and exceptional merit. I am proud to be a part of an institution that believes in putting the education of the students beyond everything. Igniting the youth with knowledge, life skills and ethics, we develop the students into confident, persuasive and practically insightful individuals. We encourage and imbibe them the lessons of self-reliance and discipline by letting them to take up multiple roles in different aspects of life. I extend my heartfelt congratulations to ADGITM, Delhi for being successful in producing strong individuals who believe in scripting stories of success with their unfailing resoluteness and indomitable will power.

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About ECE Department



The Department of Electronics and Communication Engineering is committed to render-quality and professional pedagogy to pioneering engineers. The ECE department provides opportunity for the students to learn and fulfill the industry demands of Communication Engineering. The Department has state of art equipment, in various laboratories which is necessary to blend the theoretical & practical aspects of engineering. The Department offers Under-Graduate program in Bachelors of Technology. The Department has faculty members having expertise in wide variety of fields in Electronics & Communication. The department has a strong industry institution interaction.

☆ Workshop ☆ on Basic Electronics & Arduino Interfacing



The workshop was aimed at providing the 1st year students with exposure to the basics of electronics, circuit designing and implementing projects related to Machine to Machine Communication and IoT. It also informed the students about the existing trends in various fields and tools worth exploring. The students of 4th year ECE department successfully organized a workshop on '**Basic Electronics and Arduino Interfacing**'. Under the guidance of Prof. (Dr.) Rajiv Sharma, the 4th year students gave a hands on demonstration about prototyping and interfacing the Arduino microcontroller and also helped the students realize the concepts of basic electronics. The session was made an interactive one by indulging the students to fabricate a practically implementable system based on the knowledge provided throughout the workshop. To judge the attentiveness of the students, a quiz was set which helped the students introspect their attentiveness and the knowledge spawned throughout the workshop.

Teacher In-charge: Prof. (Dr.) Rajiv Sharma

Students Coordinators of ECE Department:

- Sumneet Kaur
- Zorawar Singh Jaiswal
- Devjot Singh
- Maninder Bir Singh Gulshan
- Aman Puri
- Pranav Gupta
- Shubhang Semalty

The Workshop was attended by all the participants.

The topics of discussions were -

Day 1: *Basic Electronics, Introduction to Arduino and LED blinking*

- Resistor
- Capacitor
- Voltage Drop
- Voltage divider
- Microprocessor vs Microcontroller
- Why Arduino?
- Pins (Analogue and Digital)
- LED Blinking.
- Single LED.
- Multiple LEDs
- Buzzer
- Pattern Blinking



Day 2: *Sensors Modules*

- Serial Monitor
- Test on the topics of Day 1
- PWM
- IR Sensor
- Ultrasonic Sensor
- Multi-component system

Day 3: *Project*

- LDR
- HC05 Bluetooth Module
- Scope of prototyping
- Brainstorming Session
- Minor Project
- Future Reading
- More techniques to master





Python and Image Processing Workshop



The workshop was aimed at providing the 1st year students with exposure to the basics of signals, Image Processing and implementing projects related to Image Processing. It gave the students a brief introduction to the Computer Vision Prerequisites and the OpenCV library. The students of 4th year ECE department successfully organized a workshop on '**Basic of Python and Image Processing**'. Under the guidance of Prof. (Dr.) Rajiv Sharma, the 4th year students gave a hands on demonstration on real time image and video processing by implementing projects such as Face Detection and Colour Detection. The session was made an interactive one by indulging the students to fabricate a practically implementable system based on the knowledge provided throughout the workshop. A repository of the workshop content was made available to the students for further exploration and to recapitulate the content covered in the workshop.

Teacher In-charge: Prof. (Dr.) Rajiv Sharma

Students Coordinators of ECE Department:

- Sumneet Kaur
- Zorawar Singh Jaiswal
- Devjot Singh
- Aman Puri
- Pranav Gupta
- Shubhang Semalty

The Workshop was attended by all the participants.

The topics of discussions were -

Day 1 : *Basics of Python*

- Introduction to Python
- Background of Python
- Variables
- Data Types and Keywords
- Python Operators
- If-Else constructs
- Loops
- Strings
- Lists and Tuples
- Functions
- Mini Problem



Day 2 : *Basics of Signals and Image Processing*

- Image Processing Basics
- Introduction
- Resizing of images
- Colour channels
- Convolution of images/filtering
- Binarization
- Morphological operations
- Projects
- Colour detection
- Introduction to Haarcascades
- Pedestrian/face detection
- Brainstorming session
- Minor Project
- Future Reading
- More techniques to master



Student Achievements



Title: MUJ Hack 4.0 at Manipal University, Jaipur

Organized by: Manipal University, Jaipur

Venue: Manipal University, Jaipur

Date: February 1, 2020 to February 2, 2020

Description: ECE third year student **Shagun Saboo** participated in Manipal University Hack by Manipal University, Jaipur and bagged **2nd position**. The project titled as “**ASAAN KISAAN**”. The idea of the project is to ease the work of farmers, and earn at most..

