UNIVERSITY OF ENGINEERING AND MANAGEMENT, KOLKATA

PRESENTS

2024 SUMMER SESSION

ON

Fundamentals of Industrial IoT (IIoT)

3 Weeks (Contact Hours: 36 Hrs): May 17 to June 2
Days: Friday, Saturday, Sunday
Time: 1 pm - 5 pm
Course Fees: INR 4000/- + 18% GST
Offered by: Department of CSE (AI & ML)
Instruction Mode: Online
Open Seats: 30

USP of the Course

Joining our summer school isn't just about learning; it's about setting yourself up for success in the fast-paced world of IoT. Our program isn't like any other - it's designed with one goal in mind: to make you industry-ready. Here's why our sessions are your best bet for breaking into the IoT field:

1. **Tailored Industry Curriculum:** Our curriculum isn't just academic; it's crafted with input from industry experts to ensure you learn exactly what you need to deal with in real-world IoT applications.

2. **Practical Hands-on Training:** Theory is important but practical makes the difference quotient. Our sessions offer hands-on training with the latest tools and technologies used in the industry, so you'll graduate with the confidence and competence to tackle real-world challenges.

3. **Industry Networking Opportunities:** Building connections is key to success in any industry, and IoT is no different. Our sessions provide networking

opportunities with industrial personnel, giving you a foot in the door and a network of support as you launch your career.

4. **Industry-Relevant Projects and Case Studies:** Gain practical experience by working on industry-relevant projects and case studies. Our sessions are designed to give you a taste of working in the field, so you'll be ready to hit the ground running from day one.

5. **Industry-Recognized Certifications:** Stand out from the crowd with industry-recognized certifications. Our program offers the opportunity to earn certifications that are valued by employers.

When it comes to launching a successful career in Industrial IoT, don't settle for anything less than the best. Join us this summer and take the first step towards a rewarding career.

Prerequisite: Comprehensive knowledge of Arduino, Raspberry Pi, Basic Python, Knowledge of HTTP, MQTT, Web Server, Programming

Course Summary:
Introduction to Industrial IoT, architecture of IIoT, IIoT node, Challenges of IIoT, IIoT components, communication technologies of IIoT, visualization and data types of IIoT, retrieving data from web, controlling and supervisory level of automation, IoT data security, knowledge of data acquisition (DAQ), IoT application and autonomous ROVER, final project.

Duration: 3 weeks (3 days per week, 4 hours per session)

Week 1: Fundamentals of IIoT
- Session 1: Introduction to Industrial IoT
- Session 2: Requirement of IIoT in industries such as warehouses and water plants.
- Session 3: Challenges of IIoT
- Session 4: IIoT node and architecture
- Session 5: IIoT components
- Session 6: Cost-effective solutions using IIoT

Week 2: Communication Technologies of IIoT

-Session 7: Device-to-Device communication and Device-to-Cloud Communication
- Session 8: Communication Protocols: IEEE 802.15.4, Bluetooth, RFID
- Session 9: Industry standards communication technology ((LoRAWAN, HTTP, MQTT), wireless network communication.
- Session 10: Demonstration of MQTT communication.
- Session 11: Demonstration of LoRa communication, web server, AWS.
- Session 12: Visualization and data types of IIoT.
- Session 13: Retrieving data from the web and automation.
- Session 14: IoT data security and data acquisition (DAQ)

Week 3: Final Project and Assessment

- Session 15: IoT application and autonomous ROVER
- Session 16: Group Project Kickoff
- Session 17: Group Project Work
- Session 18: Group Project Presentations
- Session 19: Final Assessment and Exam Preparation
- Session 20: Course Wrap-Up and Closing Ceremony

This intensive 3-week course will give participants a deep dive into various aspects of Industrial IoT, including fundamental principles, communication topologies, practical applications, and real-world case studies. Each session will combine theoretical knowledge with hands-on exercises and discussions to ensure active learning and practical skill development. By the end of the course, participants will be equipped with the knowledge, skills, and confidence to address challenges faced during industrial IoT research and development.

Eligibility Criteria:

For IEM Students:

- Enrollment Requirement: Must be currently enrolled as a degree-seeking student at IEM, Newtown or IEM Saltlake or IEM Kolkata

For Non-IEM Students:

- Age Requirement: Applicants must be at least 18 years old by the start of the courses.

- Educational Qualification: A high secondary degree/diploma degree is mandatory.

- English Language Proficiency: Must demonstrate proficiency in English as per the specified requirement.

- Application: Students must complete the Summer Sessions application to gain access to enroll in summer courses.

Please note that eligibility criteria may be subject to updates or changes, and prospective applicants should verify the latest requirements on the official UEM website.