स्पंदन
Newsletter of Department of Electronics Engineering
J. C. Bose University of Science and Technology, YMCA, Faridabad
April-June 2023

From Chairperson's Desk

Dr. Pradeep Dimri
Chairperson and Professor,
Department of Electronics Engineering

Dear Electronics Family of J.C. Bose University of Science and Technology, YMCA, Faridabad, I hope this message finds you well. As we approach the new issue of our department newsletter, "स्पंदन," I am thrilled to share some exciting updates and insights of our dynamic Department. This is your platform to showcase the incredible work happening within our department. In this issue, we will spotlight some of the cutting-edge research in our department. I am writing to express my gratitude to each of you for your continued commitment to excellence. Our department is a community of dedicated professionals. Thank you for your contributions, and I look forward to another informative and inspiring newsletter!

Best wishes and regards.

Mission

- To frame a well-balanced curriculum with an emphasis on basic theoretical knowledge as well as the requirements of the industry.
- To motivate students to develop innovative solutions to the existing problems for the betterment of society.
- Collaboration with the industry, research establishments, and other academic institutions to bolster the research and development activities.

Vision

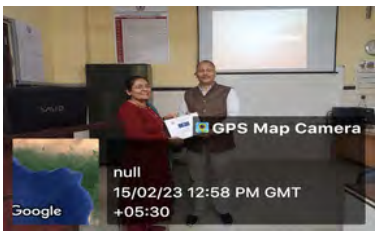
To be a Centre of Excellence for producing high-quality engineers and scientists capable of providing sustainable solutions to complex problems and promoting cost-effective indigenous technology in the area of Electronics, Communication & Control Engineering for Industry, Research Organizations, Academia, and all sections of society.

News & Events:

ACTIVITY REPORTS:

Department of Electronics Engineering of J.C.Bose University of Science and Technology, YMCA, emphasizes providing quality education and fostering a culture of innovation and knowledge sharing in the University. The department aims to stimulate knowledge sharing by conducting the following activities.

LECTURE SERIES:



Analysis & Design of State Machines

Ms. Sangeeta Dhall's expert talk, held on 15th February 2023, enriched the knowledge of the faculty members, workshop staff, research scholars, and PG students and fostered a dynamic atmosphere of learning and collaboration within the Department of Electronics Engineering.

Her presentation skillfully unveiled the intricacies of state machine design, allowing attendees to grasp the critical connections between inputs, outputs, and states, thus laying the foundation for further exploration and innovation in the field.

TRENDS

DRONE :

Drones are small, remotely controlled aerial vehicles that receive commands from a pilot or rely on software for autonomous flight. In today's technological world, drone projects can improve efficiency, safety, and data collection capabilities for various industries. They can be used in aerial photography, agriculture, search and rescue operations, delivery services, and endless fields.

HUMAN FOLLOWING BOT :

A Human Following Bot or an Object Following Bot is designed to autonomously navigate and follow a human or a predefined path. The prototype employed Arduino UNO R3, a Motor Driver, an Ultrasonic sensor, and an IR sensor. Ultrasonic sensors detect the distance of the human or object and maintain a particular distance from them. IR sensors have been used to detect the direction of movement of an object or human. These bots can improve efficiency, safety, and convenience in various industries and applications.

Smash - It - Out :

This project was developed by the students of the Electronics Department under the headship of the IEEE YMCA SB. Smash-It-Out is a classic arcade game that involves hitting plastic moles with a mallet as they pop up randomly from different holes. This project involves designing and implementing a digital version of the game using software and hardware components. The project aims to create a fun and engaging game that can be played on a handheld device. The software component of the project involves programming the game mechanics, graphics, and sound effects. The game is designed to respond to player input and keep track of their progress. Overall, the Smash-It-Out project involves a combination of software and hardware skills, creativity, and knowledge of game design.

EDGE COMPUTING

(AARUSHA (ECE 5th Sem.)

