

The Spintronics NEWS LETTER

J. B. Institute of Engineering & Technology

June 2021

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Department of ECE

Vision:

To be a guiding force enabling multifarious applications in Electronics and Communications Engineering, promote innovative research in the latest technologies to meet societal needs.

Mission:

To provide and strengthen core competencies among the students through expert training and industry interaction.

To promote advanced designing and modeling skills to sustain technical development and lifelong learning.

INSIDE HIGHLIGHTS:

HOD'S MESSAGE

EVENTS

STUDENTS ACHIEVEMENTS

ARTICLES



Dr. Towheed Sultana
HOD, ECE

Message from Head of Department

“I heartily Congratulate all the faculty members for successful completion of Workshops. I also congratulate IEEE Student Chapter for organizing workshop. And Especially the conducting of seminars is a great step for our branch”.

Events Conducted:

- Seminar on Industry 4.0
- A Two Day National Online Workshop on Python Programming
- Guest Lecture on Radar Signal processing”

Brochure



J.B. INSTITUTE OF ENGINEERING AND TECHNOLOGY

(UGC AUTONOMOUS)

BHASKAR NAGAR, YENKAPALLY (V), MOINABAD (M), R. R. DIST., HYDERABAD.

Department of Electronics and Communication Engineering Seminar On "Industry 4.0"

Dr. Towheed Sultana
HOD – ECE

Dr. P. C. Krishnamachary.
Principal

CO-ORDINATORS:




Mrs. G. Samatha,
Mr. G. Anand

Dr. Parkavi A, Ramaiah Institute of Technology Bangalore, has covered the various points associated with Industry 4.0 as described below through online mode.

1. **Interconnectivity:** Machines, devices, sensors, and people are interconnected through the Internet of Things (IoT), enabling real-time data exchange and communication.
2. **Data Transparency:** Data is collected from various sources throughout the production process, providing transparency and visibility into operations. This data is often used for analytics, optimization, and decision-making.
3. **Information-driven Decision Making:** Advanced analytics and AI algorithms analyze large volumes of data to derive insights and support decision-making processes, leading to more efficient and informed decisions.

4. **Automation and Robotics:** Robotics and automation play a significant role in Industry 4.0, enabling tasks to be performed with greater precision, speed, and flexibility. This includes both physical robots and software-based automation systems.
5. **Smart Manufacturing:** Factories and production facilities are equipped with intelligent systems that optimize processes, monitor equipment health, predict maintenance needs, and enable flexible production customization.
6. **Cybersecurity:** With increased connectivity comes greater vulnerability to cyber threats. Cybersecurity measures are essential to protect critical infrastructure, data, and intellectual property from cyber-attacks.
7. **Customization and Flexibility:** Industry 4.0 enables more flexible and customizable production processes, allowing companies to respond quickly to changing market demands and customer preferences.
8. **Sustainable Manufacturing:** By optimizing resource usage, reducing waste, and improving efficiency, Industry 4.0 technologies contribute to more sustainable and environmentally friendly manufacturing practices.

Industry 4.0 is transforming the manufacturing and industrial sectors, leading to increased productivity, efficiency, and innovation. Companies that embrace these technologies can gain a competitive edge in the global marketplace. However, adopting Industry 4.0 technologies also requires significant investments in infrastructure, workforce training, and cybersecurity.

<p><u>CO-ORDINATORS</u></p> <ol style="list-style-type: none"> MR. RAJKUMAR D BHURE Assoc. Professor, ECE MR. N. RAMESH BABU Assoc. Professor, ECE MRS. K. SNEHALATHA Assoc. Professor, ECE <p><u>ORGANIZING COMMITTEE</u></p> <p><u>FACULTY</u></p> <ol style="list-style-type: none"> Mr. G. ANAND Assoc. Professor, ECE Mr. VVVS.PRASAD Assoc. Professor, ECE Mr. RAVI KIRAN Asst. Professor, ECE Mrs. B. SOWMYA Asst. Professor, ECE Mrs. G.SAMATHA Asst. Professor, ECE 	<p><u>CHIEF PATRONS</u></p> <p>Shri. J. V. Krishna Rao, Honourable Secretary, J. B. Educational Society.</p> <p><u>PATRONS</u></p> <ol style="list-style-type: none"> Major Gen Dr S S Dasaka, SM, VSM Retd, CEO, JBGEI. Dr.P.C Krishnamachary, Principal, JBIET. <p><u>HEAD OF DEPARTMENT</u></p> <p>Dr. Towheed Sultana</p> <p><u>Organized by IEEE</u></p> <p></p>	<p> J.B. INSTITUTE OF ENGINEERING AND TECHNOLOGY (UGC AUTONOMOUS) BHASKAR NAGAR, YENKAPALLY (V), MOINABAD (M), R. R. DIST., HYDERABAD.</p> <p>Department of Electronics and Communication Engineering</p> <p></p> <p>A TWO DAY WORKSHOP On “Python Programming” 12-07-2021 TO 13-07-2021</p> <p>Keynote Speaker</p>
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Students Practicing in
Python Session