Level (University / State / National / International): National

Position of participant: 2nd position

Student Achievements



Paper Title: Smart Irrigation for Sustainable Agriculture

Organized by: (Journal) International Journal of Creative Research Thoughts (IJCRT)

Venue (Published at): IJCRT (www.ijcrt.org)

ISSN: 2320-2882

Publication Volume: Volume 8, Issue 5 May 2020

Date of Publication: 21/05/2020

Description: Four students of B. Tech. ECE, third year published a paper in International Journal of Creative Research Thoughts (IJCRT) on 21.05.2020. The paper titled “**Smart Irrigation for Sustainable Agriculture**” by **Shubham Garg, Madhav Rathi, Niharika Sabharwal and Ujjwal Saxena**. The IJCRT is a **International Peer-reviewed, Refereed Journals, Open Access Journal and Impact Factor: 7.97** (Calculate by **Google Scholar and Semantic Scholar** | AI-Powered Research Tool).

Indexing in: Google Scholar, Researcher ID Thomson Reuters, Mendeley: reference manager, Academia.edu, arXiv.org, Research Gate, CiteSeerX, DocStoc, ISSUU, Scribd, and many more

Level (University / State / National / International): International Journal

Status of Publication: Paper Published

Alumni Talk, 2020



This Alumni talk was coordinated by Ms. Swati Juneja under the supervision of Prof. (Dr.) Rajiv Sharma, Head, ECE department. Session started with welcoming of alumni, **Mr. Rajat Bajpai** and **Ms. Manali** by Director, Prof. (Dr.) Sanjay, C.E.O., Sh. S.N. Garg, Assistant Registrar, and Prof. (Dr.) Rajiv Sharma, Head, ECE department by presenting mementos to alumni.

Alumni Talk, 2020



ADGITM (formerly NIEC) has a long-established tradition of staying in touch with their students and alumni and to maintain this tradition, two of our successful alumni, Mr. Rajat Bajpai and Ms. Manali were the speaker of the day. Mr. Rajat Bajpai from batch 2013-2017 is currently in cadence design system, posted in Gurugram shared his experiences of life of how to keep yourself motivated always and how to be strong irrespective of ups and downs in life with an ending note of life is beautiful and we should live it gracefully. Ms. Manali from batch 2013-2017, working as a Senior Executive in Bharti Airtel our another successful alumni speaker who got success in his very early stage of life shared his old memories of college and how to reach heights of success by keeping yourself humble and never give up attitude in life. In a nutshell, it was a great talk summed up with the blessings and motivational thoughts by CEO Sir and Director Sir.

Guest Lecture, 2020



The guest was welcomed by presenting a memento by Prof. (Dr.) Sanjay Kumar, Director, ADGITM and Prof (Dr) Rajiv Sharma, Head ECE Department.

Delegates:

1. Sandeep Gupta, Director (3ST Technologies Pvt. Ltd.)
2. Johnson
3. Abhishek Kumar Singh

The talk aimed at introducing the 3rd year students to the basics of VLSI design and Verilog HDL and it aimed at increasing the numbers of placements by making the students aware of the ease of designing of circuit and learning of language which will help in placement interview.

Guest Lecture, 2020



The Workshop was attended by all the participants. The topics of discussions were:

1. Digital Test
2. Seminar on VLSI
3. Verilog introduction
4. Implementation of design on FPGA



Introduction to Embedded Systems using Arduino



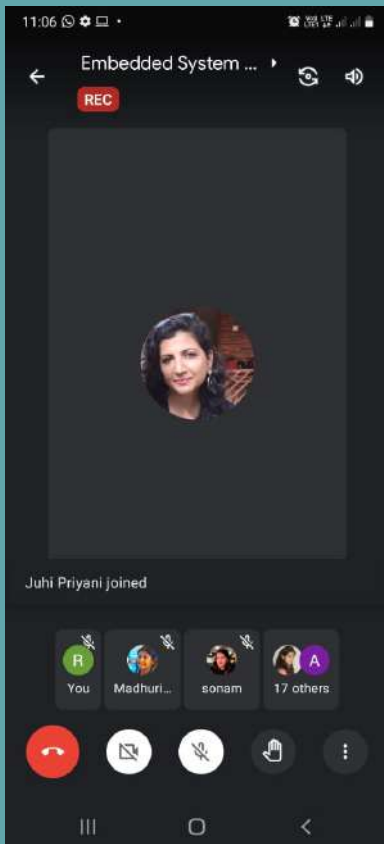
IEEE ADGITA in collaboration with the ECE department organized a two-day workshop on “Introduction to Embedded Systems using Arduino” on 09-03-2021 and 10-03-2021. This workshop provided an invaluable experience to our students. After successful completion of the workshop, every participant was provided with an e-certificate. Keeping in mind the hazards of the COVID-19 pandemic, the batch size was restricted to 20 students only.

The objectives of the workshop:

- 1. To provide students, especially first year, with hands-on experience of hardware.**
- 2. To make students realize the importance of both hardware & software and help them understand the dependency of one on the other.**



ICT based FDP on Embedded System Design & System Development



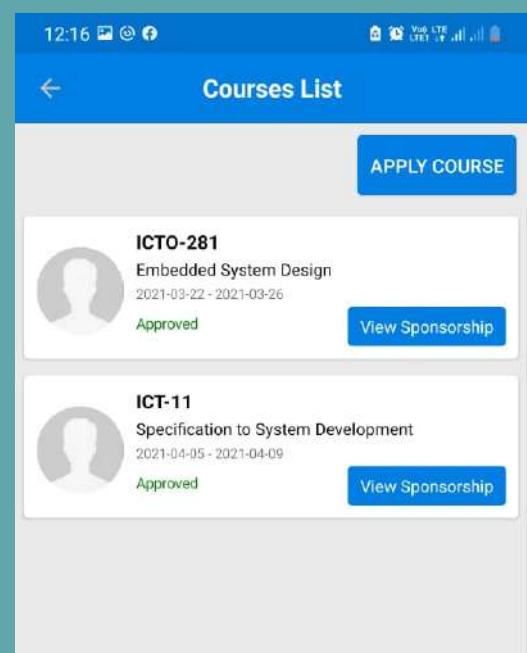
This faculty development program was organized by NITTTR Chandigarh from 15-03-2021 to 21-03-2021 & 5-04-2021 to 9-04-2021 through online mode.

