

## **Activity 2 – Reinforcement Learning Agents**

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### **Task 1: Warehouse Mobile Robot**

- State: position, orientation, distance to package/drop-off, nearby obstacles, load status
- Sensors: LiDAR/depth camera, wheel encoders, IMU, camera/RFID
- Rewards: + move closer, + successful delivery, – collision/unsafe movement

### **Task 2: Agricultural Monitoring Drone**

- State: GPS position, altitude, battery level, coverage map, no-fly zone distance
- Sensors: GPS, camera/multispectral sensor, battery sensor, altimeter
- Rewards: + new area coverage, + efficient battery use, – no-fly zone entry

### **Task 3: Hospital Service Robot**

- State: location, distance to destination, dynamic obstacles, restricted areas
- Sensors: LiDAR/depth camera, vision sensor, IMU, encoders
- Rewards: + safe delivery, – collisions or restricted access

### **Task 4: SCARA Pick-and-Place Robot**

- State: joint angles, velocities, end-effector position, object position
- Sensors: joint encoders, vision system, force/torque sensors
- Rewards: + accurate grasp/placement, – joint limit violation or collision