Guest Lecture on Radar Signal Processing

BROCHURE

J. B. INSTITUTE OF ENGINEERING & TECHNOLOGY
UGC Autonomous Institute
 Permanently Affiliated to JNTU, Approved by AICTE and Accredited by NAAC & NBA
 Shankar Nagar, Moosahad Mandal, R.R. District, Hyderabad-500075, Telangana State, India

Guest Lecture
 on
RADAR SIGNAL PROCESSING
 Organized by
Department of Electronics & Communication Engineering

RESOURCE PERSON
 Dr. Parthipati Srihari, MS (UK), PhD
 Assistant Professor
 FETE, Sr. Member (IEEE, ACM)
 Dept. of ECE
 NIT, Karnataka

Coordinator
 Dr. Himanshu Sharma
 Associate Prof., ECE
 Mr. K. Srinivasulu
 Associate Prof., ECE

Convener
 Dr. Towheed Sultana
 Prof. & HOD-ECE

Date: September 2021
 Time: 10:00 AM to 12:00 PM
 via Google Meet

Registration Link:
<https://forms.gle/ATP8Ah8SPwVM5Q8>
 Date of Registration: 05.09.2021

Guest Lecture on Radar Signal Processing

JBIET, Telangana, India - 500075
 Lat 17.329952°
 Long 78.29847°
 04/09/21

Students participated online inside the department Auditorium

GEO TAGGED PHOTOGRAPHS

JBIET, Telangana, India - 500075
 Lat 17.329952°
 Long 78.29847°
 04/09/21 10:37 AM

Students Participated

Signal Reception: Radar systems emit electromagnetic waves (typically microwaves)

Resource: Dr. Patipati Srihari

Dr. Patipati Srihari covered various aspects of Radar Signal Processing as a concept wise and based on real time application. Some the conceptual points are as follows.

towards a target. When these waves encounter objects in their path, they are reflected back towards the radar receiver.

1. **Signal Preprocessing:** Raw signals received by the radar are often contaminated with noise, interference, and clutter. Signal preprocessing techniques such as filtering, amplification, and noise reduction are applied to improve the quality of received signals.
2. **Pulse Compression:** In pulse radar systems, transmitted pulses are typically wide to achieve better range resolution. However, wide pulses result in poor range side lobes. Pulse compression techniques such as matched filtering are used to compress the transmitted pulse, improving range resolution without sacrificing side lobe suppression.
3. **Range-Doppler Processing:** Range-Doppler processing is used to extract range and Doppler information from radar signals. Range information determines the distance to the target, while Doppler information provides velocity measurements. Techniques such as Fast Fourier Transform (FFT) are commonly employed for range-Doppler processing.
4. **Clutter Rejection:** Clutter refers to unwanted signals from stationary or slow-moving objects such as terrain, buildings, or sea waves. Clutter rejection techniques are applied to suppress these unwanted signals, allowing radar systems to focus on detecting moving targets.
5. **Target Detection and Tracking:** Once clutter is rejected, radar systems detect and track targets in the environment. Detection algorithms such as Constant False Alarm Rate (CFAR) are used to distinguish between targets and clutter. Tracking algorithms estimate the state (position, velocity, etc.) of detected targets over time.
6. **Data Fusion:** In multi-sensor or multi-platform radar systems, data fusion techniques are used to integrate information from multiple sensors or platforms, improving overall situational awareness and target tracking accuracy.
7. **Decision Making:** Radar systems often incorporate decision-making algorithms to interpret the information obtained from signal processing and make decisions based on predefined criteria, such as threat assessment or target prioritization.

Overall, radar signal processing plays a crucial role in extracting meaningful information from radar signals, enabling various applications such as air traffic control, weather monitoring, military surveillance, and more. Advances in signal processing techniques continue to improve the capabilities and performance of radar systems across different domains.

Students Achievements

- M Shivani and group Participated in cloud based Analog IC Design Hackathon and designed 8 bit carry select adder with binary to Excess One converter and designated as **excellent work** conducted between 15th Feb to 1st March 2021 by IIIT hyd.
- K.Lokesh, Workshop on "Emerging Trends in Artificial Intelligence" At Bhimavaram Institute of Engineering & Technology, Kakinada, on 25 to 31st May 2020.
- M.Bhasker Reddy, Participated in the International Webinar on the "Artificial Intelligence in Neurology" At VELS Institute of Science Technology, Chennai, on 05-06-2020