Edge computing means bringing computation and data storage closer to the devices where it's being gathered rather than relying on a central location that can be thousands of miles away. This is done so that data, especially real-time data, does not suffer latency issues that can affect an application's performance. It puts storage and servers where the data is, often requiring little more than a partial rack of gear to operate on the remote LAN to collect and process the data locally. The computing gear is often deployed in shielded or hardened enclosures to protect it from extremes of temperature, moisture, and other environmental conditions. Processing usually involves normalizing and analyzing the data stream to look for business intelligence, and only the analysis results are sent back to the principal data center. The physical architecture of the edge can be complicated. Still, the basic idea is that client devices connect to a nearby edge module for more responsive processing and smoother operations.

Edge devices can include IoT sensors, an employee's notebook computer, their latest smartphone, a security camera, or even the internet-connected microwave oven in the office break room. It is all a matter of location. Traditional enterprise computing produces data at a client endpoint, such as a user's computer. That data is moved across a WAN, such as the internet, through the corporate LAN, where an enterprise application stores and works upon the data. The results of that work are then conveyed back to the client endpoint. This remains a proven and time-tested approach to client-server computing for most typical business applications.

In principle, edge computing techniques collect, filter, process, and analyze data "in-place" at or near the network edge. It's a powerful means of using data that can't be first moved to a centralized location -- usually because the sheer volume of data makes such moves cost-prohibitive, technologically impractical, or might otherwise violate compliance obligations, such as data sovereignty. It addresses vital infrastructure challenges -- such as bandwidth limitations, excess latency, and network congestion.

A Brief Insight into PhD Research Area

Graduate research programs in our university are an essential driver of research output—the Ph.D. Scholars of the University are engaged in various forms of research activity in different domains. Few of them are receiving scholarships through Government schemes, too. Here is an insight into the current research work of our students

Name: Anjali Malik; **Supervisor:** Dr. Sunil Jadav; **Co-Supervisor:** Dr. Shailender Gupta.

Topic: Data security

Work: An accomplished researcher with expertise in Data Security, Image Processing, and Cryptography. More than 6 research papers were published in reputed journals (SCI/ ESCI). Having a solid background in secured mechanisms for data communication. Committed to advancing knowledge and positively impacting Data Security and Image Processing.

Academic Qualifications:

- Ph.D. [Pursuing] - Analysis and Design of Secured Mechanism for Data Communication from, JCBUST, YMCA
- M. Tech, Electronics Engineering (Data Security), JCBUST, YMCA, [2019]
- B. Tech, Electronics and Communication Engineering, GGSIPU, [2017]

Name: Shweta; **Supervisor:** Dr. Sunil Jadav;

Topic: Gas Sensor

Work: Scholar on gas sensing technology, which is finding great applications in industrial production, automation, and daily life. Highly reliable and accurate gas sensors have become critical for human survival. On the other hand, flexible electronics allow one to build electronic circuits on flexible substrates, thus making them bendable and stretchable. Ms. Shweta is exploring the potential of Flexible electronics in sensor technology. Committed to her work in the field of gas sensors and flexible electronics. Has three quality research papers in the journals of repute.

Academic Qualifications:

- Ph.D. [Pursuing] - Analysis & Design of Efficient Flexible Gas Sensor from JCBUST, YMCA
- M. Tech, Electronics and Communication Engineering (2012)
- B. Tech, Electronics and Communication Engineering (2009)

Research publications:

