Gesture Controlled Robot

ECE 6780 Project

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Milestones

Milestone 1

Order parts
Read part datasheets

Milestone 3

Correct control of motors using wireless gestures
Low level C for PWM

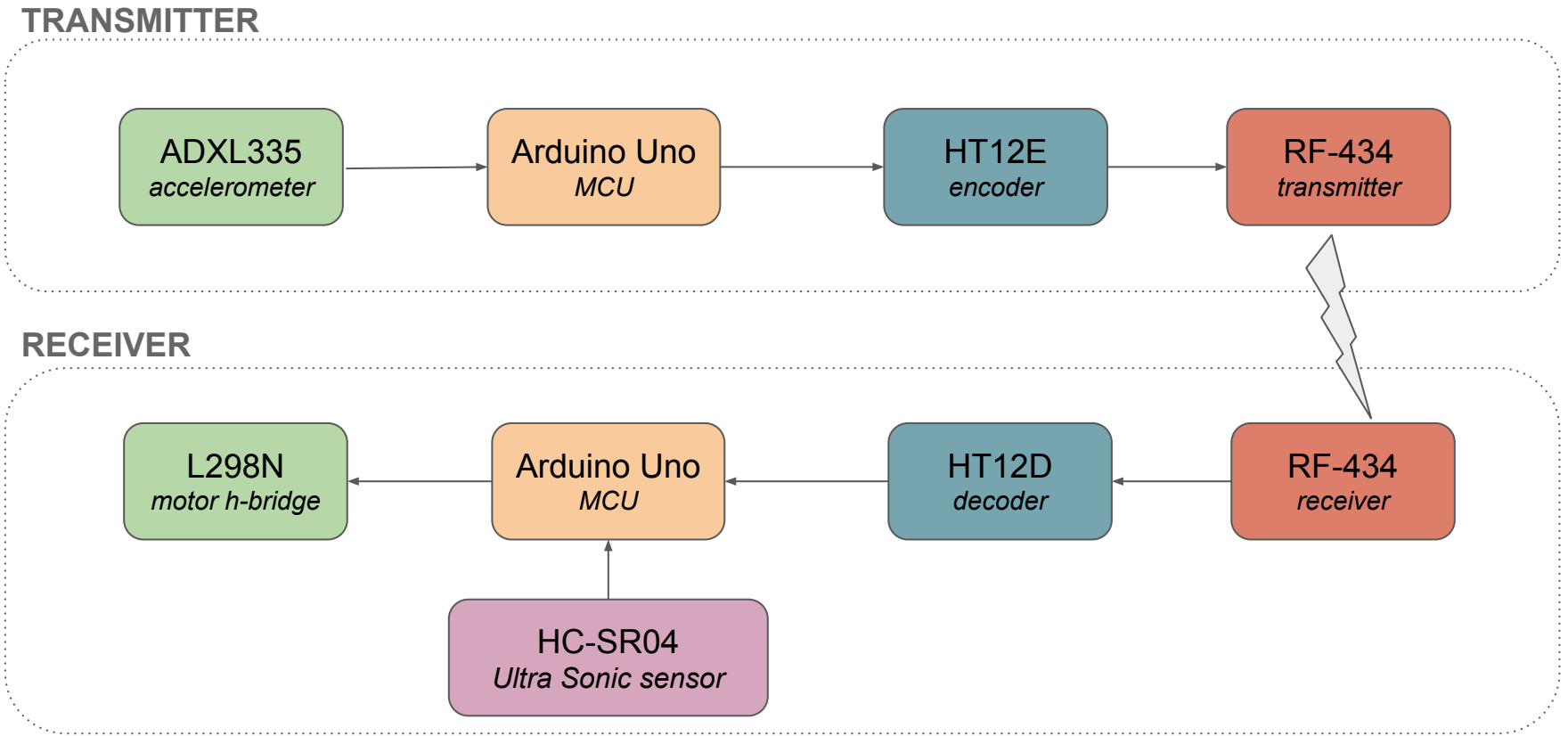
Milestone 2

Low level C code for GPIO, ADC
Implement functions for basic movements
Solder and connect parts

