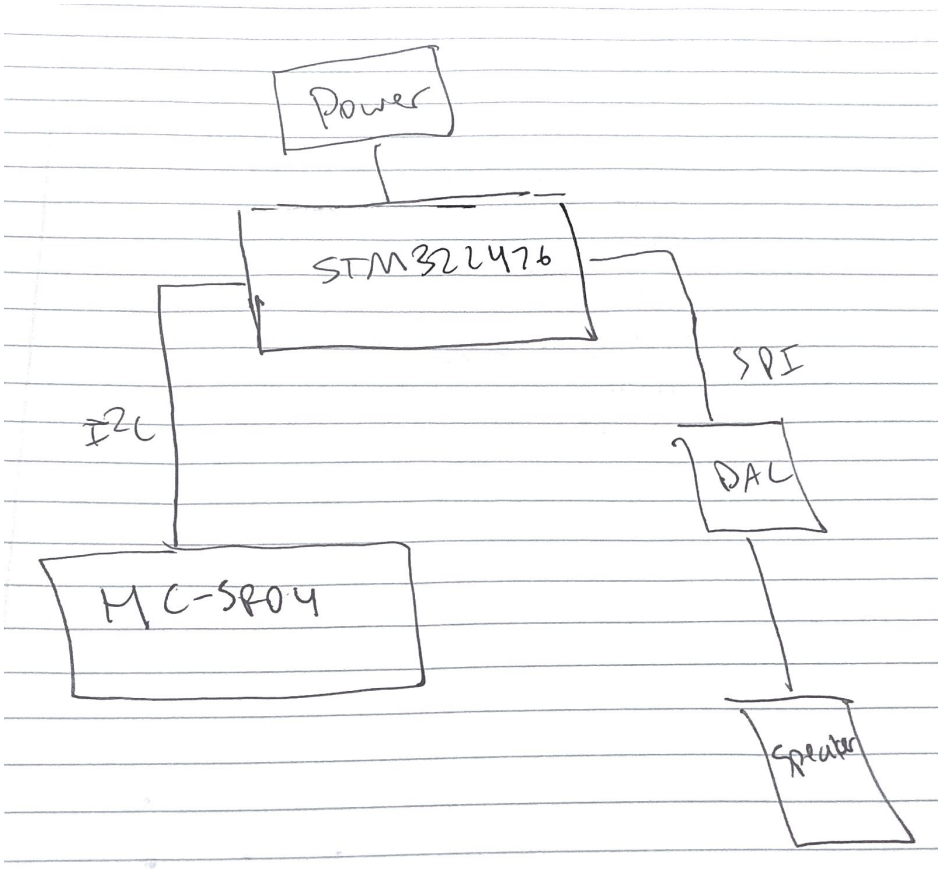
Matthew Aragaw
Final project Proposal - Car Parking Alarm

Overview:
I will be utilizing the HC-SR04 Ultrasonic Distance sensor and a speaker to create a car parking alarm system. The HC-SR04 sensor will monitor for any object moving too close to the sensor, and will output an audible sound on the external speaker. Once an object crosses a certain threshold of being too close to the device, the audible alarm will be triggered.

Peripherals:
HC-SR04 Ultrasonic Distance Sensor
External Speaker
DAC

Serial Interface Protocols:
I2C for the HC-SR04
SPI for External Speaker
SPI for DAC

Block Diagram:



Software Structure:
I will be using PWM to measure the distance using the ultrasonic sensor, and use interrupts to interpret this distance. We will play a single tone when the threshold for proximity is passed. The Distance sensor will be connected to a GPIO port on the Discovery Board. The digital signal that is outputted from the Discover board will then be converted into an analog signal by the DAC to be used as audio information for the speaker.

Site:
https://sites.google.com/view/ece153b-matthewaragaw/home