



Raj Kumar Goel Institute of Technology, Ghaziabad

Affiliated to Dr. A.P.J. AKTU, Lucknow

5th km stone, Delhi-Meerut Road, Ghaziabad



UDGHOSH

**The Voice of ECE Department
(NBA Accredited)**

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Vision & Mission

Vision: To develop the Department into a full-fledged Center of learning in various field of Electronics and Communication Engineering keeping in view the latest development in world.

Mission

Mission 1: To educate the students in Contemporary Technologies in Electronics and Communication Engineering.

Mission 2: To educate the students in Electronics and Communication Engineering to meet the Industrial needs.

Mission 3: To educate the students in Electronics and Communication Engineering to meet the Societal needs.

EDITORIAL TEAM:

Patrons:

Shri Dinesh Kumar Goel

Mr. Akshat Goel

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Dr. D.K. Chauhan

Dr. B.C. Sharma

Dr. R.K. Yadav

Faculty Members:

Mr. Kunal Lala

Ms. Richa Gupta

Ms. Madhu Verma

Student Members:

Anuradha Pandey

Luckey Sharma

WELCOME OF NEW FACULTY MEMBERS

Mr. Robin Abraham received his B.E, with First Class in Electronics & Communication from Bharatiar University, Coimbatore, Tamil Nadu in the year 2001 and M.E, with First class and honors in Applied Electronics (Electronics & Communication) in the year 2007 from Anna University, Chennai, Tamil Nadu. Mr. Robin is pursuing PhD (part time) from Satyabama University, Chennai in the area of Wireless Sensor Networks. He has more than 20 years of teaching experience and 01-year industrial experience in reputed Institutions / Organizations. He has published several papers in reputed National and International Conferences / Journals including SCIE / IEEE / Scopus. His research interests include clustering and routing in WSN, VLSI etc

Ms. Bindu Handa is currently working as Assistant Professor in Raj Kumar Goel Institute of Technology, Ghaziabad. She has 8.5 years of experience in teaching undergraduate and graduate students She received her B.Tech degree in Electronics and Communication Engineering from Punjab technical university, Jalandhar in 2008 and M.Tech degree in Electronics and Communication Engineering from Punjab technical university, Jalandhar in 2017. She did MBA in I.T from Punjab Technical University, Jalandhar in 2011. She has published 4 research papers in International journals. Her research areas include Digital Communication & Wireless Communication.

Dr. Neelima Agrawal is presently working as an Associate Professor in the department of ECE at Raj Kumar Goel Institute of Technology Ghaziabad. She has received her B.Tech degree in EEE from Dr. A.P.J. Abdul Kalam Technical University, Lucknow. She received an M.Tech degree in Power Electronics and Drives from MMMUT Gorakhpur. She has earned her PhD degree in ECE from VNIT Nagpur. Her research experience as Post Doc fellow is from NSYSU TAIWAN in wireless communication. She has published 6 SCI Transaction papers in well-known Journals. She has also published 5 international IEEE conferences papers. Her research interests include wireless communication, vehicular communication, and IRS assisted UAV based communication system. Energy harvesting based model.

Mr. Ankur Mittal has done his M.Tech in Electronics & Communication with specialization in Signal Processing in 2020 from Motilal Nehru National Institute of Technology Allahabad, Prayagraj, UP. He has completed his B.Tech, First Class with Honors in Electronics & Communication Engineering from Uttar Pradesh Technical University, UP in 2014. He has two years of teaching experience. He has qualified four times Gate exam with 2401 rank in 2018. His research interests are in the areas of Image Processing, Control System & VLSI.

Mr. Swatantra Kumar has received his B.Teh (ECE) Degree from AKTU in 2011 and M.Tech with speziaztion in VLSI Design in 2014 from SRM University Chennai. He holds 9 years of teaching experience. He has also published several papers in reputed national and international conferences. His research interests are in the areas of Microcontroller and embedded system, VLSI Design.

