

iPhone Controlled Car

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Bret Pontillo, Alec Taren, Vansh Patel

Alec Taren

EDUCATION

The Pennsylvania State University, University Park, PA - May 2016
Bachelor of Science in Electrical Engineering

EXPERIENCE

Pennsy Supply, Subsidiary of Oldcastle
Mechanical Engineering Internship

Pittston, PA
May 2015-August 2015

- Assisted operating and repairing large scale machinery.
- Put together databases of equipment and preventative maintenance schedules.
- Assisted quality control test asphalt and stone product.
- Worked with project managers on putting together bids for state jobs

SKILLS

Programming: C++, MATLAB, Multisim, Eagle, Labview, Microsoft Excel

Bret Pontillo

EDUCATION

The Pennsylvania State University, University Park, PA - May 2016
Bachelor of Science in Electrical Engineering; Minor in Mathematics

EXPERIENCE

AIG, Livingston, NJ - June 2015 - Aug. 2015

Technology Summer Analyst

- Developed knowledge of cyber security within the AIG Technology Risk Office.
- Streamlined the global recertification of distribution lists, to reduce the risk of phishing emails, by developing a project timeframe and documentation
- Devised a three-piece plan to reduce future risk and increase project efficiency.

Telemetrics Inc., Mahwah, NJ - June 2014 - Aug. 2014

Engineering Intern

- Tested and developed new software for use with robotic camera controls
- Gained exposure to a variety of departments including engineering, manufacturing, testing, international relations, supply chain management

SKILLS

Programming: Certified LabVIEW Associate Developer, C++, C, MATLAB, ABEL, Verilog, MIPS, Assembly Language, Multisim, Ultiboard

Vansh Patel

EDUCATION

The Pennsylvania State University, University Park, PA - May 2016
Bachelor of Science in Electrical Engineering;

EXPERIENCE

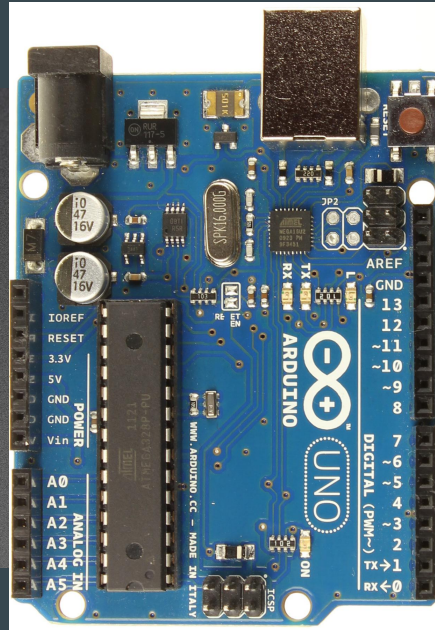
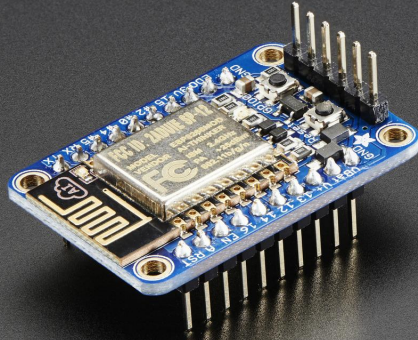
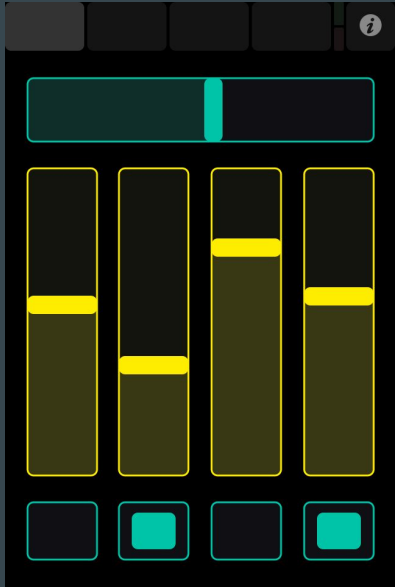
Syska Hennessy Group, NY, NY - June 2015 - Aug. 2015