NITTTR is the National Institute of Technical Teachers Training & Research is one of the four regional Teacher's Training Institute in India established by Human resource development MHRD. This institute has been conducting short-term courses in various subjects for faculty of Engineering Colleges in addition to organizing AICTE sponsored Induction Training Programmes.

They have provided two certification courses:

1. Embedded System Design
2. Specification to System Development.

The duration of these courses was 7 days & 5 days respectively.



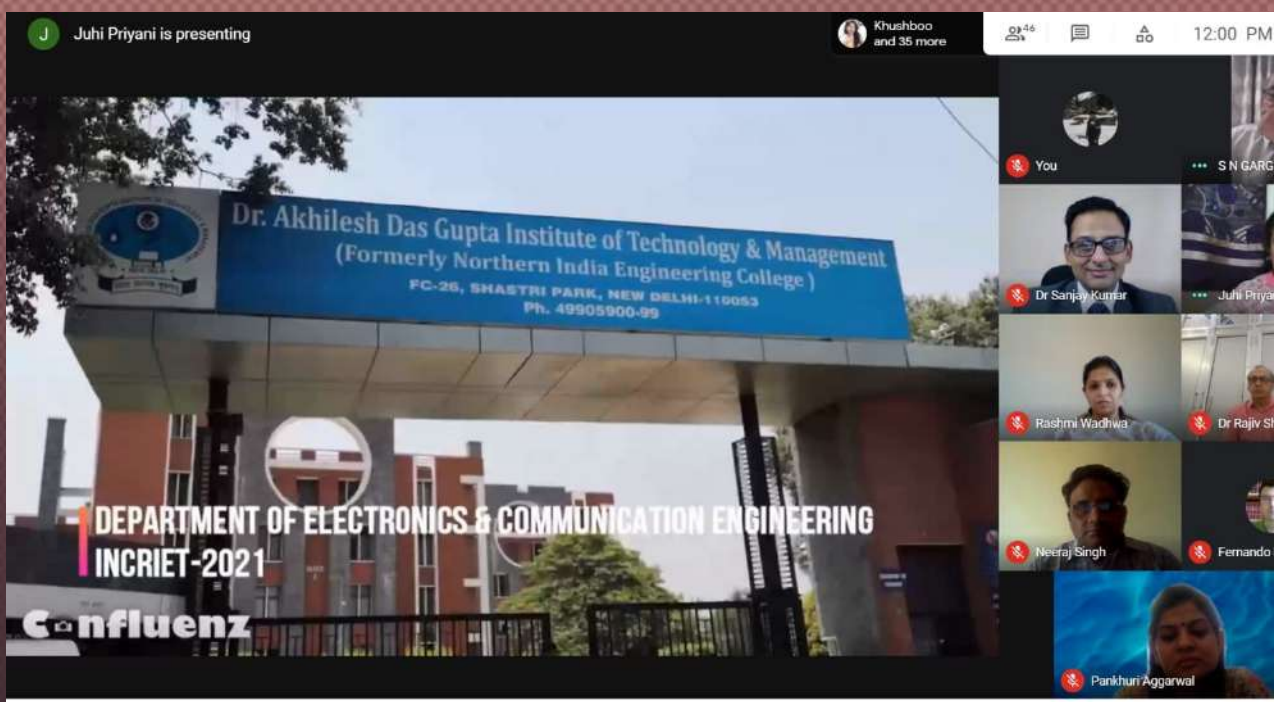
International E-Conference on Recent Innovation in Engineering and Technology

Two days International E-Conference on Recent Innovation in Engineering & Technology (INCRIET-2021), was organized by the Electronics and Communication Engineering Department at Dr. Akhilesh Das Gupta Institute of Technology & Management, New Delhi on 26th - 27th May 2021 in virtual mode.

- **HIGHLIGHTS:**

DAY1: 26th May, 2021

- > **Dr. Fernando López**, Associate Professor at the International University of La Rioja , UNIR, Spain , Chief Guest and Keynote Speaker.
- > **Dr. Elena Verdu Perez**, Associate Professor, International University of La Rioja (UNIR), Spain, Guest of Honor.



DAY2: 27th May 2021

> **Prof. (Dr.) Rashmi Gupta**, Netaji Subhas University of Technology, NSUT, East Campus, (formerly AIACTR), Delhi. Chair, Technical session 1.



