RC Car

ENEL 417 Group Project

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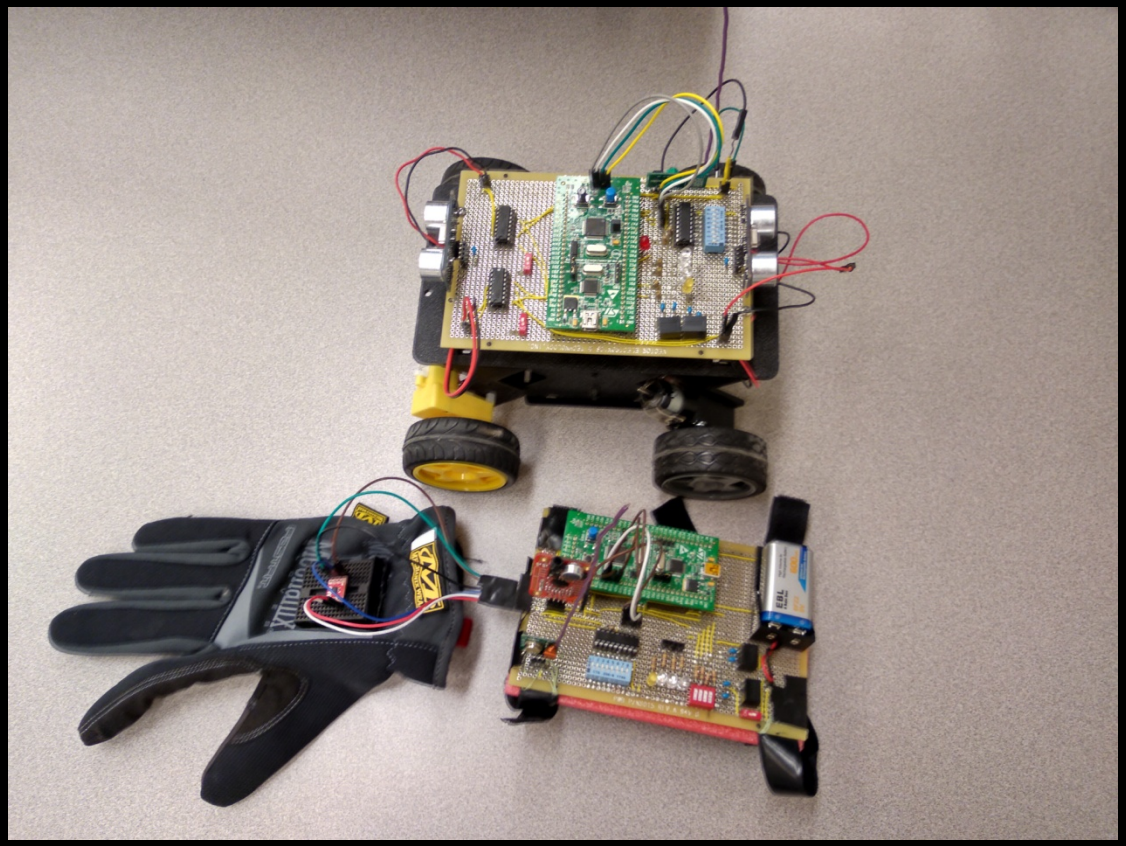


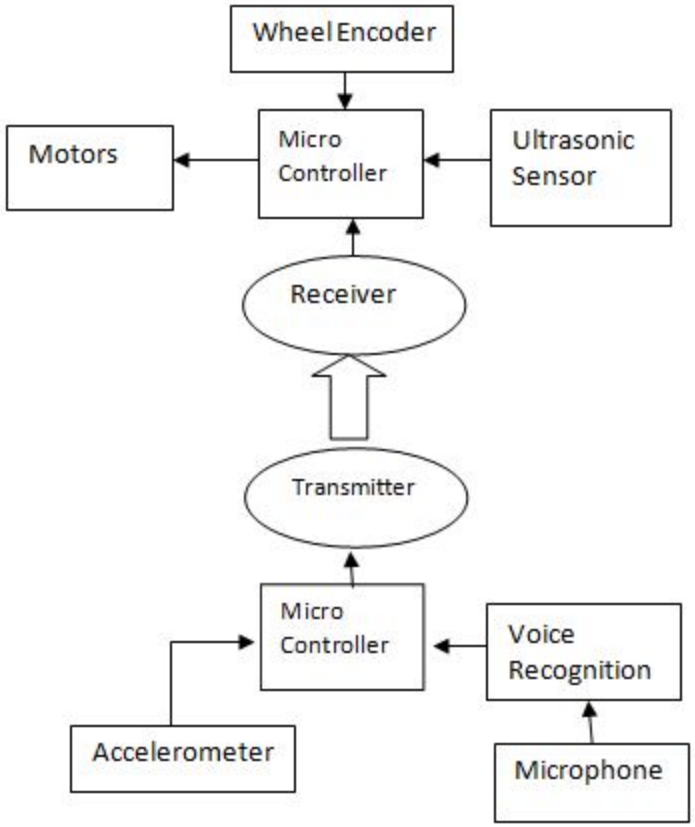
Project Goals

- Provide people who are unable to use conventional controls with alternative solutions
- Integrating autonomous and assisted control systems with user control systems

