

# Bluetooth RC Bot

*ECE 4180 Final Project*



# Group Members

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# Project Proposal

- *iOS app controlled Magician Robot*
- *Touchscreen single virtual joystick control*
- *Communication to LPC1768 via Bluetooth LE*
- *PWM differential controlled motors*
- *Three degrees of freedom (front and back, left and right, and 360° rotation)*
- *Speed control based on joystick position*

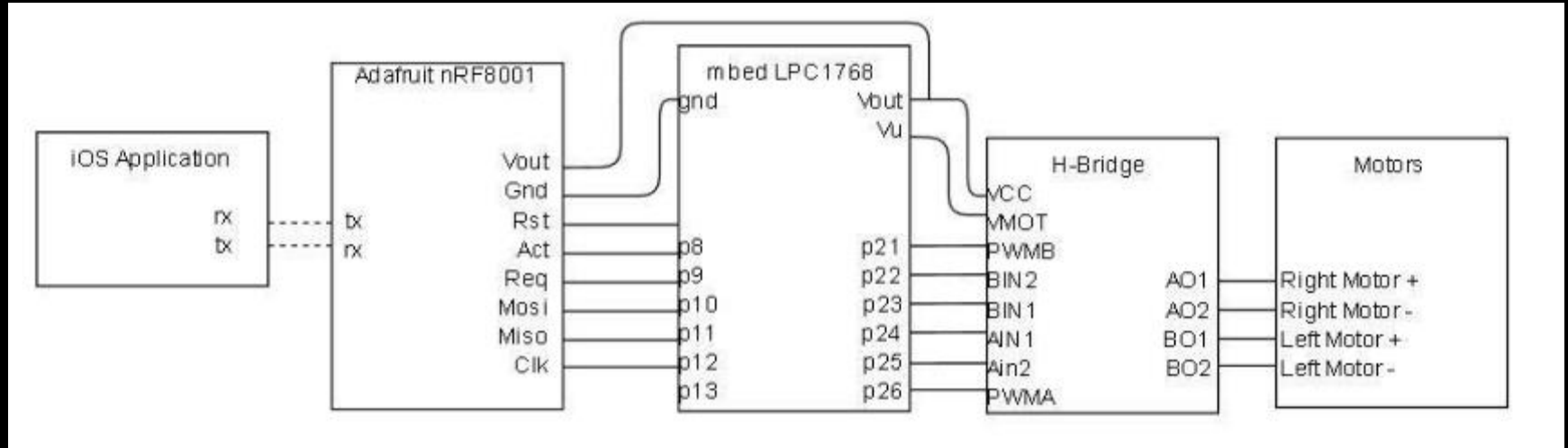


# Parts Needed

- *iOS enabled device with Bluetooth 4.0*
  - *iPhone 6 running iOS 8.1.2*
  - *Mac with Xcode 6.3 (iOS 8.3 SDK)*
  - *Apple Developer account*
- *mbed NXP LPC1768*
- *Nordic Semiconductor nRF8001*
- *Magician Robot Kit*
- *Pololu MD08A H-Bridge*
- *4xAA Batteries*



# Block Diagram





# iOS App Results

The screenshot displays the Xcode IDE with the following components:

- Project Navigator (Left):** Shows the project structure for "BluetoothRCBot" (target: iOS SDK 6.3). It includes a "Supporting Files" folder with various assets like .plist, .pch, .png, and .strings files, and a "Frameworks" folder containing system frameworks like CoreBluetooth, CoreGraphics, and Foundation.
- Code Editor (Center):** Displays the source code for `ViewController.m`. The code includes:
  - Comments: "Created by user on 4/7/15. Copyright (c) 2015 Adrian Winata. All rights reserved."
  - Imports: `#import "ViewController.h"`
  - Constants: `#define NORTH 0`, `#define EAST 2`, `#define SOUTH 1`, `#define WEST 3`
  - Interface Definition: `@interface ViewController: UIViewController`
  - Implementation: `@implementation ViewController` with methods `viewDidLoad`, `didReceiveMemoryWarning`, `updateAnalogueLabel`, and `processAnalogueControls`.
- Canvas (Right):** Shows a "No Selection" message, indicating that no UI element is currently selected in the storyboard.

# Final Results





# Future Work

- *Smoother controls*
- *Application aesthetics (icons, better animations)*
- *IR collision avoidance system*
- *Quadrature encoders on wheels (PID control)*
- *Video feedback*



# Questions or Comments?

- *To learn more about the project visit:*  
<https://developer.mbed.org/users/awinata/notebook/bluetooth-rc-bot/>

