

ICE ASSOCIATION NEWSLETTER



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EDITOR'S NOTE:

Greetings,

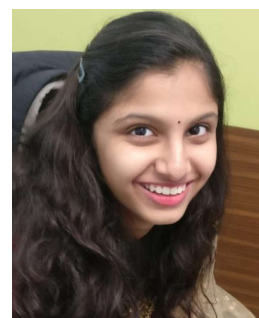
I am duly honoured to have been instrumental in fleshing out the latest issue of our newsletter as the editor for the odd semester of 2020. This issue provides you with a palette of informative articles pertaining to the expansion and development of the Department of Instrumentation and Control Engineering.

With a myriad amount of information piled upon you, your prime objective involves organizing your thoughts into a well-structured format, hence making it within reach of anyone who seeks said information. This has always been the prime objective of our newsletter. We have highlighted the most prominent features that make our department a paragon of ambition and repute, by starting off with the list of papers published by our department as of 2020, the number of patents applied, the number of seminars and workshops conducted, the placement stats and a rather informative tech corner that elaborates on the latest sensor-driven technology.

Constructive criticism has always been the pioneer of perfection and that being said, we welcome any feedback and suggestions for our upcoming editions which will definitely provide a more enhanced experience to our readers, so feel free to contact us for the same.

Thank you for your continued support and interest in Sensors.

-Mahika





VISION AND MISSION:

The Department of Instrumentation and Control has always strived for perfection, and this is achieved by following our department's Vision and Mission

Vision:

- To become a world-class center of excellence in Instrumentation and Control Engineering.

Mission:

- To inspire our students to realize their aspirations and potential through quality education in Instrumentation and Control Engineering.
- To enhance knowledge, create a passion for learning, foster innovation, and nurture talents towards serving the society and the country.
- To encourage our faculty and students to keep in pace with the latest technological developments and to pursue research in those areas.
- To enable our students to engage themselves in entrepreneurship and product development for the benefit of the global community.

We believe that our vision and mission statement will provide a clear direction and purpose for our department, as well as inspire our faculty and students to strive toward excellence.

LIST OF PAPERS PUBLISHED BY DEPARTMENT:

The Department of Instrumentation and Control has garnered a number of breakthroughs in numerous fields related to its domain this semester. Listed below is a gist of a few of the papers published by our department:

1. A novel capacitive temperature sensor based on polydimethylsiloxane (PDMS)
2. A capacitive sensor for detecting insulation degradation by sensing 2-FAL in Transformer Oil
3. Automated detection of subthalamic nucleus in deep brain stimulation surgery for Parkinson's disease using microelectrode recordings and wavelet packet features.
4. Electromyography-Based muscle fatigue analysis using binary and weighted visibility graph features.
5. Study of absorption of radio frequency field by gold nanoparticles and nanoclusters in biological medium
6. Study of skin flow motion pattern using photoplethysmogram
7. Transfer matrix analysis of a duct with gradually varying arbitrary cross-sectional area
8. Performance analysis of Super Twisting Sliding Mode controller by ADAMS-MATLAB Cosimulation in Lower Extremity Exoskeleton
9. Analysis of time delays in scheduled and unscheduled communication used in process automation
10. State estimation for a networked control system with packet delay, packet dropouts, and uncertain observation in S-E and C-A channel
11. Experimental evaluation of liquid mixing using piezo actuated pump system
12. Realization of constant voltage anemometer using an alternative signal conditioning circuit
13. Experimental investigation and uncertainty analysis of constant voltage anemometer using low-cost sensor
14. Role of Shape Memory Alloy Wires as a Sensaptic HMI Device
15. Electromagnetic characteristics of shape memory spring

LIST OF WORKSHOPS CONDUCTED BY THE DEPARTMENT:

Our department over the years has always strived toward creating a more hands-on learning experience for anyone imbued with the passion for expanding knowledge across different domains and to achieve that very aim, the esteemed faculty of the department has conducted several workshops, a few of them being;

- 1) Recent trends in Industrial Process Automation
- 2) Technology-Based Entrepreneurship Development
- 3) Capacity Building of Women Managers in Higher Education
- 4) Innovative and Sustainable Chemical and Process Analysis, Design and Synthesis

PLACEMENT STATS

In the academic year 2019-2020, out of the total of 64 students who went through the placement process, a whopping 62 students cleared the process and have been placed in various core, software, and management roles in top companies, boasting a nearly 100% placement record for this academic year. The highest package offered has gone up to 38 Lakhs per Annum, a huge jump of 7 Lakhs from the previous year's highest of 31 Lakhs per Annum. With more and more students opting for on-campus placements, the number of companies that visit our campus and hire our department students are also consistently keeping up with the increasing applications and hence, we are always able to maintain a near 100% placement percentage. Speakers: Dr.M.Sridevi, Faculty,CSE Department, NIT Trichy. Dr.Sugirtha, Faculty, CSE department, IIIT Trichy.