ENGINEER INTERN

- Worked closely with project manager on large scale projects such as: Healthcare Facilities, Airports, Gov't Offices and Corporate Headquarters
- Utilized AutoCAD to draw out layouts according to local codes, industry standards and guidelines
- Designed control systems, I/O points list and develop sequence of operations

SKILLS: MATLAB, AUTOCAD, LabVIEW, MICROSOFT SUITE, REVIT, ADS

iPhone Controlled Car

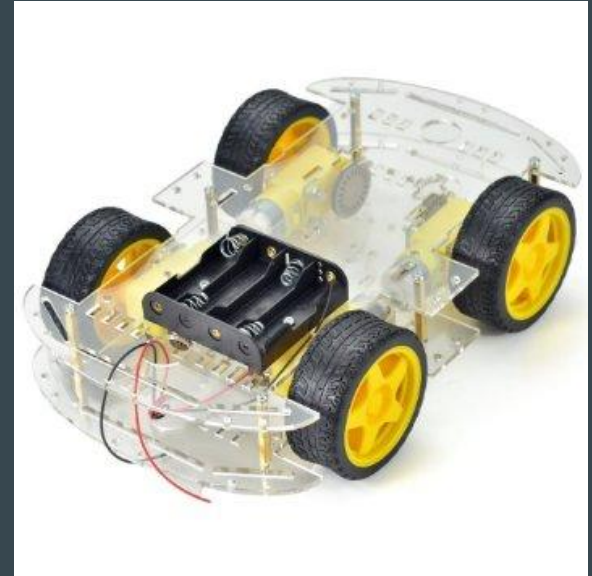


Solution

- A car controlled by a user with an iPhone application, with a easy to use interface.
- The car can be controlled when it can connect to the same wifi network as the user's iPhone.
- It will be able to traverse a flat surface, and will have LEDs to simulate car lights.
- The car will have four wheels, with batteries powering everything on the car.

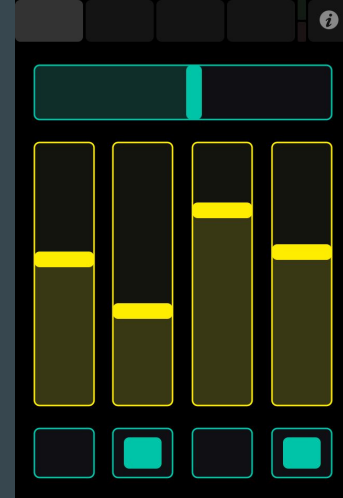
Specifications - The Car:

- 4 Motors controlled by 2 H-Bridge Signals.
- The car will weigh less than 3 pounds.
- Top speed will reach up to 5 mph.
- The car will have a battery life of at least 2 hours.
- The car will have at least two LEDs.



Specifications - The iPhone Software (TouchOSC):

