

# GEAR/TCEA Robotics

## Challenge 4: Eyes of the Robot



### Challenge 4.2: Ultrasonic Sensor

#### THE OBJECT:

Teams will add the ultrasonic sensor to the front of the robot and learn to detect approaching objects. Install it so that it can clearly “see” approaching objects as the robot moves forward. Wire it into one of the sensor ports (1-4).

#### CHALLENGE TASKS:

1. On the brick, choose “Port View”, select the port to which you connected the ultrasonic sensor, and then select “Live Readout”. Place your robot at different distances from the wall. Write down the distance shown on the display and compare with an actual distance measurement using a ruler/tape measure.
2. What ranges of distances does the ultrasonic sensor report correctly?
3. Program your robot such that it moves forward to a wall and stops once it is 10 inches away from the wall. Test your program with various power levels for the move forward block. Up to what power level does the robot stop where you expect it to stop?

4. Build a burglary alarm system. The robot will be placed next to a door opening. It is supposed to give a warning/greeting message each time someone walks through the door. Test your program.
  
5. Is there any way a burglar can still sneak through the door? How? How could you prevent this?

Extra Credit Assignment: Create an obstacle course and program the robot such that it moves through the obstacle course without bouncing into any of the obstacles.