Milestone 4

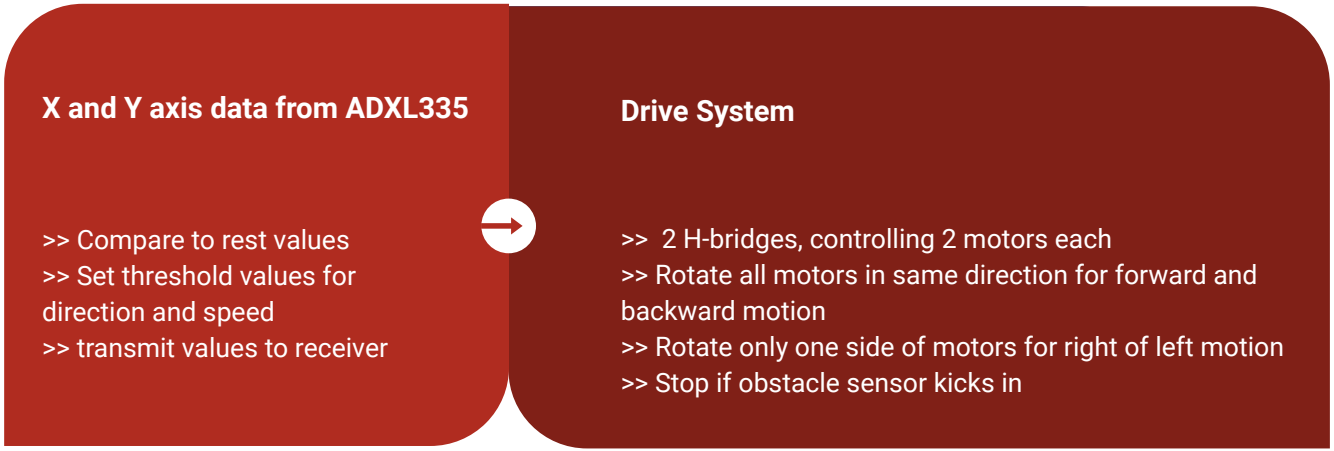
Final connectivity and code debug
Presentation and Demo

Overview


TRANSMITTER
ADXL335
accelerometer
Arduino Uno
MCU
HT12E
encoder
RF-434
transmitter
RECEIVER
L298N
motor h-bridge
Arduino Uno
MCU
HT12D
decoder
RF-434
receiver
HC-SR04
Ultra Sonic sensor

Implementation

- We used low level C implementation of ADC, GPIO and PWM
- Encoder pins used to encode both direction (ENC 0,1) and speed (ENC 2,3)
- Individual motor control, packaged into a single “drive module”



Outcome

ACHIEVEMENTS

- Works at distance > MEB corridor
- Controls even without line of sight
- 4-speed drive system
- Obstacle detection

LEARNINGS

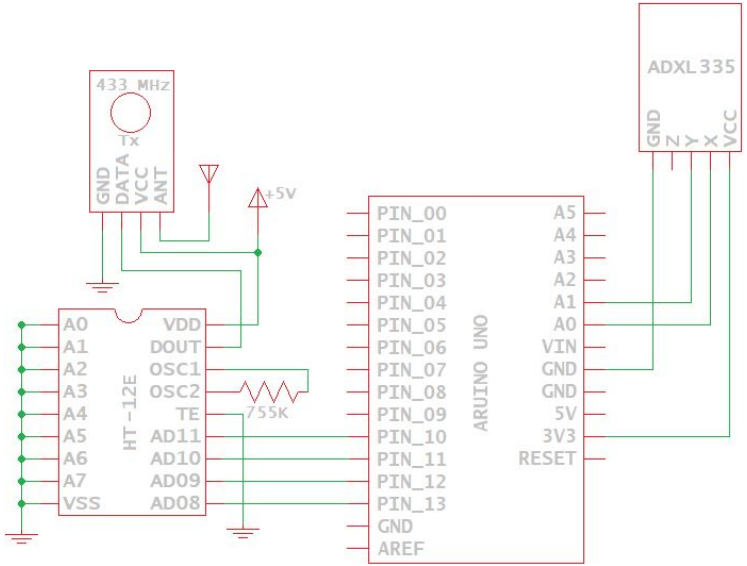
- The Arduino platform
- UNCERTAINTIES
- Modularized code

