SNS COLLEGE OF TECHNOLOGY
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

19ECT213-IOT SYSTEM ARCHITECTURE

INTERNET OF ROBOTIC THINGS

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Exploring the topic of IORT

- **IOT**
- The main focus of IoT is on connecting and enabling communication between various objects and devices to facilitate data sharing and automation.

- **ROBOTICS**
- Robotics refers to the field of engineering and technology that deals with the design, development, and operation of robots

Internet of Robotic Things (IoRT):

•IoRT is an extension of IoT that combines the capabilities of IoT and robotics.

•IoRT enables enhanced capabilities for robots, such as remote monitoring and control, data sharing for collaborative decision-making, and access to vast amounts of information and computational resources.

ESSENTIAL COMPONENTS OF IORT

➢ SENSORS

- Sensors play a vital role in IoRT by collecting data from the robot's environment.

- Examples of sensors used in IoRT include proximity sensors, vision sensors, temperature sensors, accelerometers, and gyroscopes.

➢ ACTUATORS

- Actuators are responsible for converting digital commands into physical actions.

- Common types of actuators used in IoRT include motors, servos, pneumatic systems, and hydraulic systems.

- ➢ EMBEDDED SYSTEM

- • Embedded systems enable real-time control, data processing, and communication within IoRT devices.

- • Embedded systems serve as the brain of IoRT devices, providing computational capabilities and control over the robot's operations.

- ➢ COMMUNICATION PROTOCOL

- • Communication protocols facilitate seamless connectivity and data exchange between IoRT devices, the cloud, and other components of the IoT ecosystem.

- • Common communication protocols used in IoRT include Wi-Fi, Bluetooth, Zigbee, MQTT (Message Queuing Telemetry Transport), and LoRaWAN (Long Range Wide Area Network)

➢ CLOUD INFRASTRUCTURE

• Cloud infrastructure provides a scalable and centralized platform for storing, processing, and analyzing the vast amount of data generated by IoRT devices.

The IORT architecture is divided into following layers:

- Hardware Layer ("Robotic Things" layer)
- Internet Connectivity
- Big Data Services
- Application Layer

A robot has these essential characteristics:-

Sensing
Movement
Energy
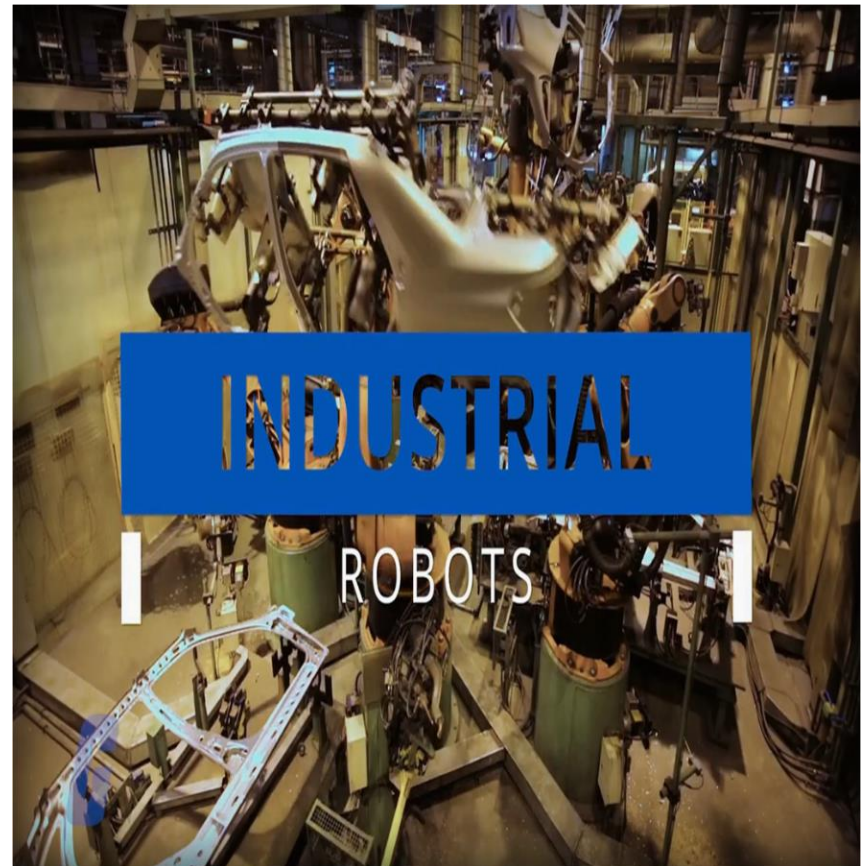Intelligence

INDUSTRIAL ROBOT APPLICATION:

- Material-Handling Application

- Processing Operations

- Assemble Application