**Objective:** Build a deployable pod that detects motion, triggers a physical response, and sends a signal to a Raspberry Pi for alerting and optional visual AI detection.

### **🧩 Team Roles**

### **🔍 Project Requirements**

**1. 3D Printed Pod Enclosure**

* House Arduino Nano, sensor board, motor, and power
* Mount sensors and DC motor
* PI enclosure that allows fan hold and pin access

**2. Sensors (3 required total):**

* ✅ Microwave Motion Sensor (RCWL-0516)
* ✅ Ultrasonic Sensor (HC-SR04)
* ➕ One optional sensor:  
  + Light (LDR)
  + Sound Sensor
  + Tilt
  + Conductive wire

**3. 2 Soldered Sensor Board run on battery power**

* Use custom pcb board
* Clean wiring and labeled pins

**4. Motor-Driven Mechanism**

* Attach a **3D-printed object** to a DC motor
* Spins on detection for ~2 seconds
* Controlled via transistor or MOSFET

**5. Voltage Signal to Raspberry Pi**

* Arduino outputs 3.3–5V HIGH to Pi GPIO input
* Use jumper wire with inline resistor (330Ω–1kΩ)
* Signal triggers Pi-side response

**6. Raspberry Pi Alert System**

* Reads GPIO signal from Arduino
* Triggers:  
  + Flashing LED or visual indicator
  + Audio alert (e.g. siren, voice clip)
* Optional: Runs YOLO object detection via Pi camera

### **🧪 End-of-Day Goal**

Deploy your pod. When triggered:

* The motor spins your custom 3D object
* A signal is sent to Raspberry Pi
* Pi responds with audio/visual alerts
* (Optional) Pi runs YOLO to detect person/object and log it