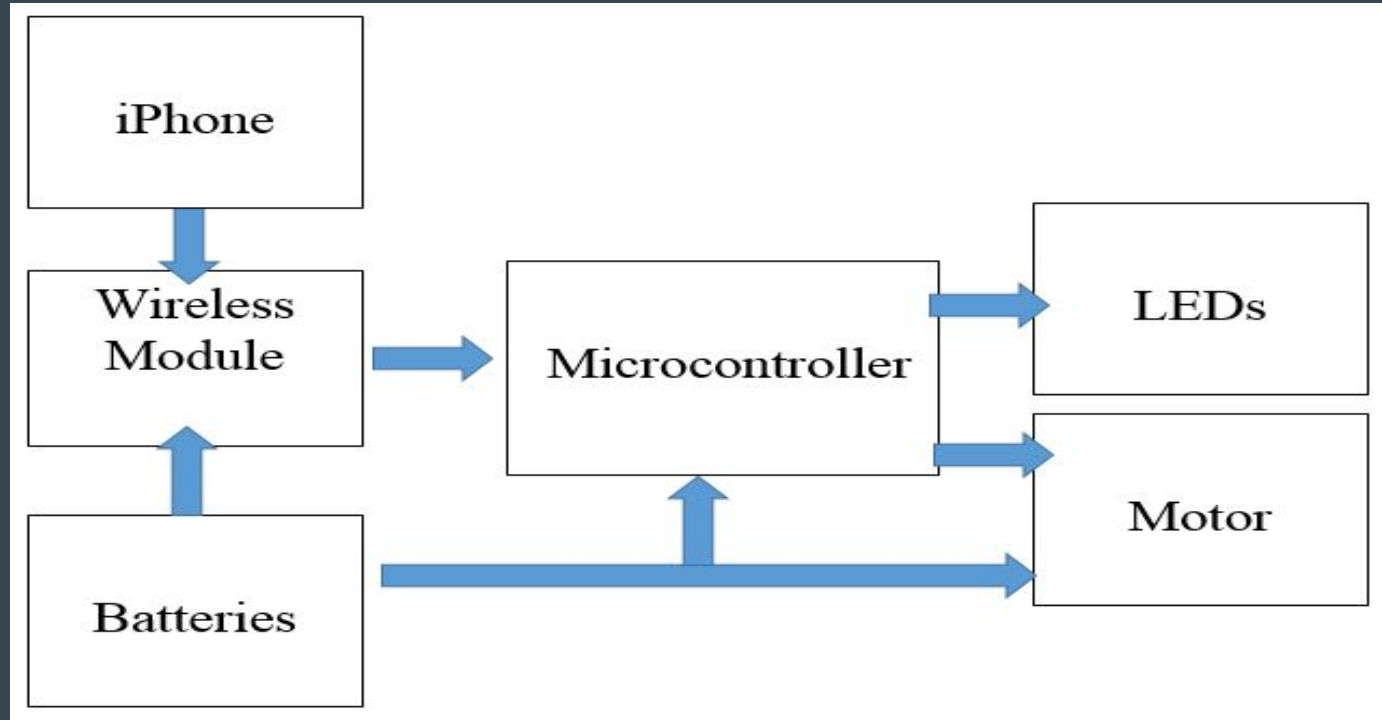
- Will utilize TouchOSC application.
- An iPhone app that can be configured with a wireless module using MIDI protocol
- Will control all the movements of the car



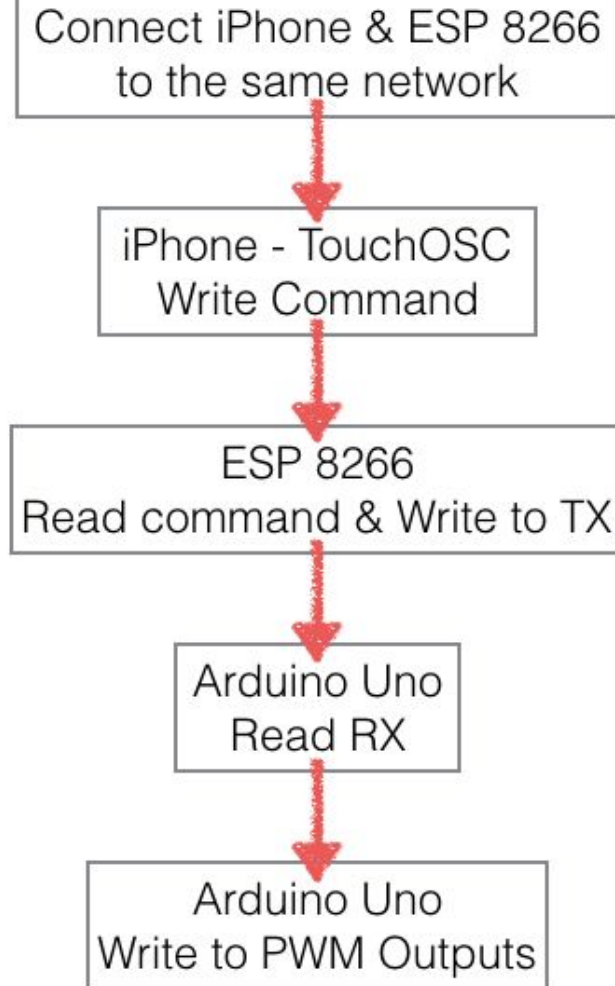
Specifications - The Arduino Software:

