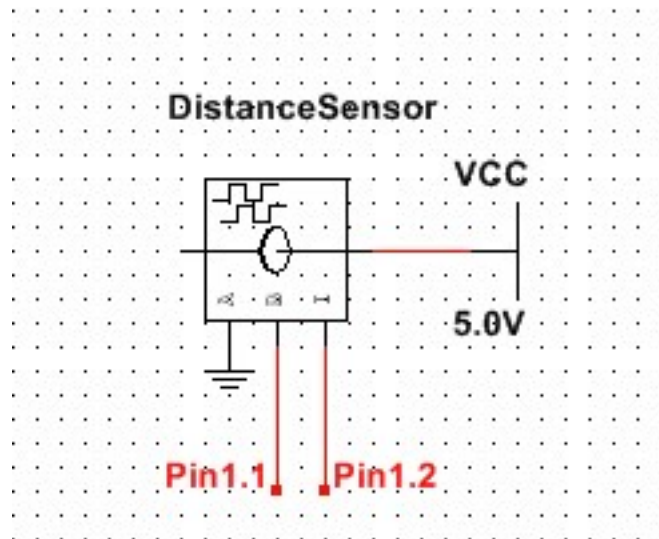# EE 40 Final Hack Proposal

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Overview

Replace Launchpad microcontroller by an Intel Galileo development board, with a WiFi card to allow remote control of the robot from a webpage. Modify motor power circuits, adding ultrasonic distance sensors for collision avoidance.

Hardware Schematic

Additional components	
Intel Galileo	Free (received from Intel makethon event)
SunFounder HC-SR04 Ultrasonic Module (x2)	$9 (from Amazon)
66mm robot wheel (x2)	$4 each (from Amazon)

Software Flowchart

```
                    ┌──────────────┐
                    │    Start     │
                    └──────┬───────┘
                           │
                           ▼
                  ┌─────────────────┐
                  │ Load control page│
                  │ from robot web   │
                  │ server           │
                  └────────┬─────────┘
                           │
                           ▼
  ┌──────────────┐      ◇◇◇◇◇◇        ┌──────────────┐
  │ Send "Left"  │◀─Left─ Key pressed ─Right─▶│ Send "right" │
  │ signal to    │      ◇◇◇◇◇◇        │ signal to    │
  │ server       │         │          │ server       │
  └──────────────┘        Up          └──────────────┘
                           │
                           ▼
                  ┌─────────────────┐
                  │ Send "left" and │
                  │ "right" signals │
                  │ to server       │
                  └─────────────────┘
```

```mermaid
flowchart TD
    Start([Start])
    WebServer[Start web server, rendering control page]
    Signal{Signal received from control client}
    LeftSensor{Left ultrasonic sensor detects obstacle?}
    RightSensor{Right ultrasonic sensor detects obstacle?}
    PowerRight[Power right motor]
    PowerLeft[Power left motor]

    Start --> WebServer
    WebServer --> Signal
    Signal -->|Left| LeftSensor
    Signal -->|Right| RightSensor
    Signal -->|None| WebServer
    LeftSensor -->|Yes| WebServer
    LeftSensor -->|No| PowerRight
    RightSensor -->|Yes| WebServer
    RightSensor -->|No| PowerLeft
```

Start

Start web server, rendering control page

Signal received from control client

Left — Left ultrasonic sensor detects obstacle?

Right — Right ultrasonic sensor detects obstacle?

Yes

No — Power right motor

None

Yes

No — Power left motor