- **Archana Agarwal, Shailender Gupta and Munish Vashishath**, "A Recursive CEIEC Technique for Image Enhancement Employing Sharpening Filter," Lecture Notes in Electrical Engineering book series (LNEE,volume 979), Springer, April 2023.
- **Lalit Kumar and Pradeep Kumar**, "WSAN Emerging Technology for IoT," 4th International Conference for Emerging Technology (INCET), Belgaum, India, May 2023.
- **Sonam Khera, Neelam Turk and Rohin Rakheja**, "Analysis of DSR Protocol in Varying Network Configurations" Lecture Notes in Electrical Engineering book series (LNEE,volume 979), Springer, April 2023.
- **Jitender, Shailender Gupta and Sangeeta Dhall**, "A Comparative Analysis of Chaotic and Quantum Chaotic Encryption Mechanisms,"Lecture Notes in Electrical Engineering book series (LNEE,volume 979), Springer, April 2023.
- **Reema Ganotra and Shailender Gupta**, "Detection of Parkinson's Disease Using Support Vector Machine and Combination of Various Tissue Density Features," Lecture Notes in Electrical Engineering book series (LNEE,volume 979), Springer, April 2023.
- **Anjali Malik, Sunil Jadav and Shailender Gupta**, "A Multilevel Secured Mechanism for Data Protection," Lecture Notes in Electrical Engineering book series (LNEE,volume 979), Springer, April 2023.
- **Bal Krishan, Neeraj Gupta, Neelam Bedwal, Ved Prakash and Prashant Kumar**, "Performance Analysis of Double Gate MOSFET with High-k Dielectric," IEEE Devices for Integrated Circuit (DevIC), Kalyani, India, April 2023.
- **Prashant Kumar, Neeraj Gupta, Lalit Rai and Rashmi Gupta**, "Design of Low power and High-Performance Decoder Using Carbon Nanotube Field Effect Transistor (CNTFET)," IEEE Devices for Integrated Circuit (DevIC), Kalyani, India, April 2023.
- **Lalit Rai, Prashant Kumar, Neeraj Gupta and Rashmi Gupta**, "Performance Analysis of Low Power Multiplexer for Communication System," IEEE Devices for Integrated Circuit (DevIC), Kalyani, India, April 2023.
- **Shweta, Sunil Jadav and Rohit Tripathi**, "Recent Development and Challenges on Design and Fabrication of Flexible Substrate Based Carbon Monoxide Gas Sensor: A Review," Emerald Publishing Limited, Volume 43, May 2023.
- **Aryan, R. Ramaprabha, Rohit Tripathi, Rashmi Agarwal**, "Efficient performance testing for PV array sets using capacitor charging method," Materials Today: Proceedings, May 2023.
- **Neetu Gupta, Nitin Sachdeva, Gunjan Sardana and Rohan Bansal**, "Branching Particle Filter for Crowd Anomaly Detection," European Chemical Bulletin, May 2023.
- **Nitin Sachdeva, Neetu Gupta, Prashant Kumar, Rohan Bansal**, "Application of Silicide Layer and Work Function in Optimization of MOSFET Process Parameters," European Chemical Bulletin, May 2023.
- **Sandeep Rangi, Sheilza Jain and Yogendra Arya**, "Optimal AGC of Two-Area Multi-source Power System Incorporating ES Under Deregulated Environment," Lecture Notes in Electrical Engineering book series (LNEE,volume 979), Springer, April 2023.
- **Ritika Thusoo, Sheilza Jain and Sakshi Bangia** , "Path Planning of Quadrotor Using A* and LQR," Lecture Notes in Electrical Engineering book series (LNEE,volume 979), Springer, April 2023.
- **Mayank Nehra and Sheilza Jain**, "Feasibility assessment of biomass for sustainable power generation to mitigate climate change in a rural cluster: a case study in India," Biomass Conversion and Biorefinery, May 2023.

- **Savita Lohat, Sheilza Jain and Rajender Kumar, "**Fractional mayfly optimization algorithm-based Infrastructure-to-Vehicle and Vehicle-to-Vehicle scheduling for service message transmission in IoV-fog," International Journal of Communication Systems, April 2023.
- **Mayank Nehra and Sheilza Jain,** "Estimation of renewable biogas energy potential from livestock manure: A case study of India," Bioresource Technology Reports, June 2023.
- **Bilal Ahmed Mir, S. Raja, Gunjan Sardana, Neetu Gupta, Nitin Sharma, Udit Mamodiya and Sarvesh Kumar**, "A novel approach for an efficient and secure image identity-based signature computing system," AIP Conference Proceedings, June 2023.

CRIMSON ACHIEVEMENTS

Chirag Tyagi, a student of EE(IOT), 2nd year, won prize of the best orator runner speaker in a national level debate competition held at Lady Irwin College, DU along with a moment mi and a cash prize of INR 800.

Chirag Tyagi, a student of EE(IOT), 2nd year along with his team (Ananya) participated in a National Level Parliamentary Debate Competition organized at DCAC, DU titled 'Sumegha Gulati Debate Competition' and won 2 Prizes.