Project Summary

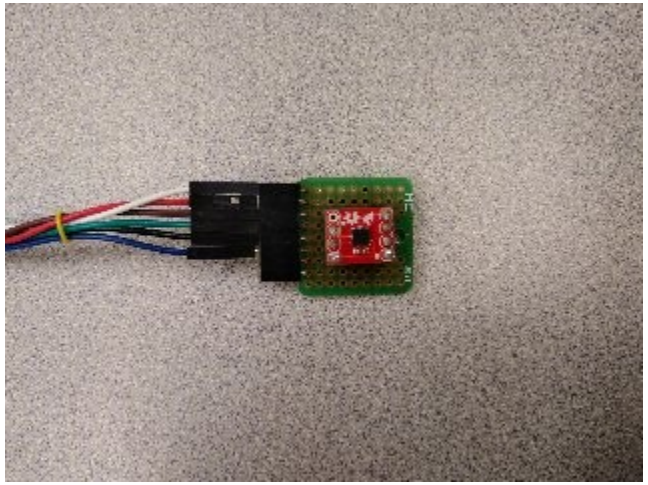
- Create alternative controls and assisted driving systems

- Gesture Based Control
- Voice Based Control
- Obstacle Avoidance
- Speed Regulation
- Wireless Communication



Gesture Based Control

Accelerometer measures the acceleration in three planes



Gesture Based Control

Gestures

Forward/left	Forward	Forward/right
Left	Flat	right
Backwards/left	Backwards	Backwards/right

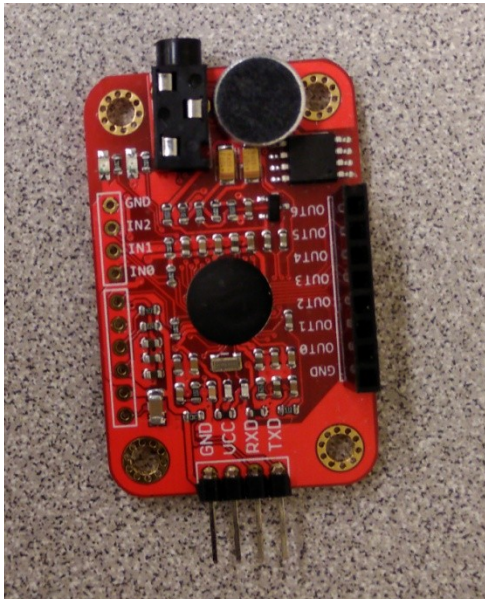
Motion 1

Turn left	Forward	Turn right
Pivot Left	Stop	Pivot right
Turn left	Backwards	Turn right

Voice Based Control

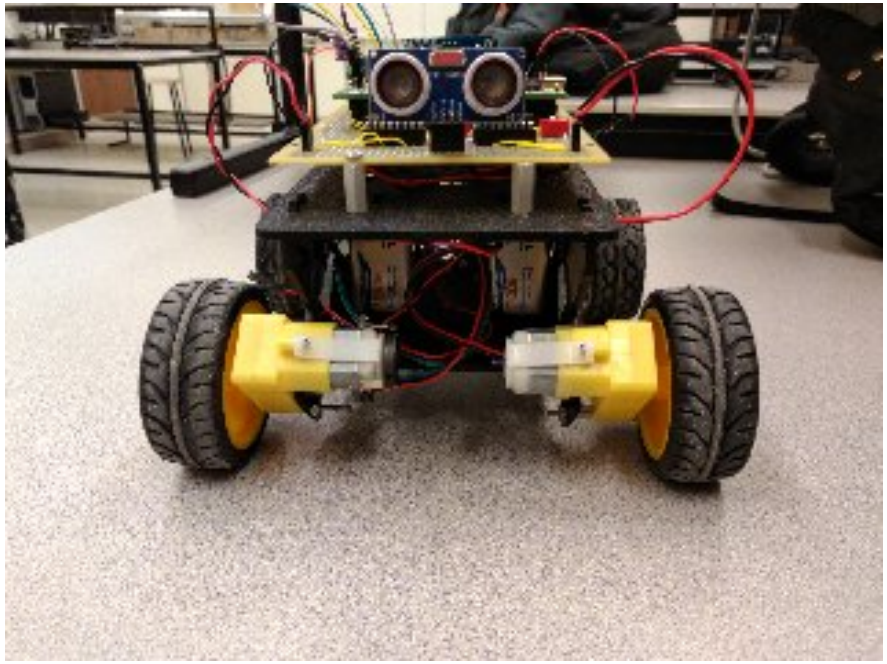
- Voice Recognition Module V3

- Train/Record your own voice signatures
- Stores up to 80 signatures
- Only 7 signatures effective at one time