- Will be able to maneuver the car in any direction on a 2D plane.
- Will control the car via an iPhone interface.
- Will remotely turn the car on and off.

Block Diagram



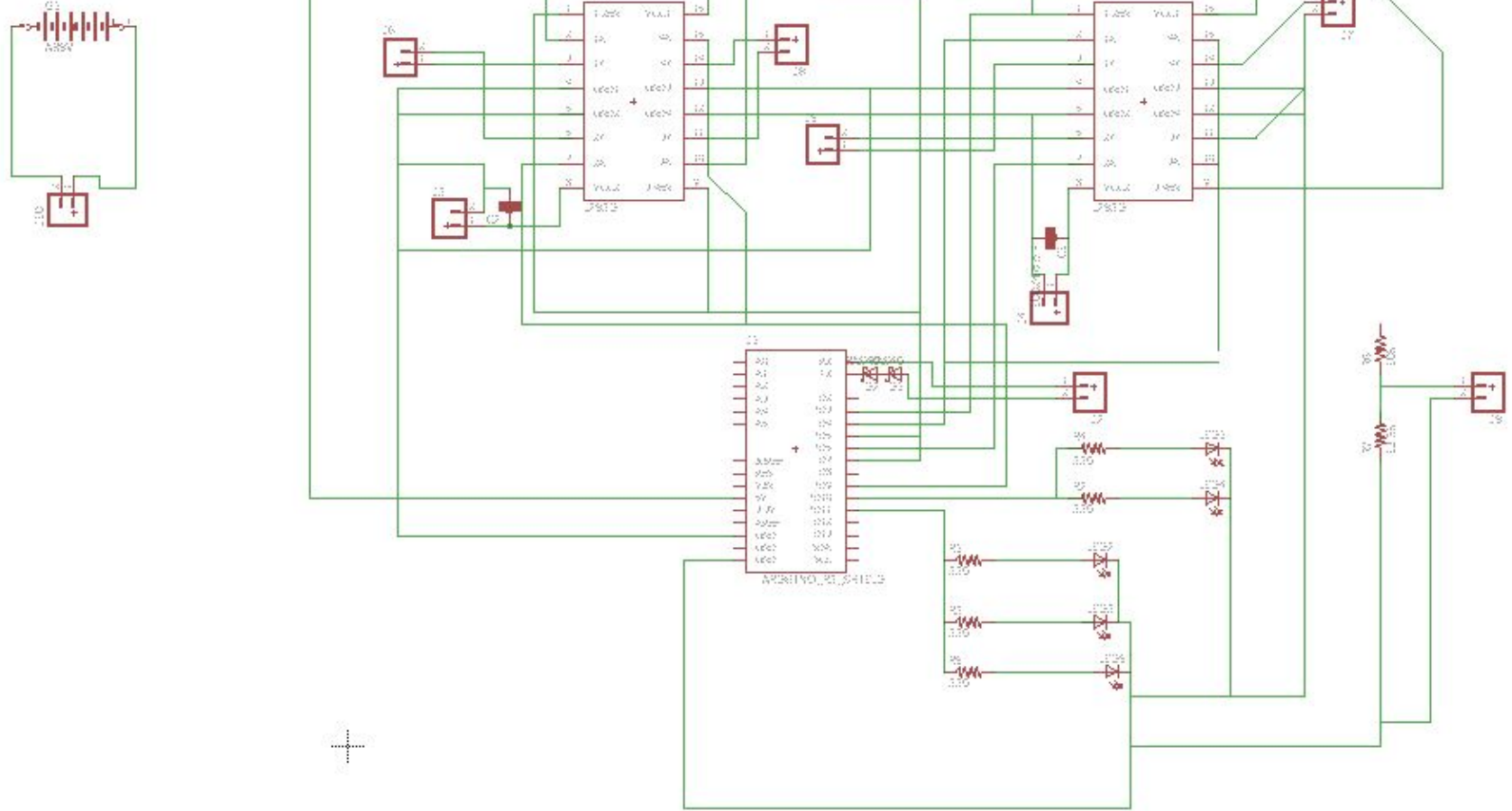
Software Flow



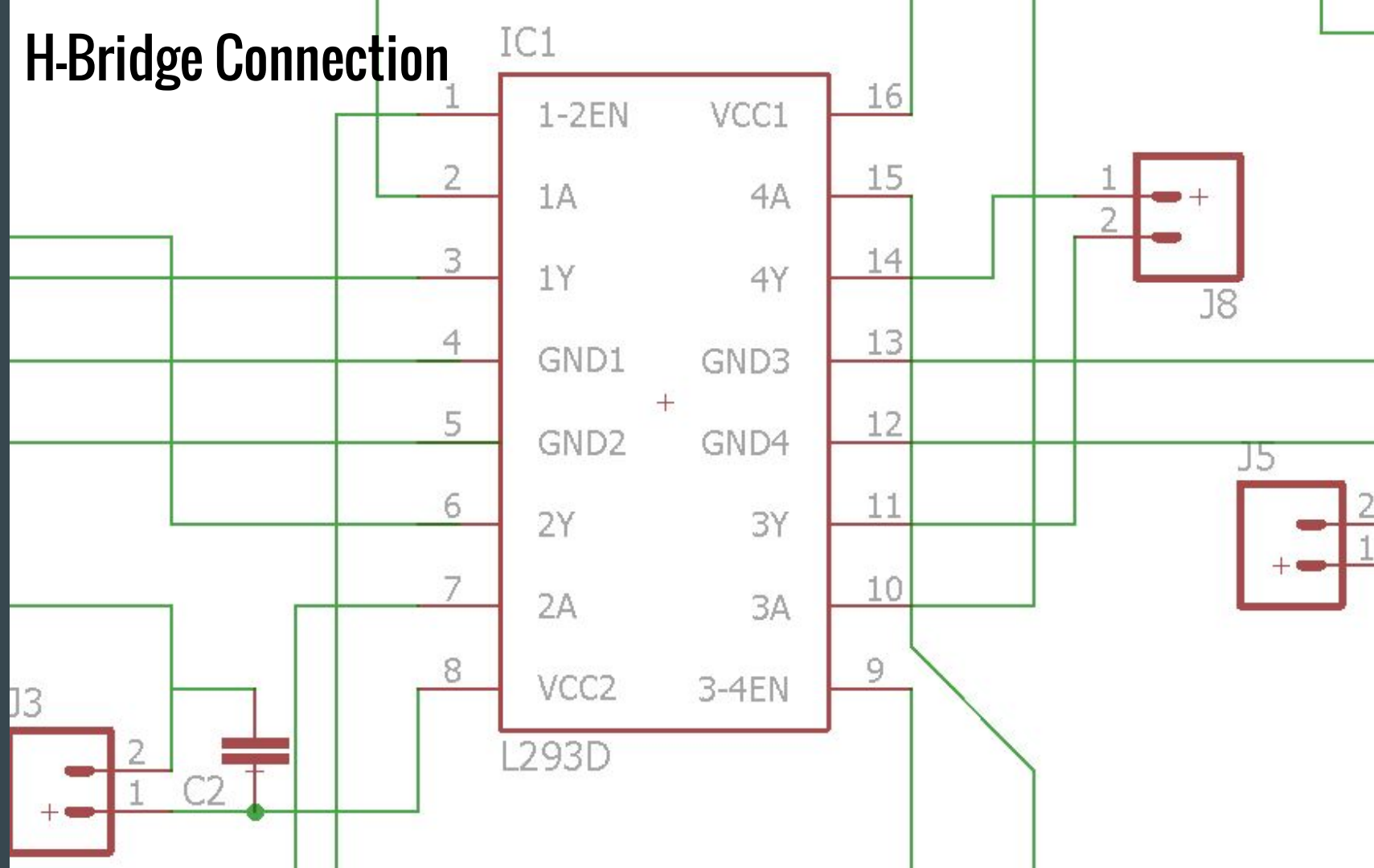