Dr. Sharmila received B.E. degree in Electronics and Communication Engineering from the Annamalai University, the M.E degree in Computer and Communication engineering from Anna University, Tamil Nadu, and the Ph.D. degree in Electronics & Communication Engineering from Pondicherry University. She is an eminent academician having more than 14 years of teaching experience. Currently she is working with Raj Kumar Goel Institute of Technology, Ghaziabad as Assistant Professor in Electronics and Communication Engineering Department. She has published widely in International Journals and Conferences, her research findings related to Wireless Sensor Networks, Digital image Processing, Cryptography and Information Security, and Block chain. She has authored/co-authored more than 20 research papers and 5 chapters in six other books, published by IET, Springer and Elsevier. She also contributes as an Editor of Books in CRC publication & River Publishers.

Ms. Divya is presently working as an Assistant Professor in the department of Electronics and Communication Engineering, RKGIT Ghaziabad. She earned a B Tech. Degree in Electronics and Communication Engineering, at Dr. A.P.J. Abdul Kalam Technical University, Lucknow and M tech. in VLSI Design and Embedded System at Delhi Technological University, Delhi. She has published articles in 2 International Journals and 1 international Conference, Her research interests include Low Power VLSI Circuits, Amplifier Circuits, memory circuits in emerging technologies.

INDUSTRIAL VISIT TO ADVANCED LEVEL TELECOM TRAINING CENTER (ALTTC), BSNL, GHAZIABAD

An Industrial visit to ALT-TC Ghaziabad was organized for the students of 3rd year on 17th May 2023 for the students of 3rd year. A group of 34 students participated in the visit. The main objective behind the visit was to make students able to understand about communication process such as Digital Switching; Mobile Communication: GSM, 3G, CDMA; Data communication and Information Technology. The students visited around various labs like the Mobile Lab, Broadband lab, IT & Networking Lab, Optical Fibre Systems Lab, NGN Lab etc. The Students were also given an overview of the Telecom systems and how Voice and Data are carried in a Telephone Network. The coordinators of this visit were Ms. Charu Tyagi and Dr. Vipin Sharma.



GUEST LECTURE ON INDIA'S SEMICONDUCTOR MISSION AND ITS SIGNIFICANCE IN IOT APPLICATIONS

A guest lecture was organized by the Department of ECE on 3rd May 2023. About 148 students attended this guest lecture on the topic of "India Semiconductor Mission and Its Significance in IoT Applications". The lecture was delivered by ETB Samuel Jigme Harrison, Semiconductor Professional (Senior Member – IEEE), Singapore.

Mr. Samuel began the lecture by providing an overview of India's semiconductor mission, which was launched in 2021 with the aim of making India a major player in the global semiconductor industry. He highlighted the key objectives of the mission, which include the creation of an ecosystem for design and fabrication of semiconductor chips in India, the development of human resources for the semiconductor industry, and the promotion of R&D in the field of semiconductors

He pointed out that IoT devices rely heavily on semiconductor chips for their functionality, and by building a strong semiconductor industry in India, the country can become a hub for IoT device manufacturing and development. This, in turn, could have significant economic benefits for the country, as IoT is expected to be a major growth driver in the global electronics industry in the coming years.



Mr. Samuel further elaborated on the challenges faced by India in achieving its semiconductor mission. He highlighted the need for investments in infrastructure, R&D, and human resources to build a robust semiconductor industry in the country. He also emphasized the importance of collaboration between industry, academia, and government to achieve the objectives of the mission.

Overall, the lecture was informative and engaging, providing valuable insights into India's semiconductor mission and its significance in the context of IoT applications. Mr. Samuel's expertise and experience in the field of semiconductors added to the depth and richness of the lecture, making it a valuable learning experience for all attendees.

TWO DAYS WORKSHOP ON ADVANCED MATLAB AND ITS APPLICATIONS

Department conducted a two days' workshop for the students of 3rd & 4th year on 24th -25th March 2023. The topic of the workshop was MATLAB and its Applications. The resource person was Mr Manoj Kumar (Sr. Engineer, Design Tech Pvt. Ltd.)