Rahul Goyal, a student of ECE, 3rd year participated in a cultural competition named "1st Faridabad District open Yogasana Sports Championship" held at 360° Fitness Hub where he bagged 5th position. Congratulations

Puneet Khoria, a student of EE(IOT), 3rd year did an Internship at Maruti Suzuki Limited for a span of 5 weeks. Congratulations

Nilesh Singh, a student of ENC, 1st year along with his team participated in a technical competition named National Technology Day, 2023 organised at JC BOSE University of science and technology, YMCA. The team secured 1st position and a cash prize of INR 3500. Congratulations

Enhancing Productivity

(Mishali: EE 5th Sem.)

Being busy and always moving through tasks is different from being productive. Productivity is getting the results you aim for with less time and effort. Thinking about achieving your goals will only do something tangible for you. You should know how to get the most results in the least amount of time. That's the ultimate motive for being efficient! In the frenzy to be more productive, we have become lesser. So, the procedures and methods in use are over a decade old. A practical approach to Being productive is understanding the power of constraints. When you have constraints, you will be more careful and be more appreciative of the limited resources you have.

If you have a lot to do and an entire week for that, it doesn't feel that urgent, and you often do little things. But you will be way more focused if you have an hour a day and one significant project. A big part of being such a kind is getting rid of your unproductive habits, like saying yes to everything, worrying too much, not writing things down, and only relying on your memory. Instead of doing this, when you lose focus, acknowledge it first. Think about your success achieved in the past to boost your serotonin (Serotonin is a chemical that carries messages between nerve cells in the brain and throughout your body, which is responsible for changes in someone's mood). Think about what matters to you.

Control your life with your daily habits instead of relying on others for suggestions or support. Set a small list of essential tasks to complete every day. It takes time to develop and use such a system to become habitual. Get clear on what you want and eliminate everything else from your life. Another fruitful way to enhance your productivity may be assigning an hourly rate of your time based on the salary you would like to make. Calculate the cash value of hours spent on things that get you closer to your goals vs. the hours spent on distractions or dead-end activities. Also, a crucial aspect of being the most productive and at your best is getting enough sleep and making exercise part of your routine. The healthier you are, the more effective you will be. At last, we are all human beings, and not every day can be equally productive, so we should not hate ourselves for the same. Instead, we should recast our energy and try to be on track again.

Guidance For Placements

(Snehal Malhotra ENC (2019-23) (Currently working for Adobe))

Starting early in college is essential for successful career preparation. Balancing enjoyment with planning is key. Begin career planning in the first year to build skills, network, and experience gradually, ensuring readiness for future opportunities without last-minute stress.

Proactive Internship Seeker

Don't rely solely on college programs; seek additional internships independently. This initiative helps you gain a deeper understanding of your field, build a network, and grasp industry culture, setting you up for future success.

Effective Preparation Strategies

1. Quality Over Quantity: Prioritize in-depth understanding rather than rushing through topics.
2. Avoid Comparisons: Trust your unique journey instead of comparing with others.
3. Comprehensive Subject Coverage: Understand relevant subjects thoroughly.
4. Coding Practice: Engage in coding practice to improve problem-solving skills.
5. Balanced Lifestyle: Prevent burnout by balancing preparation and leisure.
6. Academic Performance: Maintain focus on college studies; CGPA matters.

Trust the Learning Process

In today's dynamic industry, a balance of technical and soft skills is vital.

Technical Skills:

Programming Proficiency, Basic ML/AI Knowledge, Full-Stack/Web Development, DBMS and OS Familiarity, Adaptability to New Technologies.

Soft Skills:

Communication, Teamwork, Problem-solving, Critical thinking, Creativity, Work ethic, Adaptability, Emotional intelligence.

Early career planning, proactive internship seeking, effective study strategies, and balanced skills development are essential for success. Trust the process, stay committed, and build a robust professional network to navigate your career journey successfully.

Building a Network

After graduation, focus on building a professional network:

1. Leverage Alumni: Connect with graduates in the industry.
2. Online Platforms: Use social media like LinkedIn for networking.
3. Attend Industry Events: Engage in industry-related events.
4. Maintain Internship Connections: Keep connections from internships and part-time jobs.
5. Networking Etiquette: Follow proper networking etiquette.
6. Offer Value: Contribute to your connections' professional growth.