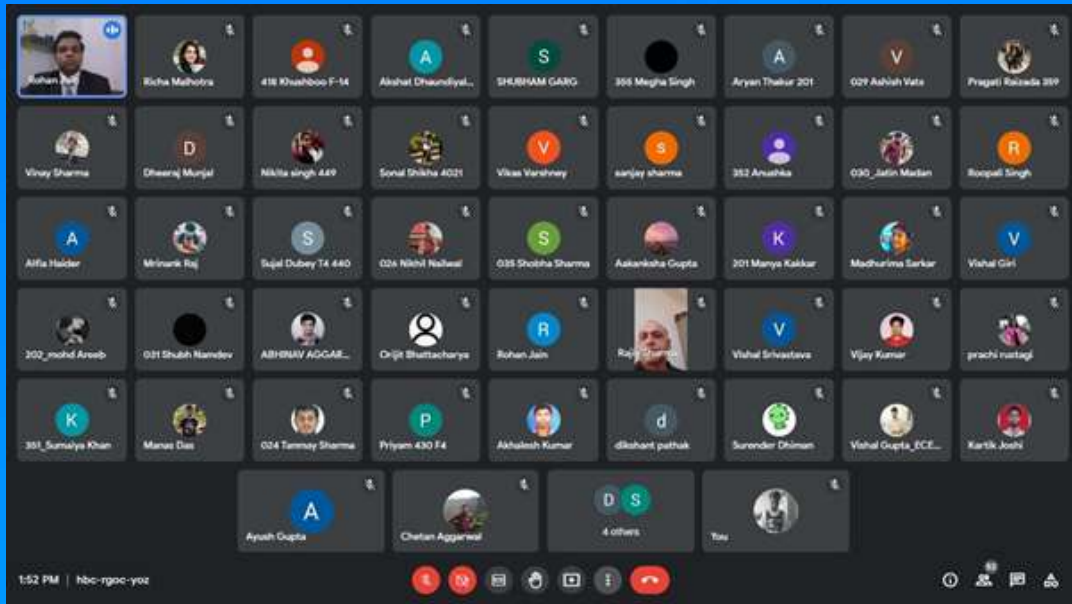
> **Prof. (Dr.) V.K. Jain**, Amity University, Noida, Chair, Technical session 2 and guest valedictory session.



For this conference, 104 review/ research papers were submitted by research scholars/ faculty members/students from universities all across the world. 72 Shortlisted papers were presented by research scholars/ faculty members/ students.

Shri S. N. Garg, C.E.O, ADGITM, Prof. (Dr.) Sanjay Kumar, Director, ADGITM graced the occasion by their benign presence on inaugural and valedictory sessions.

Alumni talk 2021, Rohan Jain



Dr. Akhilesh Das Gupta Institute of Technology & Management
(Formerly known as Northern India Engineering College)
FC-26, Shanti Park, New Delhi - 110053

Department of
Electronics & Communication Engineering
organizes

ALUMNI TALK

By,
Rohan Jain
Senior Software Developer
Publicis Sapient

IITH JUNE, 2021
1:00 PM ONWARDS

BATCH: 2012-16

Prof. (Dr.) Rajiv Sharma
Head, ECE DEPARTMENT

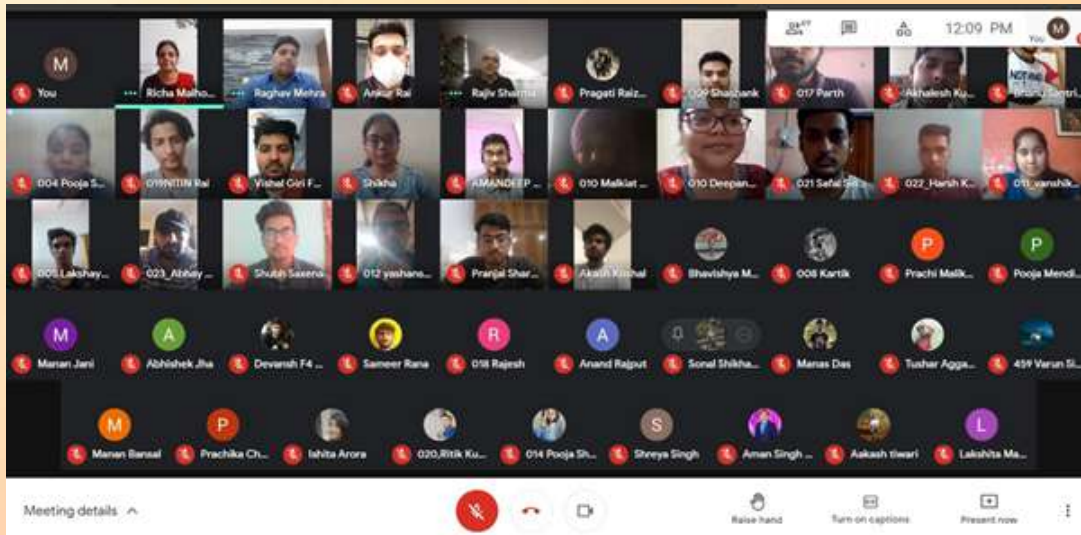
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ECE Department of ADGITM organized a talk by Mr. Rohan Jain, an alumnus, presently working as Senior Software Developer, Publicis Sapient. Mr. Rohan Jain shared his experience of working with the Indian finance ministry, telecom sector, healthcare sector, and most recently financial markets. After this, he guided the students about consistently upgrading themselves both technically and domain wise.

This lecture was about creating awareness amongst the aspiring young students especially those who are in their 3rd and 4th year of college and answer one of the most crucial questions, which is how they can prepare for interviews, make projects by utilizing their time efficiently. Prof. (Dr.) Rajiv Sharma, Head of, ECE department also addressed the attendees with his valuable words. Prof. (Dr.) Sanjay Kumar, Director, ADGITM graced the occasion with his benign presence.

Alumni talk 2021, Raghav Mehra



ECE Department of ADGITM organized a talk by Mr Raghav Mehra an alumnus, presently working as scientist/Engineer-SF, SAC, ISRO. Mr. Raghav started his talk by sharing his memories of college life at ADGITM, formerly known as NIEC. He shared his experience of working in the area of signal and image processing at ISRO. After this, he guided the students about consistently upgrading themselves both technically and domain wise.