Faculty and students participated actively in the event. Participants gained knowledge about approaches for solving Engineering problems using simulation tools through the workshop.



The trainer also discussed signal processing, where participants were introduced to the various techniques used to process signals, including filtering, noise reduction, and feature extraction. Participants were given practical examples to work on, and they were encouraged to apply the techniques they learned to real-world problems.



Participants were also introduced to deep learning, where they learned about neural networks and their applications. The trainer demonstrated how to use MATLAB to build deep learning models and provided practical examples to work on. The two-day workshop on MATLAB and its application by an industry trainer was a great learning experience for participants.

MOTIVATIONAL LECTURE BY VLSI INDUSTRY EXPERT

A Motivational Lecture was conducted for the students of 2nd year on 12th June, 2023. The resource person was Mr. Vaibhav Mishra (Co-founder and Vice President of Aujus Technology Pvt. Ltd.).

Mr. Vaibhav Mishra is a strong engineering professional skilled in Field-Programmable Gate Arrays FPGA, Embedded Systems and Management skills with technical experience in SoC Architecture for multiple market segments across the world. He has relationship management from scratch to achieve profitable business growth along with strong people leadership and communication skills. He has several years of experience in Semiconductors. He worked with some of the top technology companies in India and Asia Pacific



In this guest lecture, he explained about various concepts of VLSI Design & Embedded system. The main topics which are important for any Semiconductor Industry. He also told about the criteria's of getting placed in core Companies. The Guest Lecture was very knowledgeable for all the students.

FACULTY TECHNICAL CORNER

Significance of Cyber Security

Cyber security is the practice of defending computers, servers, mobile devices, electronic systems, networks, and data from malicious attacks. It's also known as information technology security or electronic information security. The term applies in a variety of contexts, from business to mobile computing, and can be divided into a few common categories.

Network security is the practice of securing a computer network from intruders, whether targeted attackers or opportunistic malware.

Application security focuses on keeping software and devices free of threats. A compromised application could provide access to the data its designed to protect. Successful security begins in the design stage, well before a program or device is deployed.

Information security protects the integrity and privacy of data, both in storage and in transit.

Operational security includes the processes and decisions for handling and protecting data assets. The permissions users have when accessing a network and the procedures that determine how and where data may be stored or shared all fall under this umbrella.

Disaster recovery and business continuity define how an organization responds to a cyber-security incident or any other event that causes the loss of operations or data. Disaster recovery policies dictate how the organization restores its operations and information to return to the same operating capacity as before the event.

End-user education addresses the most unpredictable cyber-security factor: people. Anyone can accidentally introduce a virus to an otherwise secure system by failing to follow good security practices. Teaching users to delete suspicious email attachments, not plug in unidentified USB drives, and various other important lessons is vital for the security of any organization.



The global cyber threat continues to evolve at a rapid pace, with a rising number of data breaches each year. A report by Risk Based Security revealed that a shocking 7.9 billion records have been exposed by data breaches in the first nine months of 2019 alone. This figure is more than double (112%) the number of records exposed in the same period in 2018.

End-user protection or endpoint security is a crucial aspect of cyber security. After all, it is often an individual (the end-user) who accidentally uploads malware or another form of cyber threat to their desktop, laptop or mobile device.

Security programs continue to evolve new defenses as cyber-security professionals identify new threats and new ways to combat them. To make the most of end-user security software, employees need to be educated about how to use it. Crucially, keeping it running and updating it frequently ensures that it can protect users against the latest cyber threats.

**Ms. Farah Naz,
A.P., ECE**

STUDENT TECHNICAL CORNER

The Future of Chip Design: Artificial Intelligence Revolutionizing VLSI

Artificial intelligence (AI) has become a revolutionary force in the quick-moving world of technology, revolutionizing many different sectors. Very Large-Scale Integration (VLSI) design is one industry that is being significantly impacted. Chip design is being pushed to its limits by AI, which makes it feasible for higher efficiency, quicker development cycles, and better performance. The industry is entering a new phase of innovation and progress because of the union of AI and VLSI.