Celebrating Academic Excellence

It is with great pleasure that we announce the noteworthy achievement of Ms. Manju Kumari, a distinguished faculty member in the Electronics Engineering Department and a dedicated Ph.D. scholar under the guidance of Dr. Shailender Gupta (Regn No. YMCAUST/Ph03/2015). Ms. Manju Kumari recently emerged triumphant in her Final Ph.D. viva voce examination, showcasing her expertise in Electronics Engineering.

The event was held on the 20th of April 2023 at the Conference Hall of the Electronics Engineering Department. The engaging atmosphere was filled with esteemed faculty members, fellow Ph.D. scholars, and enthusiastic postgraduate students, all eager to witness and participate in the scholarly discourse.

Ms. Manju Kumari's Ph.D. research, "Design and Analysis of an Efficient Secured Mechanism for Preserving Image Confidentiality," is a testament to her commitment to advancing knowledge in this specialized domain. The defense highlighted the depth of Ms. Manju Kumari's knowledge. It showcased her ability to articulate complex concepts with clarity and precision. The successful completion of the Ph.D. viva voce examination signifies the end of an academic journey and the beginning of a new chapter in her scholarly career.

On behalf of the entire Department, we extend our heartfelt congratulations to Ms. Manju Kumari. Her achievement is a personal milestone and a source of pride for our academic community. We appreciate the dedication and hard work she has invested in her research, contributing to the overall academic excellence of our department.

Birthday Celebration

The classroom is only completed with a fantastic teacher who guides, teaches, and inspires the students. They are role models and influential figures who give society the tools to grow and succeed. And when it's their birthday, it's time to show our appreciation by giving them a token of thanks and gratitude. The department celebrates the birthday of all the faculty members, workshop staff, and support teams. One day in a month is dedicated to the birthday celebration for all those members whose birthday lies in that particular month. They are all facilitated by saplings and wishing letters by the Chairperson.

Birthdays of The Quarter

Sh. Ramavtar (2nd April)
Ms. Kusum Arora (4th April)
Sh. Rahul (7th April)
Dr. Gunjan Sardana (9th April)
Sh. Varinder Singh (30th April)

Sh. Lalit Mohan (1st May)
Dr.Sunil Jadav (1st June)
Ms. Deepika Mundal (6th June)
Ms. Lavita Virmani (19th June)
Sh. Mukesh Kumar (30th June)

Message From Editorial Team

The Editorial Team

The Intention to Unravel a problem integrated with intellectual efforts, research, and constant endeavors leads to the most significant discoveries of humankind. Our esteemed readers, We, the students of the Editorial Board, are delighted to share some minor aspects of our department through "*स्पंदन*," the official Newsletter of the Electronics Department of the J. C. Bose University of Science and Technology, YMCA. We're sincerely grateful to Pradeep Dimri Sir, Bharat Bhushan Sir, Sangeeta Dhall Ma'am, and Nisha Yadav Ma'am for their priceless mentorship, exceptional leadership, and unconditional support in helping us complete the Task. We thank our seniors for leading us and answering our questions as we proceeded with the work.

Kudos to our team that worked hard, and the end product was a wealth of knowledge, insights, recommendations, and skills that we learned in the process.

We hope the readers will be pleased with our work, appreciate our efforts, and provide us with insightful criticism so we may continue to improve.

Editorial Team:- Bharat Bhushan (AP), Sangeeta Dhall (AP), Nisha Yadav (AP)
Final Year:- Armaan Alam(EEIOT), Harsh Bhawra(EEIOT), Pratham Goel(EEIOT), Shruti Yadav(ENC), Sukhman Singh(EEIOT)
Third Year: Aarusha(ECE), Anshika(ECE), Arya Mishra(EEIOT), Chirag Tyagi(EEIOT), Dolly(EEIOT), Eshita Dhar(ECE), Mishali Bansal(EEIOT), Nikita(ECE), Puneet Khoria(EEIOT), Shivam(EEIOT), Vansh Sardana(EEIOT)