This Alumni talk was about creating awareness amongst the aspiring young students especially third year and final year students to make preparation for P.S.U.s, prepare for job interviews.

Prof. (Dr.) Rajiv Sharma, Head, ECE department also addressed the attendees by giving insights on the importance of project work, seminars, internships.

Alumni talk 2021, Ms Aakriti Jain



ECE Department of ADGITM organized a "Gateway to Study Abroad video talk" with Ms Aakriti Jain. who was a former delegate at ASEAN mission to Japan, JENESYS 2.0, 2014, and was selected as one of the 100 students from over 5 lakh applicants from all over India to explore Japan for 10 days. She had also bagged campus placements at Lido Learning and Planet Spark with packages as high as 10LPA & 7LPA. She got admitted to PhD- Computer Science program at 5 prestigious Universities in the United States of America.

An event poster for an alumni talk. The poster is for Dr. Akhilesh Das Gupta Institute of Technology & Management, Department of Electronics & Communication Engineering. The talk is by Aakriti Jain, a B. Tech. ECE student from the 2017-21 batch. The talk is scheduled for July 31st, 2021, at 12:30 PM onwards. The faculty coordinator is Prof. (Dr.) Rajiv Sharma, Head of the ECE Department. The poster also mentions that Aakriti Jain was admitted to a Ph.D. program in the Department of Computer Science at Iowa State University of Science & Technology, U.S. The poster includes a QR code for registration and a Google Meet link: [HTTPS://MEET.GOOGLE.COM/PQY-SJLF-KWB](https://meet.google.com/pqy-sjlf-kwb).

This Alumni talk was conducted to create awareness amongst the students who are in their 4th year of college preparing to study abroad for an MS/Ph.D. aspirant planning for studying in the United States of America, by utilising their time efficiently, prepare for different papers interviews and how the selection process works in detail, answering one of the most important questions for a lot of students, which is how can they pursue higher studies abroad.

Opportunistic Networks: Security, Privacy & Trust

Opportunistic networks originate from Delay-Tolerant Networks (DTNs) and Mobile Ad-hoc Networks (MANETs). An opportunistic network consists of nodes. They are further classified as either mobile node or fixed node. A mobile device carried by human and a device fixed in certain locations working as an access point both are the example of mobile node and fixed node. Such nodes are isolated with each other and as a result they used other kind of wireless connectivity such as Bluetooth and Wi-Fi to interchange and transmit data. In opportunistic network the source and destination node do not support end to end connection. These nodes commonly have high mobility, low density, limited power and short radio range.

Security, privacy and trust in opportunistic networks are the most challenging work area

for the survivability of the whole network. Opportunistic networks are highly suffered from different kinds of attacks by malicious nodes and facing security problem because of its inherent features. They are categorized as internal attack and external attack. An attack that originates from nodes and part of the network is called as internal attack. An attack that originates from nodes and outside the network is called as external attack. Network is more affected by internal attack as compared with external attack.

Furthermore, to make this network more secure we have to deal with various kinds of security issues such as how to secure data vulnerability and how to establish security routings, privacy, coordination, anonymity and trust management. Resultantly, we have five different modules of security i.e. authentication & authorization, secure routing, access control, trust management and cooperation, and application/user-specific privacy protection as shown in Figure. An efficient solution to increase the security levels of the network is trust management model and intrusion detection system (IDS).