Let's investigate how AI is revolutionizing VLSI and influencing chip design in the future.

Automation and Optimization: Automation is one of the main advantages of AI in VLSI design. Several design steps, including layout optimization, circuit synthesis, and verification, may be automated using AI algorithms.

Design Space Exploration: AI makes it possible for designers to quickly sift through a large design space. AI systems may discover patterns and produce innovative designs that satisfy particular requirements by training neural networks on massive datasets of current designs and their performance metrics. This rapid exploration and generation of new designs create opportunities for innovation, improvement, and pushing the limits of chip performance.

Improved Power and Performance: When designing chips, power consumption, and performance are key considerations. Large data sets may be analyzed by AI algorithms to find design combinations that maximize performance while minimizing power usage. With better battery life for portable devices and higher performance for high-performance computing workloads, this optimization might result in more energy-efficient CPUs.

Design Error detection: Early in the VLSI process, design mistakes must be found and corrected to save expensive rework and delays. AI algorithms are capable of analyzing designs and identifying any flaws in the production process. Designers can make adjustments to assure greater yields and increased dependability by highlighting these problems beforehand.

Challenges in VLSI Using AI:

Dataset Availability: Due to the scarcity and confidentiality of chip designs, it might be difficult to get high-quality and varied datasets for training AI algorithms in VLSI design.

Integration with Existing Processes: It can be difficult and time-consuming to carefully integrate and adapt AI approaches into current VLSI design processes and tools.

Hardware Software Co-Design: VLSI designers have difficulties when balancing the trade-offs between software and hardware optimization since they must take both into account at once.

Verification and Testing: Given the complexity and variety of VLSI designs, it is difficult to ensure the accuracy and dependability of AI-generated designs through stringent verification and testing procedures.

**Sudhanshu Yadav
ECE, 3rd Year**

FACULTY ACHIEVEMENTS

AWARDS

- Dr. Vipin Sharma received Asia's Outstanding Researcher award in March 2023.

PATENTS

- Ms. Arathy Rajeev published a Patent (202311012575) titled "A Portable Solar Based Warmer Cum Sterilize Device for Warming/Sterilized Solid or Liquid" on 17th March, 2023.

- Mr. Vaibhav published a Patent titled "A Method of Fabrication and Characterization of Transparent Solar Panels for Mobile Devices" on 17th March, 2023.

FDPs/WORKSHOPS/WEBINARS

- Ms. Farah Naz successfully completed the Faculty Development Program on Python Programming from 13-03-2023 to 17-03-2023 E & ICT Academy, IIT Kanpur (A Joint initiative of MeitY & IIT Kanpur).
- Ms. Arathy Rajeev attended a Webinar on "Multifunctional MIMO Antenna for efficient Spectrum Utilization" organized by IIT Palakkad on 11 March, 2023.
- Ms. Arathy Rajeev successfully completed two days' workshop on "MATLAB & its Applications", organized by Department of ECE at RKGIT, Ghaziabad from 24th-25th March, 2023.
- Ms. Arathy Rajeev attended a Webinar on "Spoof Surface Plasmon Polaritons (SSPP): Concept and applications in RF through THz Design" organized by IIT Palakkad on 25th March, 2023.
- Ms. Arathy Rajeev attended a webinar on "Tolerance Analysis and Robust Design for Next-G Communications and Radar Antenna Systems-An Interval Analysis Perspective" by IIT-Palakkad on Aug 5th, 2023.
- Ms. Arathy Rajeev attended a STC on "Emerging Trends in Electronics & Communication" organized by Dept. of ECE, Bharati Vidyapeeth's College of Engineering, Delhi from 18th July to 22nd July, 2023.
- Ms. Arathy Rajeev attended AICTE (FDP cum) workshop on VLSI to System Design: Silicon to End Application Approach organized by AICTE, Arm Education & ST Microelectronics from July 31st-4th August, 2023.