Status Update

- Ran software compatibility tests between the Arduino Uno and iPhone
- All parts are ordered
- PCB Schematic nearly completed
- Car Chassis is built

PCB Schematic

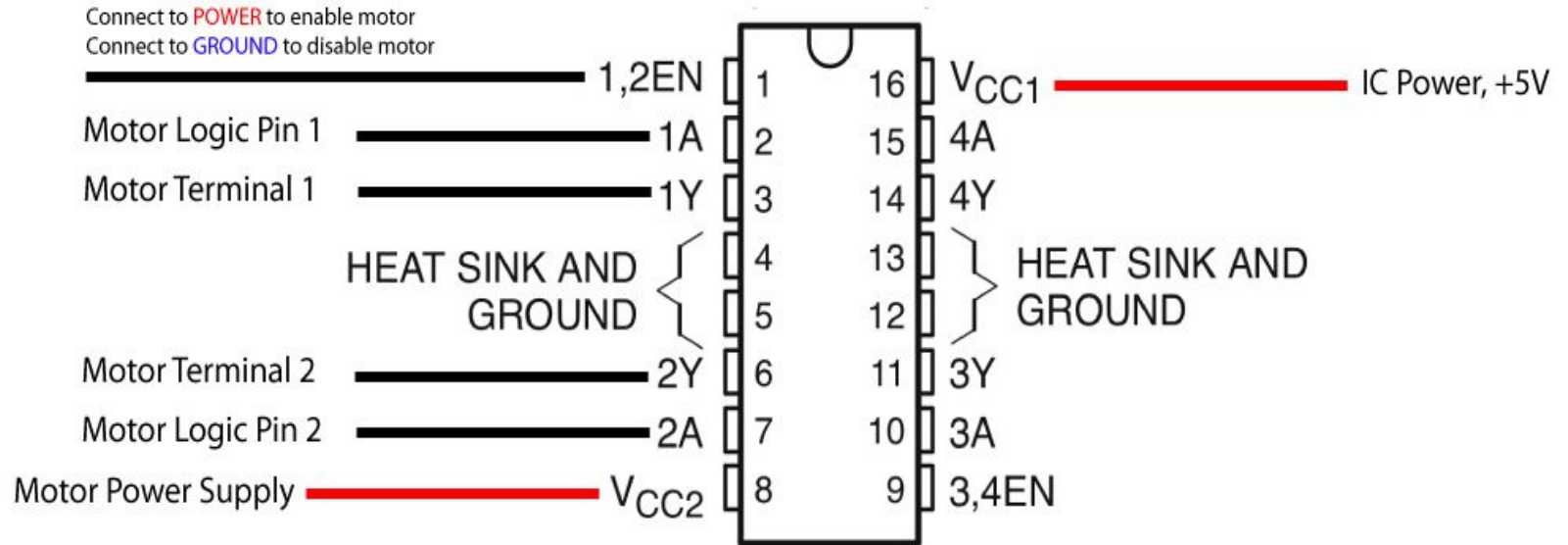


H-Bridge Connection



H-Bridge Pin out

L293NE or SN754410



Tradeoffs

- Using a 3rd party base application via the Apple app store, we won't be able to receive data
- Using an H-Bridge Module now, instead of our own MOSFET design
- Using a ESP 8266 Huzzah, instead of basic ESP 8266

