

# Attachable Parking Sensor

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## Overview

This project will combine the use of ultrasonic sensors as well as PWM to create an attachable parking sensor module. There will be 2 boards, one interior to the car and one on the exterior. The exterior board will handle the distance measurement and the interior board will handle displaying that data through RGB LEDs.

## Peripherals

- HC-SR04: Ultrasonic sensor module
- HC-05: Bluetooth module
- TLC59711: Adafruit 12-Channel 16-bit PWM LED Driver - SPI Interface ([Link](#))

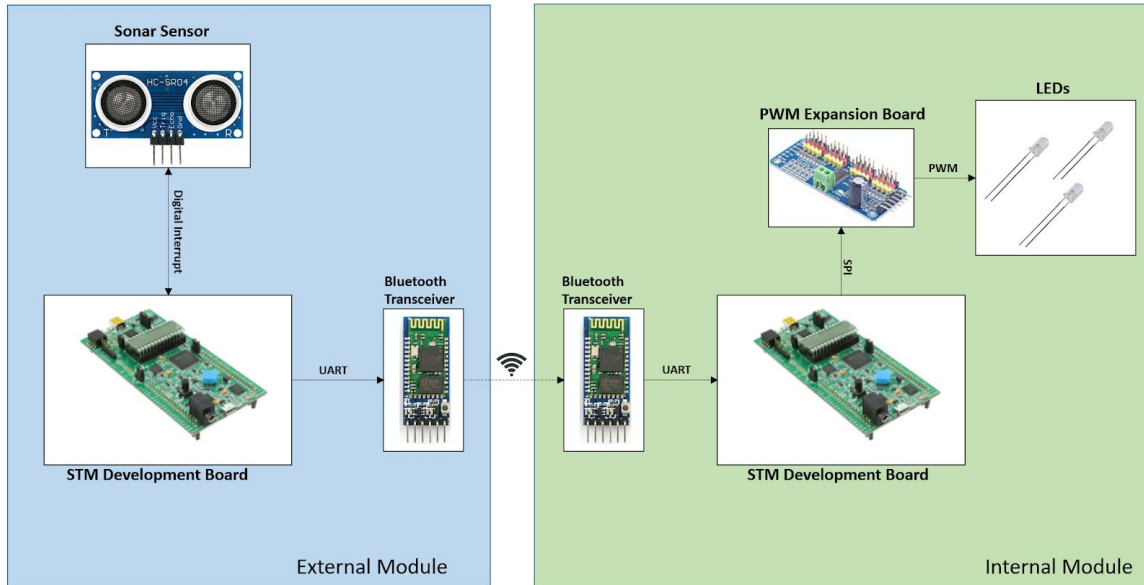
## Serial Interface Protocols

- UART - communication with bluetooth
- SPI - communication with PWM LED driver

## Member Responsibilities

- Steven
  - setup UART communication
  - send activation/deactivation message to external board for ultrasonic sensor
- Sawyer
  - setup SPI communication
  - send distance measurement to internal board
- Both
  - setup ultrasonic sensor to read distance
  - setup PWM expansion board (hardware)
  - calculate data to send to PWM expansion board to determine which LEDs to light up and what color

# Block Diagram



# Software Structure

