Day 1: Introduction to IoT & Robotics

1. What is IoT?

IoT means **Internet of Things**. It is a system where everyday objects like lights, fans, cars, or watches are connected to the **internet or mobile phone**. These objects can share information with each other and can also be controlled from far away.

Examples:

- A smart bulb that can be switched ON or OFF using a mobile phone.
- A smartwatch that measures your heart rate and sends it to your phone.

2. What is Robotics?

Robotics is the branch of technology where we make **robots**. Robots are machines that can work **automatically**. A robot can **sense** its surroundings, **decide** what to do, and then **act**.
Examples:

- A toy car robot that follows a line on the floor.
- An obstacle avoidance robot that changes its path when something comes in front of it.
- A cleaning robot that cleans the floor automatically.

3. Main Components of IoT & Robotics

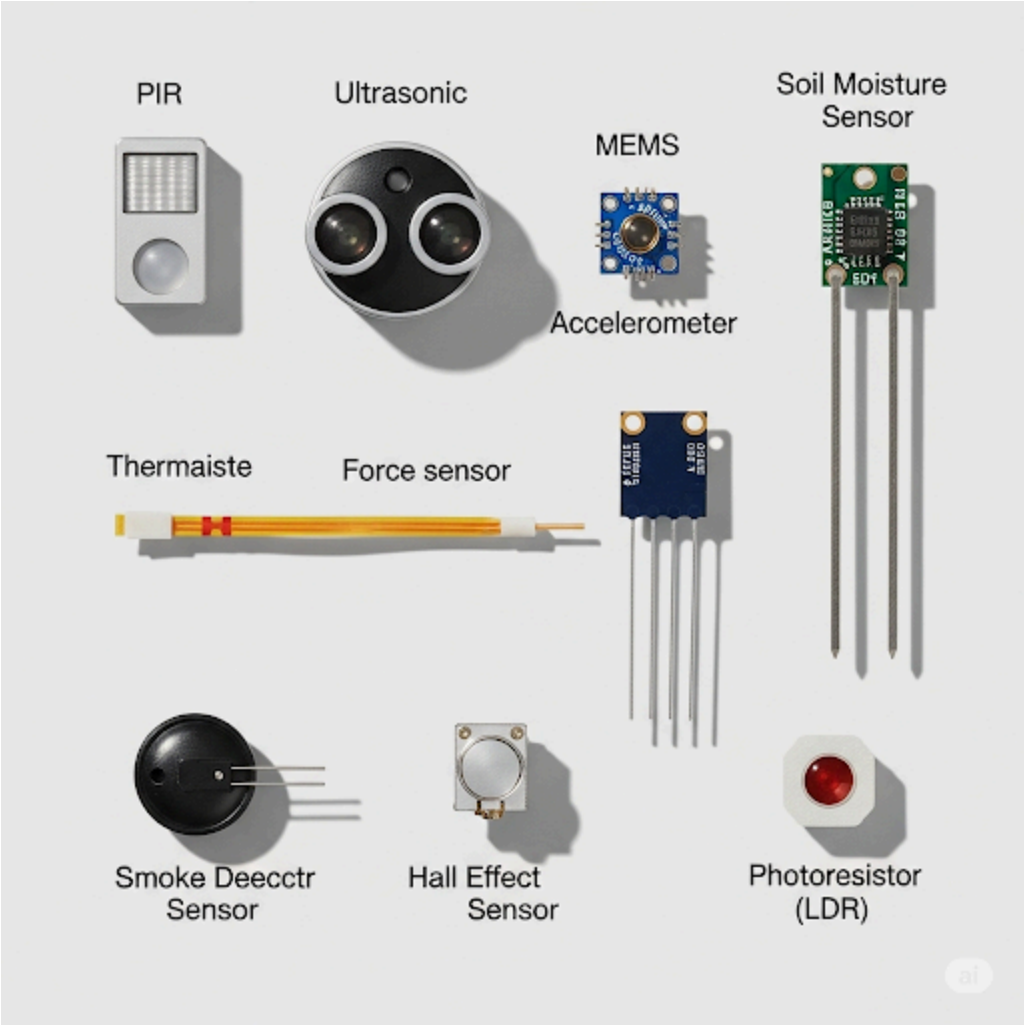
A) Sensors

Sensors are like the **eyes, ears, and nose** of a machine. They collect information from the

environment.