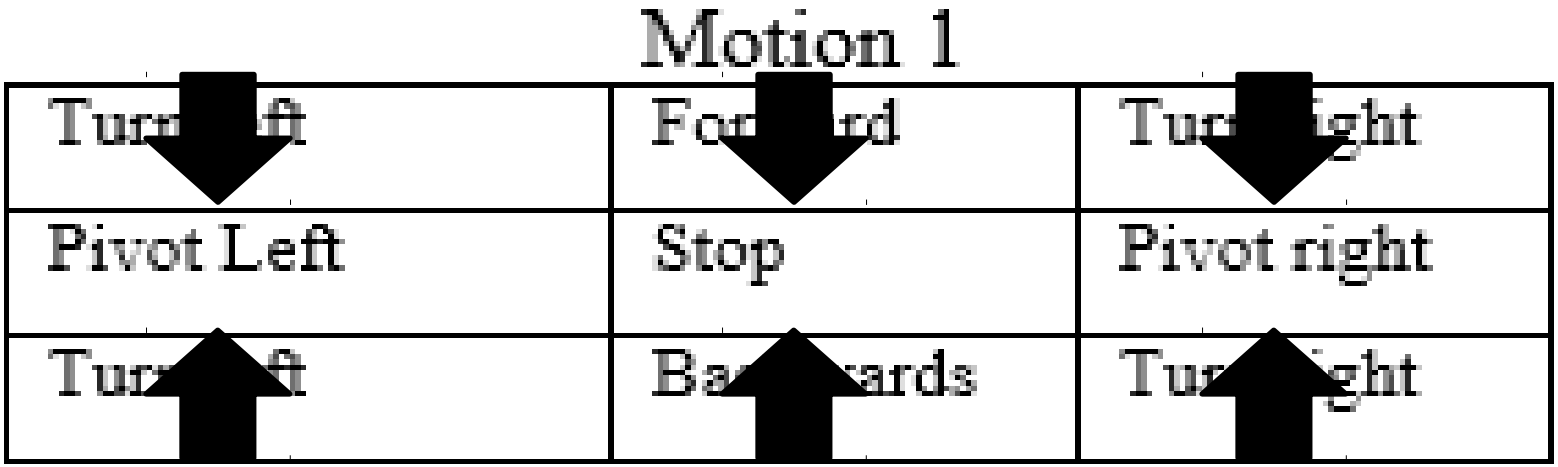


Obstacle Avoidance

- Ultrasonic Sensors
- Non-contact
- Transmits 40 kHz signals
- 2 cm to 4 m range



Obstacle Avoidance



- If an obstacle is detected, the vehicle automatically changes into a different state based on what the users input.

Speed Regulation

- Wheel Encoder
- Detects wheel rotation
- Count number rotations over period of time

Wireless Communication

- 433 MHz Radio Frequency signals
- ASK (amplitude shift keying) modulation
- 20-200 meters range
- Communication is one way (controller to car)
- Communication is not obstructed by obstacles such as tables or walls.

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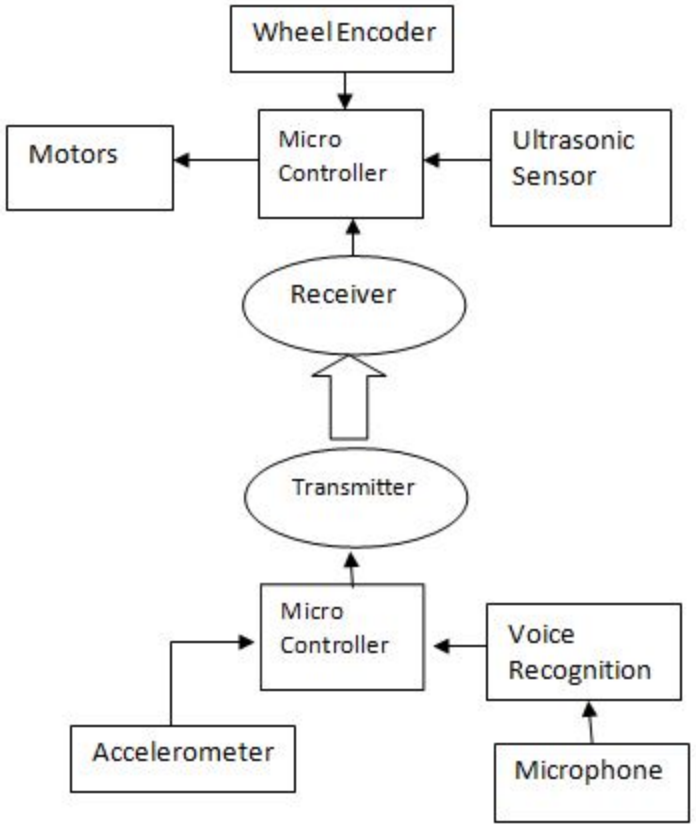

Project Summary

- We are presenting this project as a proof of concept
- We have designed, built and tested a prototype
- These alternative techniques of control can be extended into more specific applications

Questions