TECH CORNER:

"HOW IoT DEVICES AND SMART HOME AUTOMATION IS ENTERING OUR HOMES IN 2020"

The Internet of Things is set to disrupt the way we live and work, but for now let's focus on the "live" portion of that statement. Smart homes filled with connected products are loaded with possibilities to make our lives easier, more convenient, and more comfortable. Imagine that you're driving home on a hot summer day. But rather than turn the air conditioner on when you get home and wait for your house to cool, you simply use your smartphone when you leave your office to tell your smart thermostat to lower the temperature. Or imagine that you're cooking dinner, and you ask Alexa, the voice assistant on the Amazon Echo, to read you today's biggest news stories so that you can focus on chopping those vegetables. There is no shortage of possibilities for smart home IoT devices, and home automation seems to be the wave of the future. Below, we've compiled a detailed guide on how the IoT and house automation will change our way of life.

SMART BUILDINGS AND SMART HOMES

The total number of connected devices on the planet is expected to reach 64 billion by 2025, up from about 10 billion in 2018. This includes, but is not limited to, all smart appliances (washers, dryers, refrigerators, etc.), smart home safety and security systems (sensors, monitors, cameras, and alarm systems), and smart home energy equipment, like smart thermostats and smart lighting.

- The first and most obvious benefit to smart homes is convenience, as more connected devices can handle more operations (lighting, temperature, etc.) and frees up the resident to perform other tasks.

- But beyond this, smart home IoT devices can help reduce costs and conserve energy. In our example above, you'd have a comfortable and cool apartment when you get home, but you could also leave your air conditioner off when you're not home, which would lower your electric bill and reduce energy consumption. Smart lights would function in a similar way.
- Of course, there are disadvantages, as well. Smart home devices are typically more expensive than their non-connected counterparts, so consumers would certainly feel the hit in their wallets at first.
- Consider that connected LED bulbs cost \$15 on average, compared to \$8 for nonconnected LED bulbs. However, the cost of these connected bulbs has dropped in the last two years, so the prices of smart home IoT devices could decline even further and make them more affordable to the average consumer.

SMART HOUSE IoT DEVICES

Several stellar smart home IoT devices have already hit the market and made their way into thousands of houses around the world.

- First we have the Amazon Echo, arguably the first and most recognizable name in this space. The device functions as a central hub for your other smart home gadgets, and its voice-activated assistant, Alexa, provides convenience that few other products can match. Amazon also offers two sister products, the Tap and the Dot.
- Nest, one of the more famous smart home device manufacturers, has created a Learning Thermostat that can automatically adjust temperature based on your location and uses a far-field sensor to determine the time and temperature from a distance. And thanks to a recent update, it now works with Alexa, too.
- The August Smart Lock provides enhanced security for the home, is easy to install, and works with Siri through the Apple HomeKit.

- And for smart bulbs, there's the Lix Color 1000, which can change color as necessary, and the Philips Hue Wireless Dimming Kit for your white-light needs.

HOME AUTOMATION COMPANIES

So who's putting out these devices? Several companies have emerged at the forefront, such as Amazon, Nest (owned by Google's parent company, Alphabet), Apple, August, and Philips.

Other companies leading the way in this space include:

- Samsung (SmartThings)
- Sylvania
- Ring
- Wink
- Abode
- TP-Link
- Ecobee
- Arlo
- SimpliSafe

EDITORIAL BOARD:



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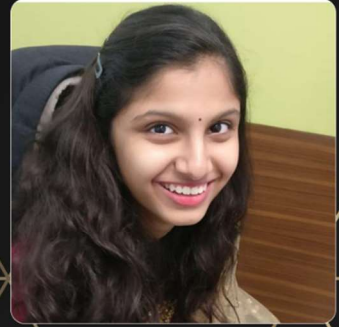
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