Examples:

- Temperature sensor → tells how hot or cold a place is.
- Motion sensor → detects if someone is moving.
- Camera sensor → works like human eyes.

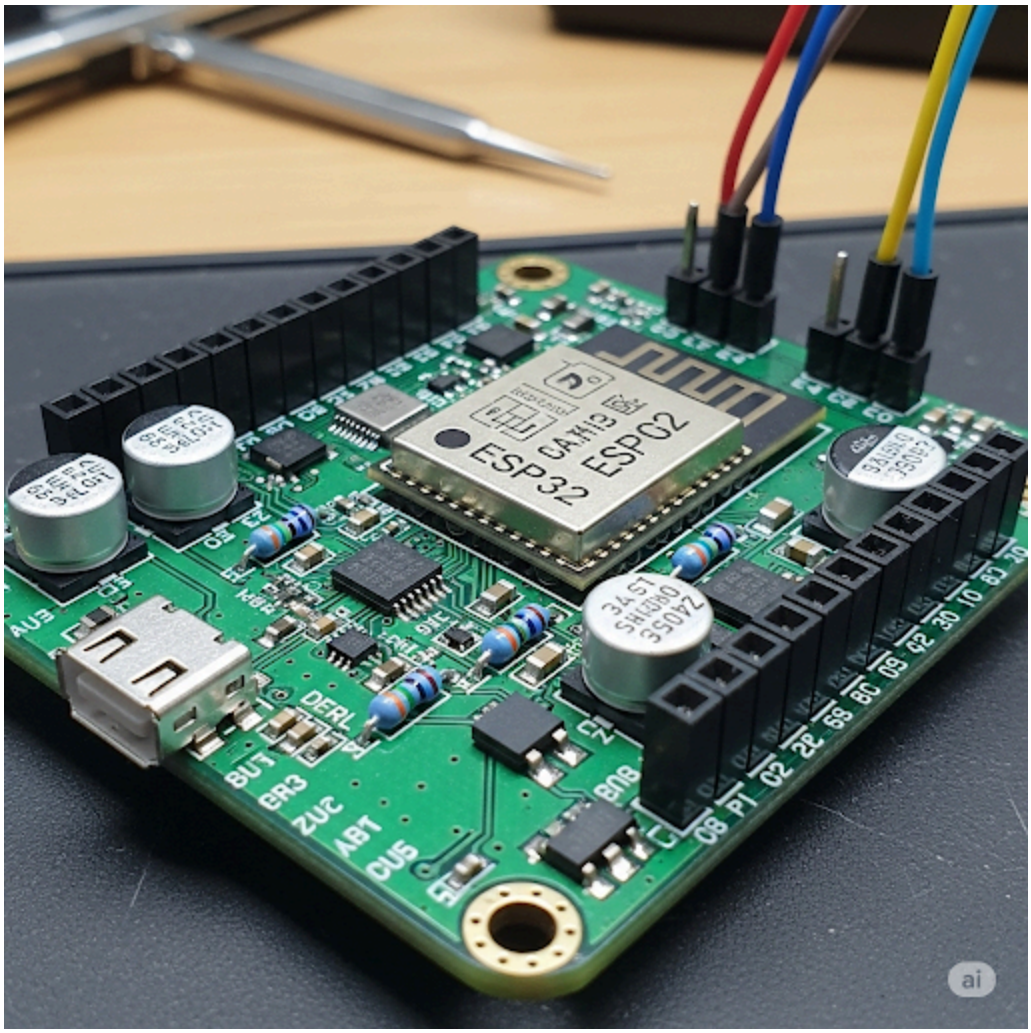


B) Controller

The controller is like the **brain** of the system. It receives data from the sensors, makes a decision, and then gives orders to the actuators. Small computers like Arduino, ESP32, or Raspberry Pi are usually used as controllers.

