# Project 5

DC motor control with Bluetooth connectivity

CptS 466

Kevin Evans

## Requirements

### Overview

For this project, we will implement a system used to control a DC hobby motor. The system will send the current speed over Bluetooth, to be displayed on a computer or phone. This will run on the LaunchPad board with an HC-06 module for Bluetooth.

### Functional Description

The deliverable will be a system capable of running a DC motor. The buttons on the LaunchPad will increment and decrement the speed by 10%. There will be an external button used to e-stop the motor. An LED will illuminate red when the motor is stopped. The system will print messages over Bluetooth when the speed is changed.

### Design Document

The user will connect to the Bluetooth module to see the current PWM duty cycle. The user can press SW1 and SW2 to increase and decrease the speed. This will change the speed on the DC motor. When the e-stop button is pressed, the motor will stop and the red LED will illuminate.

Diagram, schematic

Description automatically generated

Figure 1: The dataflow diagram of the system.

## Discussion

There are several limitations of the system. First, the motor stalls at lower duty cycles. At 30% and lower, the motor does not start when the input voltage is at the nominal battery voltage (3.7V). Increasing the voltage to 5V allows it to start, but requires an additional power supply.