Group 12 Proposal – RT Embedded Challenge 2018

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# Additional Hardware

1 HC-SR04 Ultrasonic Distance Sensor

# Control Algorithm Outline

1. Stop any forward motion. Turn slowly and monitor FFT output.

2. (Optional) If magnitude of target frequency is decreasing, turn the other direction.

3. When magnitude of target frequency reaches a peak and begins decreasing, turn back to where the peak was detected.

4. Start moving straight.

5. While moving, keep monitoring FFT and distance sensor output.

If target frequency is the final in the sequence and the car has hit the beacon (indicated by FFT magnitude reading or distance sensor), then stop moving and light an LED to indicate that the course has been completed.

6. Keep moving forward and checking for the next one or two frequencies in the sequence.

If a frequency farther along in the sequence is detected at a significant level, then remove current target frequency from possible targets, set detected frequency as the new target, and go back to step 1 with the new target frequency.

Else if target frequency starts to decrease in magnitude (probably going past beacon without finding next) go back to step 1 with same target frequency.