IMPROVEMENTS

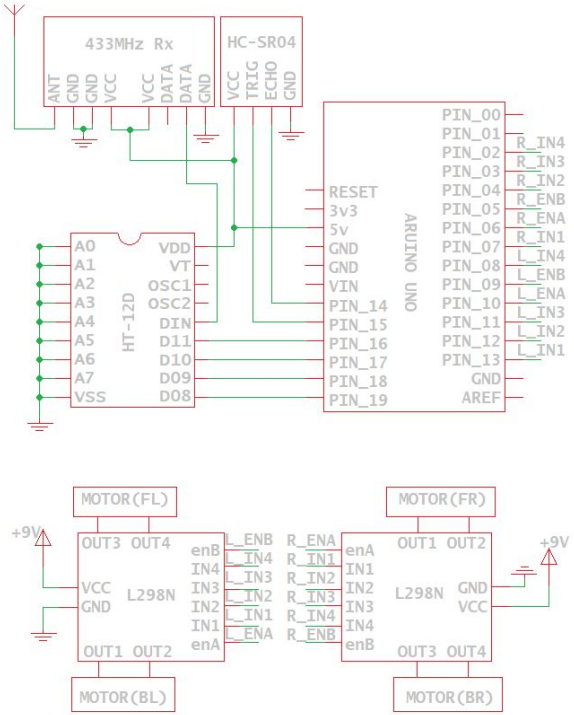
- More range of direction and speed
-

CONNECTIONS

Gesture Controller

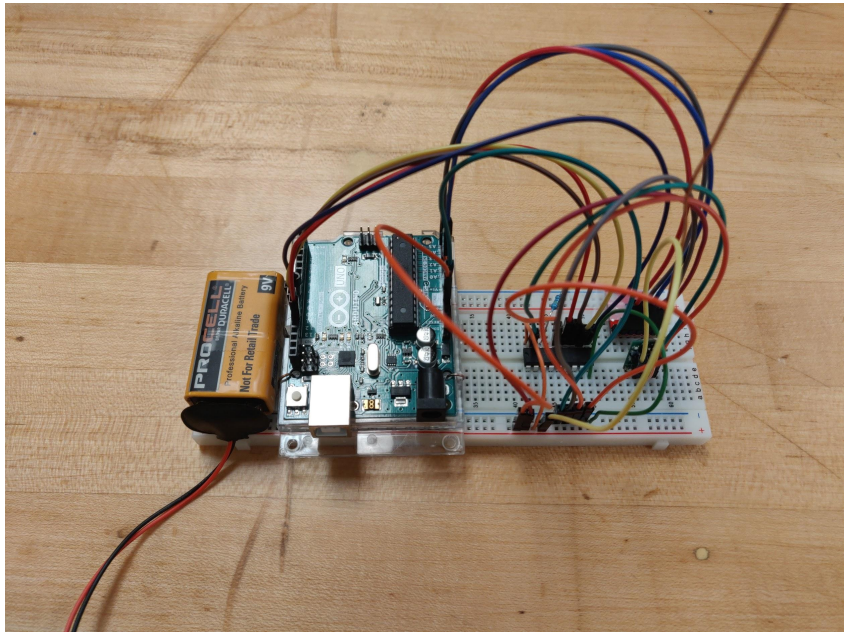


Vehicle Controller and Robot

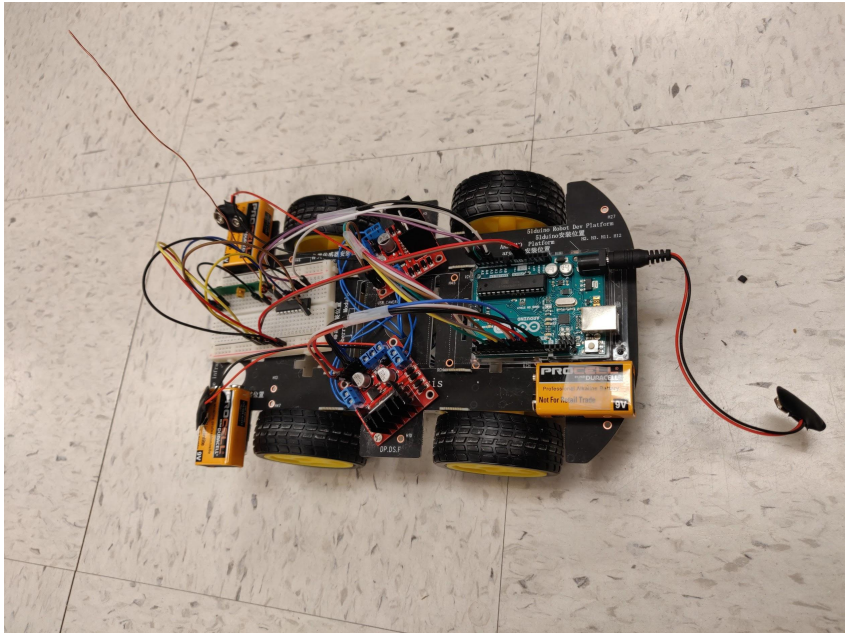


The System

Gesture Controller



Vehicle Controller and Robot



Video Demo