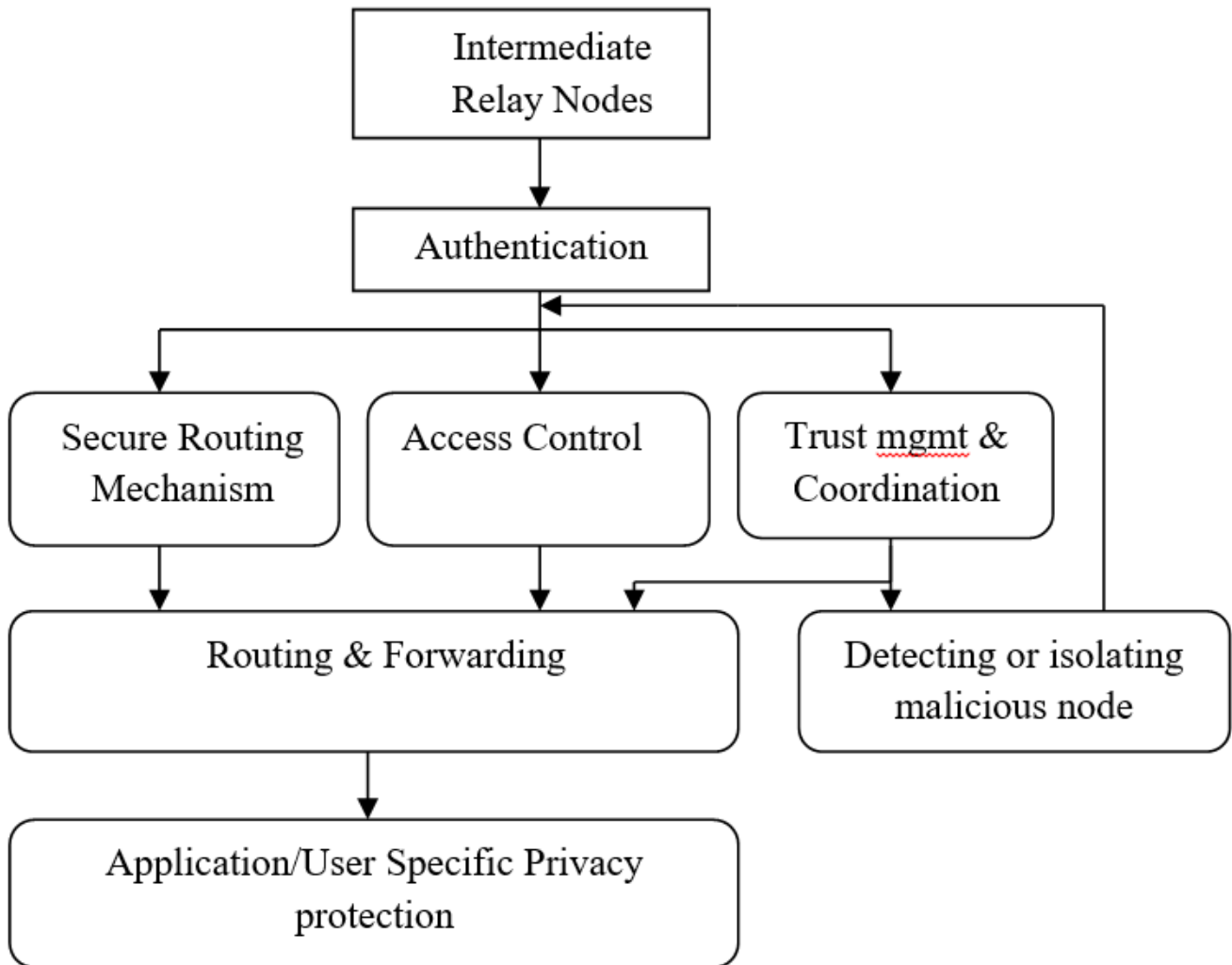


Figure: General block diagram of security in opportunistic network

Khushboo Verma

Assistant Professor

Electronics & Communication Engineering Department

Dr. Akhilesh Das Gupta Institute of Technology & Management

New Delhi, India

Placements Congratulations!



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Parmesh Garg

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Facts about Numerical Relays

Cost of Numerical Relays

Modern numerical protection devices have multiple protection elements and this technique makes the cost of the relay comparable with that of electromechanical and static relays (discrete), and the end-user can get a cost benefit in numerical relays in terms of greater functionality at a reduced price.

The following cost reduction benefit the consumer:

- The number of protective relays and auxiliary relays are reduced.
- CT and PT of lower VA burden are sufficient. Thus the cost of CT and PT is reduced.
- The panel space required is very less. Thus the size of instrument panels is reduced, thereby resulting in further cost reduction.
- The wiring of relay is much less as compared to electromechanical relays/static relays. This adds to savings in wiring material and labour.

Size of Numerical Relays

The size of the numerical relays is much less as compared to that of electromechanical and static relays due to the multi-functionality approach of the former. For example, we have the following protections in numerical relays in-built into one relay.

Motor Protection Features available:

1. Thermal protection
2. Unbalance protection
3. Undercurrent protection
4. Overcurrent and earth fault protection, and temperature protection
5. Number of starts
6. Hour run meter
7. Ammeter



References:

Switchgears book by BHEL

The Art and Science of Protective Relaying by C. Russel Mason

Protective Relays Application Guide: GEC Alstom T&D, 1987

Reyrolle Product Technical Manual,

Alstom Relay Manual

Antenna for Internet of Things

The modern wireless technologies drive this world in the direction of a new pattern which includes Internet of Things (IoT) and Internet of Everything (IoE). The Internet of Things (IoT) allow an emerging combined wireless platform, in which physical and virtual things can be exclusively identified on a global scale and are connects with a global network. IoT becomes frequent in both research and industries due to its exclusive emerging applications like vehicles which is connected with smart cities, healthcare monitoring system and so on. Modules for Internet of Things (IoT) applications are streaming the consumer and industrial markets with the purpose of sensing, computing, and connecting all things within extend. A wealth of clever strategies is needed to shrink the size of these devices while maintaining highly reliable remote performance under low-power conditions. As a result, IoT-module antenna designers face the restrictions of maintaining reasonable performance in ever-shrinking footprints and under extreme interference/cosite conditions. For the purpose of antenna dimension reduction and decreasing the size and cost of IoT modules Antenna folding techniques can be used. Because of low cost, small size, design effort, and manufacturing complexity in IoT modules engineer's faces much more challenge. There some common type of antenna, which is used in this technology are Chip Antennas, Proprietary Antennas, Wire Antennas, Whip Antennas, PCB Antennas.

Chip Antennas: This is very small size antenna even at low frequency. Chip antennas could aid in maintaining low reproducibility issues when large manufacturing runs are required. However, chip antennas are costly and no flexibility in design.

Proprietary Antennas: Proprietary antenna designs are owned by a designer or design company. This antenna is generally short in size and test cycle. The cost for these antennas begins with the purchasing of the intellectual property (IP), although this option usually comes with support from the antenna design company.

Wire Antennas: This antenna has lowest-cost and highest-flexibility options. These antennas generally demand electromagnetic (EM) simulation for optimal designs. But the size of the antenna is varying with frequency. The size of antenna may large at low frequency.

Whip Antennas: Whip antennas are one of the highest-cost antenna options but it is highest-performing and may be the best fit in the module. In addition to the up-front antenna cost, connector will also require on board.