Examples:

- If the room is dark, the controller decides to turn ON the light.
- If the temperature is too high, the controller switches ON a fan.

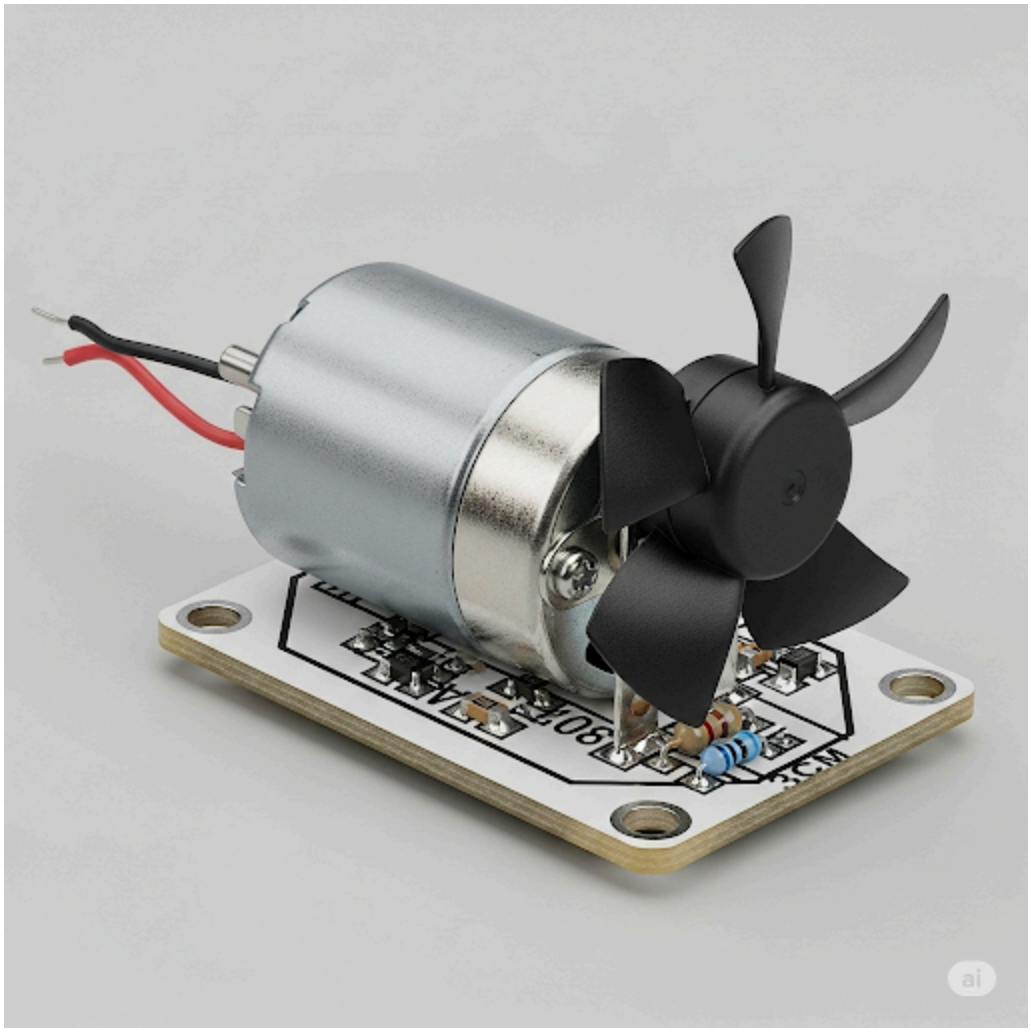


C) Actuators

Actuators are like the **hands and legs** of robots. They perform the real action when they receive commands from the controller.