RESEARCH PAPERS

- Dr. R K Yadav published a paper titled "Analysis of LTE based an Antenna Design for 5G Communications" in International Journal on Recent and Innovation Trends in Computing and Communication (Vol 11, Issue 6) in July 2023.
- Dr. R K Yadav published a paper titled "Design of 5G Communication MIMO Based Advanced Antenna System" in International Journal on Recent and Innovation Trends in Computing and Communication (Vol 11, Issue 75), July 2023.
- Mr. Deepak Kumar published a paper titled "A New Approach of Novel Analysis of IOT in Waste Management Scheme" in International Journal of Advanced Research in Science, Communication and Technology (IJAR SCT), May 2023.
- Ms. Arathy Rajeev published a paper titled "Automated Attendance Marker" in International Journal of Advanced Research in Science, Communication and Technology (IJAR SCT), May 2023.
- Ms. Madhu Verma published a paper titled "Vehicle Air Pollution and SMS Alert" in International Journal of Advanced Research in Science, Communication and Technology (IJAR SCT), May 2023.

STUDENT ACCOMPLISHMENTS

- Approx. 56 students have completed various courses from Coursera and Udemy etc. platforms.

STUDENT PLACEMENT

- Approx. 53 students have grabbed offers from National and Multinational companies.
- Many of them got placed with a package of above 6LPA.
 - Ms. SHAILJA GHILDIYAL got placed in TCS at a package of 7 LPA.
 - Mr. VAIBHAV DEV DIXIT got placed in UPGRAD at a package of 7.5 LPA.
 - Mr. ADITYA SHANKAR got placed in CENTILYTICS at a package of 7.3 LPA.
 - Mr. KUMAR SATYAM got placed in BYJU'S at a package of 7 LPA.

ALUMNI SPEAK

Reflecting on the four incredible years of my engineering journey, memories come flooding back, reminding me of the wonderful time I spent at RKGIT. Under the guidance of highly efficient professors and a supportive management, I had the privilege of completing my graduation in an institute that surpassed my expectations. From day one, RKGIT impressed me with its phenomenal step-by-step learning process.

Engineering is not merely a path to obtain a bachelor's degree; it is a transformative period that shapes your entire life. It is during this time that you enter college as a confused teenager, and the right institute plays a crucial role in molding you into a well-rounded individual. I am immensely grateful to RKGIT for fulfilling this purpose in every aspect.

To the entire RKGIT family, I want to express my heartfelt gratitude. Thank you for providing me with a nurturing environment where I could grow intellectually and personally. The professors at RKGIT were not only knowledgeable but also dedicated mentors who went the extra mile to ensure our understanding of complex subjects. Their guidance and expertise played a pivotal role in my academic success.

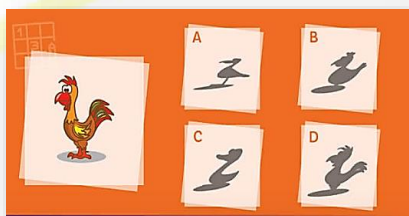
Thank you, RKGIT, for everything you have done for me. I am proud to be an alumnus of this esteemed institution, and I will always cherish the values, knowledge, and friendships I gained during my time there. The lessons I learned and the skills I acquired have been instrumental in shaping my future, and I am forever grateful for the incredible opportunity to be a part of the RKGIT family.



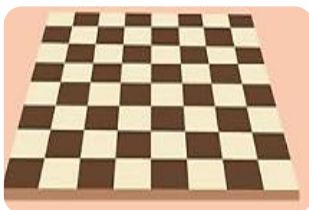
Yash Yadav
NTT Data Pvt Ltd.

BRAIN TEASERS

1. Which shadow corresponds to the image on the left?



2. How many squares are there on the chessboard?



3. A train goes from station A to station B at a speed of 200 Km/h. While returning, the train has a better engine. It is faster by 100 Km/h than the old engine. What is the train's average speed for the round trip?

4. A and B do a work in exactly 16 days, B and C do the same work in exactly 12 days while C and A do the same work in about 10 days. If A, B and C can together do the work in integral number of days, then C does the work alone in?

5. Are the lines in the given figure bent or parallel to each other? How many of them are parallel if they are parallel and how many are bent?