PCB Antennas: PCB antenna is a low cost having reasonable design flexibility in a highly integrated printed circuit board. For large-scale manufacturing, PCB antennas tend to be the most cost-effective with the least reproducibility issues. Many low-cost or free EM-simulation software packages has been used for designing these antennas.

Harsh Kumar

Assistant Professor

Electronics & Communication Engineering Department

Dr. Akhilesh Das Gupta Institute of Technology & Management

New Delhi, India

Electronic waste

Electronic waste is a terminology for electronic products nearing the end of their useful life. We can simply call it as electronic trash. Electronic waste could be harmful, as some electronic products contain materials that are hazardous, depending on their condition. The chemical composition of certain electronic materials poses a threat to human health and the environment. Discarded computers, televisions, refrigerator, drives, fax machines, electric lamps, cell phones, radios, and batteries if improperly disposed of can leak toxic substances like cadmium, lead, copper, chromium and other substances into soil and groundwater. Such types of electronic equipment can either be reused or recycled in an eco-friendly way so that they are less harmful to the environment and human beings.

How harmful is Electronic waste?

- **Lead:** It is found in batteries, solder and cathode ray tubes (CRTs). Exposure to lead would cause behavioral disturbances, attention deficits, hyperactivity, and lower IQ. These effects have a high impact on the growth of children. They adversely affect the nervous system, causing mental disorder.
- **Mercury:** It is found in fluorescent tubes, thermostats, and flat screen monitors. Health effects include sensory impairment, dermatitis, memory loss, and muscle weakness. Environmental effects in animals include death, reduced fertility, and slower growth.
- **Cadmium:** It is found in light-sensitive resistors, corrosion-resistant alloys, and nickel-cadmium batteries. Cadmium can leach into the soil, harming microorganisms and disrupting the soil ecosystem. It can damage lungs and kidney. Cadmium can also affect the growth of children.
- **Sulfur:** It is found in lead-acid batteries. If it is released in the environment, it can create sulphuric acid through sulfur dioxide which is a dangerous corrosive acid. Sulfur can cause liver damage, kidney damage, heart damage, eye and throat irritation.
- **Perfluorooctanoic acid (PFOA):** It is found in non-stick cookware. Studies have found increased maternal PFOA levels to be associated with an increased risk of spontaneous miscarriage and stillbirth.

How to deal with Electronic waste?

Certain organizations take care of this E-waste in an ethical, efficient, and eco-friendly way. They provide services to corporates and individuals. Their service includes disposals, asset tracking, residual forecasting, portfolio planning, certified DoD data erasure, IT Asset Recovery/Asset Purchase programs, and comprehensive electronic waste recycling. Certain state law requires the safe disposal of e-waste; therefore, all the organizations should adhere to their policies.

Neeru Bala

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The Switchboard Design Requirements



Switchboard Areas

The goal of that architecture is to separate the switchboard in different areas in function of each professional user.

- Devices zone => panelbuilder and exploiter
- Busbars zone => panelbuilder
- Cable connection zone => installer and maintenance

Design Rules

The switchboard must be designed the way to have a clearly visible separation between the 3 following zones:

- One dedicated for the devices installation
- One dedicated for the busbars mounting
- One dedicated for the outgoes cables connections

In order to facilitate the access within the switchboard for the maintenance, its covering panels must be dismountable on all surfaces for any IP degree.

To insure the maximum protection of people around the electrical installation, front plates must be installed in front of all control and protection equipment in order to avoid a direct access without a tool to the devices and consequently to the active parts.

For safety reasons and especially when the door will be opened during the switchboard working, all busbars have to be covered by barriers onto the whole perimeter of the busbars zone. To achieve that requirement, the switchboard specification must comply with the partitioning rules at the minimum level of form 2.

Resources: electrical-engineering-portal.com ;

Article by: Edward Csanyi

Activities Conducted During Lockdown

Knowledge Transfer Webinar Series (IEEE WIE ADGTM)

Date	Day	Topic	Host	Start Time	Views / Attendees
28th March 2020	Saturday	Overview of Cybersecurity	Bipin Bisht (Network Security Engineer @ HCI) (Network Security Engineer @ HCI)	12:16	455
28th March 2020	Saturday	Overview of App Development	Tushar Varshney (App Developer at Ola Cabs) (App Developer at Ola Cabs)	8:00 PM	384
29th March 2020	Sunday	Basics of networking components	Bipin Bisht (Network Security Engineer @ HCI)	12:08 PM	192
29th March 2020	Sunday	Getting Started Android Studio	Shubham Garg (Volunteer, IEEE ADGTM) (Volunteer, IEEE ADGTM)	4:00 PM	382
1st April 2020	Wednesday	Add 2 numbers Android App	Shubham Garg (Volunteer, IEEE ADGTM)	4:00 PM	237
1st April 2020	Wednesday	Introduction to embedded systems	Gaurav Sharma and Himanshu Sahdev	6:00 PM	163
2nd April 2020	Thursday	Basics of research paper writing	Arushi Relan (M.Tech Scholar, MNIT Jaipur)	6:00 PM	198
2nd April 2020	Thursday	Overview of Python App Development	Saurabh Badhwar (Sr. Engineer @ LinkedIn) (Sr. Engineer @ LinkedIn)	8:00 PM	307
4th April 2020	Saturday	Relevance of scientific literature	Ujjwal Makin (Volunteer @IEEE ADGTM)	12:08 PM	156
4th April 2020	Saturday	Career possibilities	Saurabh Badhwar (Sr. Engineer @ LinkedIn)	4:00 PM	105
4th April 2020	Saturday	Activity life cycle	Shubham Garg (Volunteer, IEEE ADGTM)	6:00 PM	176
5th April 2020	Sunday	Report writing and technical note writing	Ujjwal Makin (Volunteer @IEEE ADGTM)	11:56 PM	84
5th April 2020	Sunday	Basics of graphic designing	Sourabh Kumar (Freelance Graphic Designer , UI UX developer)	4:00 PM	100
5th April 2020	Sunday	Web Scrapping	Shagun Saboo (General Secretary @ IEEE ADGTM)	6:30 PM	235
6th April 2020	Monday	In depth use of beautifulsoup	Vaibhav Makhloga (Volunteer)	6:00 PM	107
7th April 2020	Tuesday	Creating another activity using intent	Shubham Garg (Volunteer, IEEE ADGTM)	4:00 PM	116
7th April 2020	Tuesday	How to build a simple application	Saurabh Badhwar (Sr. Engineer @ LinkedIn)	8:00 PM	104
8th April 2020	Wednesday	Hands on Experience	Gaurav Sharma and Himanshu Sahdev	5:00 PM	124
9th April 2020	Thursday	Introduction to ds and algo	Pankhuri Bhatnagar (Intern @ almug.ai)	4:00 PM	460
9th April 2020	Thursday	Introduction to web scraping tool selenium	Vaibhav Makhloga (Volunteer)	6:00 PM	121