Examples:

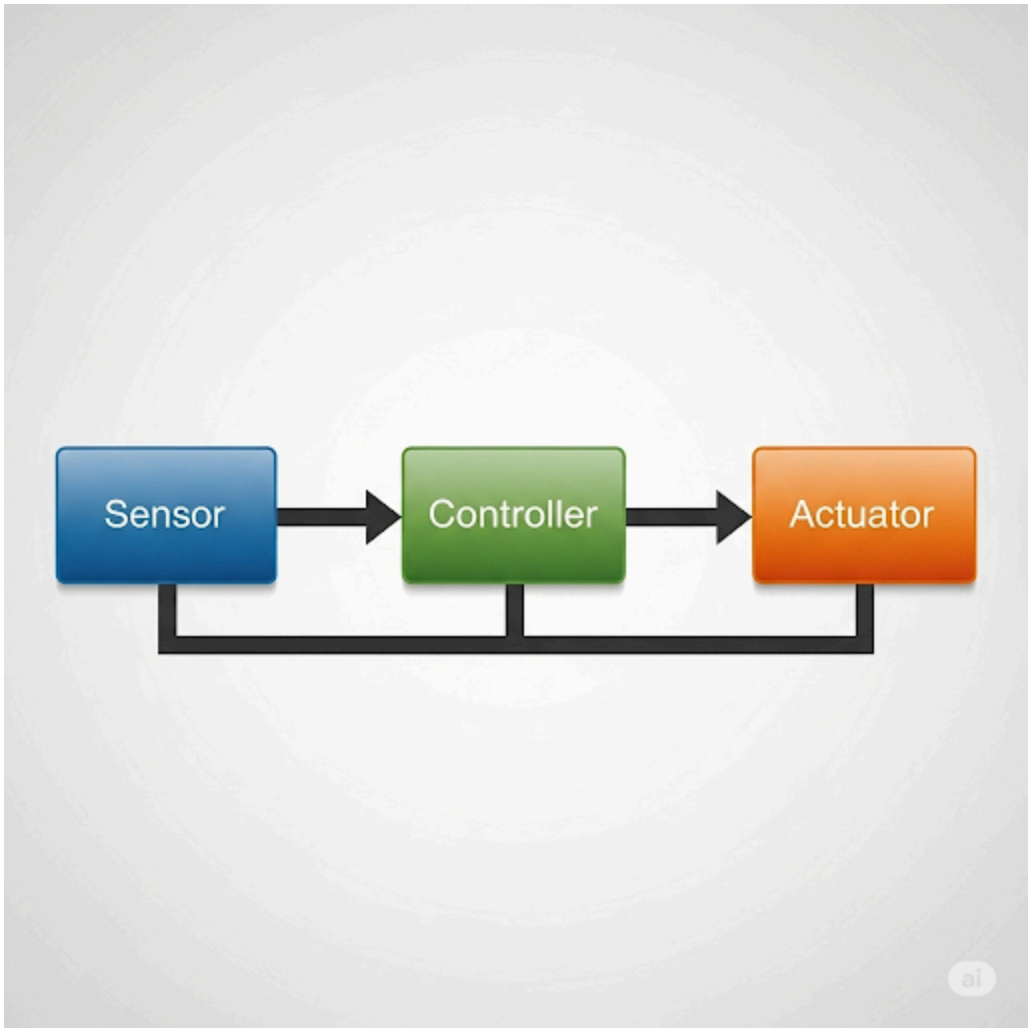
- Motor → moves the wheels of a robot.
- Speaker → produces sound.
- Fan → starts spinning when switched ON.



Simple Formula

- Sensors = Sense (collect data)
- Controller = Think (decide what to do)
- Actuators = Act (perform the work)

👉 Together they form the basic cycle of IoT & Robotics: **Sensor → Controller → Actuator**


Sensor
Controller
Actuator