Technical Problems So Far

- Difficulty wiring with Eagle
- Wireless configuration of the ESP 8266 Huzzah
- Not to overload the H-bridge
- Waiting to receive the H-Bridge IC
- Quality of the chassis is very poor
- A week behind schedule on PCB order

Design Tasks to be Completed

- Finish the PCB Design
- Arduino Software Design
- ESP 8266 Huzzah Networking Software Design
- TouchOSC Application Configuration

Team Responsibilities

- Circuit Board Design Lead - Alec
 - PCB board design
 - Circuit Specification Requirements
- Mechanical Configuration Lead - Vansh
 - Parts Assembly
 - Solder PCB
 - Assist Bret with iPhone control development
- iPhone Control Development Lead - Bret
 - GUI Design
 - Communicate to car via wireless network



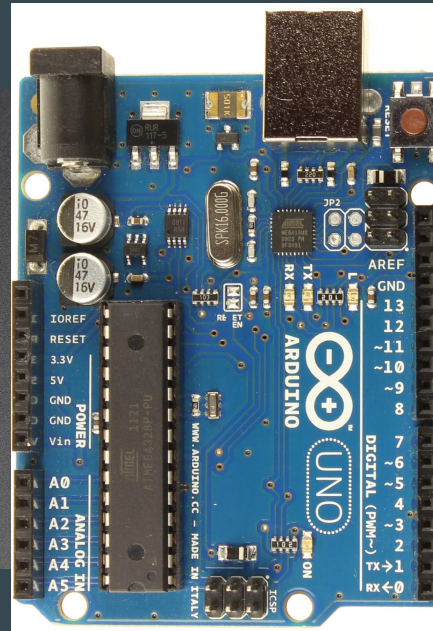
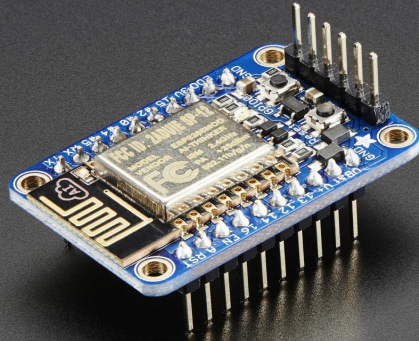
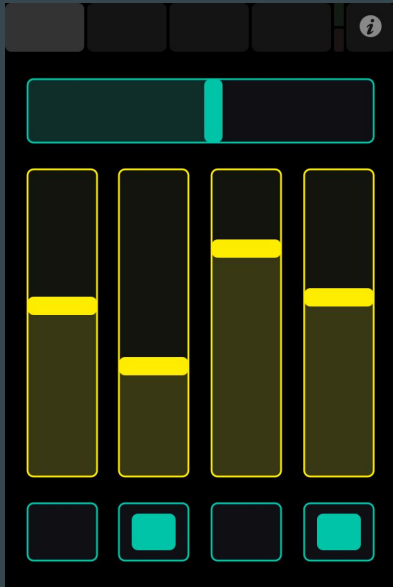
Schedule

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Milestones:

- Milestone 1 - Week of 2/15/16
 - Run software tests with the Arduino Uno and be able to write a command from an iPhone wirelessly to the Uno.
 - Solder pins onto ESP 8266
 - All parts are ordered
- Milestone 2 - Week of 3/14/16
 - PCB order is completed
 - Car chassis is designed and ready to incorporate the PCB on arrival
- Milestone 3 - Week of 4/4/16
 - Arduino hardware code is written
- Milestone 4/ Final Review - Week of 4/25/16
 - All codes are debugged
 - Car can be controlled via a wireless
 - Ready for demonstration

Review



Any Questions?