IEEE & its BENEFITS (In Collaboration with IEEE NSUT, GTBIT, MSIT, MAIT and other IEEE Student Branches)

20th July 2020	Monday	IEEE & It's Benefits	Prof. Prerna Garg (Chair, IEEE Delhi Section)	6:00 PM	150+ live attendees
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Colloquy Webinar Series (IEEE PES ADGITM)

16th April 2020	Thursday	Careers in CSE/IT	Jasneet Singh (Founder, Innovative Labs)	4:00 PM	231
17th April 2020	Friday	Continuation of Careers in CSE/IT	Jasneet Singh (Founder, Innovative Labs)	11:30 AM	118
21st April 2020	Tuesday	Careers in EEE	Akash Awasthi (Electronics Engineer, Innochi Care PVT. LTD.)	5:00 PM	236
26th April 2020	Sunday	Careers in ECE	Vinay Verma (Computer Vision Engineer)	6:00 PM	207
2nd May 2020	Saturday	How to crack interviews	Pankhuri Bhatnagar (Intern @ almug.ai)	4:00 PM	321

PES Day Celebration

22nd April 2020	Monday	Role of Battery Energy Storage System in Smart Distribution System	Ashish Rawat (Junior Research Fellow , T.E.R.I)	8:00 PM	220 (Along with International audience)
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1-Day Workshop on OOPs

16th May 2020	Saturday	OOPS Concepts using PYTHON	Mrs. Ruby Mehra (Corporate Facilitator @ KVCH)	4:00 PM	120+ (Registrations) & 80+ Live Attendees
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Skill Learn – Machine Learning Webinar Series (IEEE CS ADGITM)

10th May 2020	Sunday	Introduction to ML		3:00 PM	174+ (Registrations) & 60+ Live Attendees
14th June 2020	Sunday	Logistic Regression and Introduction to Support Vector Machine	Ashish Sethi (Applied Research Engineer @IIIT-D) Vinay Verma (Computer Vision Engineer)	3:00 PM	100+ Live Attendees

International WIE Day- Internal Session (IEEE WIE ADGITM)

23rd June 2020	Tuesday	International WIE Day celebration (IEEE ADGITM Members only Event)	Palak Kumar, Nishthaa Jain	10:00 PM	23 Live Attendees
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Placement Prep Coding Test (IEEE CS ADGITM)

5th July 2020	Sunday	Online coding test for preparation of internships/placements	Proxy, a team of final year students who are placed in top tech companies (Amazon, Google, Samsung, Shopee, Visa etc.)	9:30 PM	123 Attendees
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Webinar on “JOURNEY FROM TIER II/TIER III COLLEGE TO A PRODUCT BASED COMPANY” (IEEE CS ADGITM)

Date	Day	Topic	Host	Start Time	Views/Attendees
13th July 2020	Monday	Journey from Tier II/Tier III college to a product-based company	Sumeet Malik (CEO , Director Pepcoding Pvt.Ltd.)	5:00 PM	126+ Live Attendees

Ms. Richa Malhotra

Editor



I am extremely delighted to introduce the latest edition of ECE Departmental technical magazine “LECTRON” for the session July, 2020 to March, 2021.

LECTRON provides you a perfect opportunity to immerse oneself in the technical developments of ECE DEPARTMENT as it gives you insights about the latest achievements in field of technology, placements, high quality publishing, original contributions & happening events from both i.e. faculty and students, point of view.

I would like to thank all the members of the editorial board for putting up such a brilliant piece of work within such a short span of time which included collection of data, compiling, proof reading, editing, checking plagiarism etc.

I would also like to thank all the people who have contributed in some way or the other towards the magazine release.

It will be highly appreciated if our team is provided with your valuable suggestions for the further improvement and enrichment of our upcoming volumes.

Student Editor



Mohit Gupta

The three of us take great pride in presenting to you all the third edition of "Lectron" - Official Technical Magazine of the Electronics and Communications Department. Striving to outlive the expectations of all to make the college a better institution every single day. Thanking the department for providing us with this opportunity and all our mentors who helped us along in building this piece.

