



PEACE

Power of Electronics and Communication Engineering

Issue:1, Year : 2024

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Key Events

Alumni Meetings: January 6, 2024, at RTC Kalavedika with 35 attendees
Conferences and Workshops: An Workshop titled "Remotely Monitored, Controlled, and Real-Time Implementation of Incubation Parameters via Cutting Edge IoT and Cloud Technology" was held from March 1 to March 31, 2024

VISION OF THE DEPARTMENT

To strive to become centre of excellence in Education, Research with moral, ethical values and serve society.

MISSION OF THE DEPARTMENT

- M1:** To provide Electronics & Communication Engineering knowledge for successful career either in industry or research.
- M2:** To develop Industry-Interaction for innovation, product oriented research and development.
- M3:** To facilitate value added education combined with hands-on trainings.

The role of Electronics in the Military & Defence industry

Military & Defense Electronics are electronic devices and systems which are designed with the highest electronic sophistication and technological superiority with the scope of providing the latest technologies for the national defense. Such electronics-based systems provide reliable, high-performance electronic detection, protection, and attack capabilities to make operations succeed while minimizing casualties. These sophisticated systems can be used on many military applications and in various domains: air, land, maritime, space, and for various services.

Let's have a look on some of the most important electronics applications in the

military industry:

Electromagnetic

Signatures are electromagnetic signals, like interferences, noise, arcing, corona, partial discharge, gap discharge, sparking or microsparking, or any combination of these, generated by the operation of electronic-based systems. Through their electrical activity a



great deal of information can be obtained. This is the reason why an electromagnetic signature of a (military) platform is crucial, especially

classification and identification by adversary sensor systems and on hit probability in a potential engagement phase. Electronic military devices need to be able to keep such signatures below safe levels.

Radar Electronic Warfare (REW) have been used in military operations ever since the 1930s. Radar (RADio Detection And Ranging) EW allows to detect an object within a certain radius by sending out a signal that bounces back from it and the distance is determined by how long it takes for the echo (return signal) to come back.

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Professional Development Activities

Dr. K Jaya Sankar, **International Workshop**, MCET – ECE, and ISTE, IETE. Remotely Monitored, Controlled and Real time Implementation of Incubation Parameters via Cutting edge IoT and Cloud Technology, 1st Mar -31st Mar 2023.

Patent Granted. Automatic Eye Blink Detector, Dr. John William Carey Medithe, Patent no:497832, 2024

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO1: Apply the knowledge of Basic sciences and Engineering in designing and implementing the solutions in emerging areas of Electronics and Communication Engineering.

PEO2: Pursue the research or higher education and practise profession.

PEO3: Adapt to the technological advancements for providing the sustainable engineering solutions to meet organisation/society needs.

PEO4: Work as an individual or in a team with professional ethics and values.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Professional Competence: Apply the knowledge of Electronics & Communication Engineering principles in VLSI, Signal processing, Communication, Embedded system & Control Engineering.

PSO2: Technical Skills: Design and implement products using the cutting-edge software and hardware tools.

PSO3: Social consciousness: Demonstrate the leadership qualities and strive for the betterment of organization, environment and society.

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Expertise needed in developing military devices

Reasoning on why defense electronics are increasingly being so widespread is especially due to the greater availability and the rapid progress of enabling technologies in the market. In particular, there are six technology areas which are having a crucial role in the defense industry and are impacting the demand for defense electronics:

MACHINE LEARNING : Part of artificial intelligence, Machine Learning is a method based on algorithms that leverages data to improve performance and to make more accurate predictions or decisions. Investments in such systems are exploding and applications of it are advancing across segments, domains and platforms, making them strategic tools in the military industry.

SOFTWARE-DEFINED SYSTEMS: Software Defined Systems (SDSys) provide a layer of virtualization where capabilities are progressively defined by software components rather than hardware. Moreover, such systems allow for shorter upgrade cycles which are crucial in the military industry.

OPEN ARCHITECTURES: Architectures of systems are progressively becoming "open", and open architecture systems are more favorable because they allow a more efficient and cost-effective migration of data with financial and CRM's systems, by creating a more competitive market too.

RADIO-FREQUENCY (RF) CONVERGENCE: Modern RF systems (i.e. Communications, Radar, EW, SIGINT) consist of high-frequency analog electronics (front-end architectures) and adaptive digital algorithms. Such systems are favourable because they are high-performing, energy-saving and cost-efficient. RF systems present a growing multi-functionality and convergence of capabilities.

ADVANCED MANUFACTURING & MATERIALS : Electronics manufacturing is seeing progresses in the development of electronic products with new and more resistant materials, which allow to increase the durability and performance of electronic systems. Also, they enable new forms of them, such as the GaN system, a semiconductor material with high breakdown voltage and high electron mobility.

EDGE COMPUTING: Processing power is increasing and this enables new computing architectures like edge computing, a distributed framework which brings applications closer to data sources such as IoT devices or local edge servers. The proximity to data at its source allows for more data security, faster insights, improved response times and better bandwidth availability.

FDP Attended

Dr. Ravi M Yadahalli - CVR college of engineering - Outcome based education
29.01.2024-02.02.2024 - 1week

Dr. Ravi M Yadahalli - CVR college of engineering - Research methodologies –
quantitative & qualitative research - 05.02.2024-09.02.2024 - 1week

Dr. Ravi M Yadahalli - IEEE JSSATE Noida student branch Role of green energy
towards sustainable smart cities -13.02.2024-17.02.2024 - 5days.

Dr. Ravi M Yadahalli -CT University, Punjab -Effective teaching pedagogy-
11.03.2024-17.03.2024 -1week