



Course **Advanced Manufacturing**
Section: **Robotics Engineering**



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Robot Sensors Challenge

What You Will Do

- Build a simple obstacle course.
- Guide a robot using only sensor commands.
- Practice giving clear instructions.
- Learn how robots detect obstacles and respond.

Materials You Will Need

- At least one partner to work with.
- Books, chairs, or boxes to create obstacles.
- A scarf or cloth for a blindfold (optional).
- Tape or paper to mark a start and finish line (optional).

Robotic Sensors

Robots use sensors to understand their environment. Sensors detect distance, motion, light, or touch. Engineers program robots to respond when sensors detect nearby objects.

In this activity, one of you will be the robot and the other will be the sensor. The robots only moves when it receives a command from the sensor.

Step 1: Build the Obstacle Course

1. Place objects around the room to create a path.
2. Leave space so someone can walk between obstacles.
3. Mark a start and finish location.
4. Make sure that the course is safe. Clear any obstacles that could harm the person playing the robot.

Step 2: Assign Roles

Choose one person to be the robot and one to be the sensor.

Step 3: Guide the Robot

1. **Robot:** Close your eyes. Listen for input from the sensor. Only do what the sensor commands.
2. **Sensor:** Give commands such as “move forward, turn left, turn right, or stop.” Your commands have to be simple and exact. Give one command at a time. Pay close attention to what the robot does. The robot can only do what it is commanded to do.

Step 4: Try Again

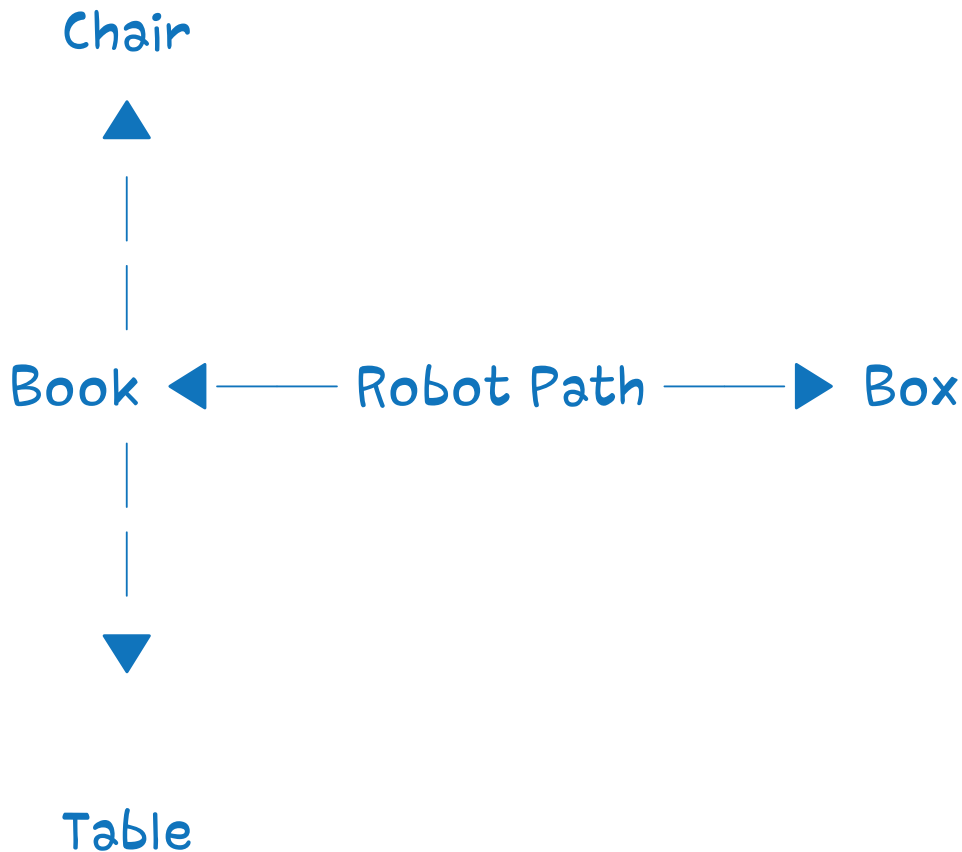
Switch roles and repeat the challenge. The robot’s success depends on clear commands from the sensor.

Engineering Tip

Real robots often combine several sensors at the same time. For example, warehouse robots use distance sensors and cameras to move safely around people and shelves.

Example Obstacle Course Layout

START



FINISH