



People Counter

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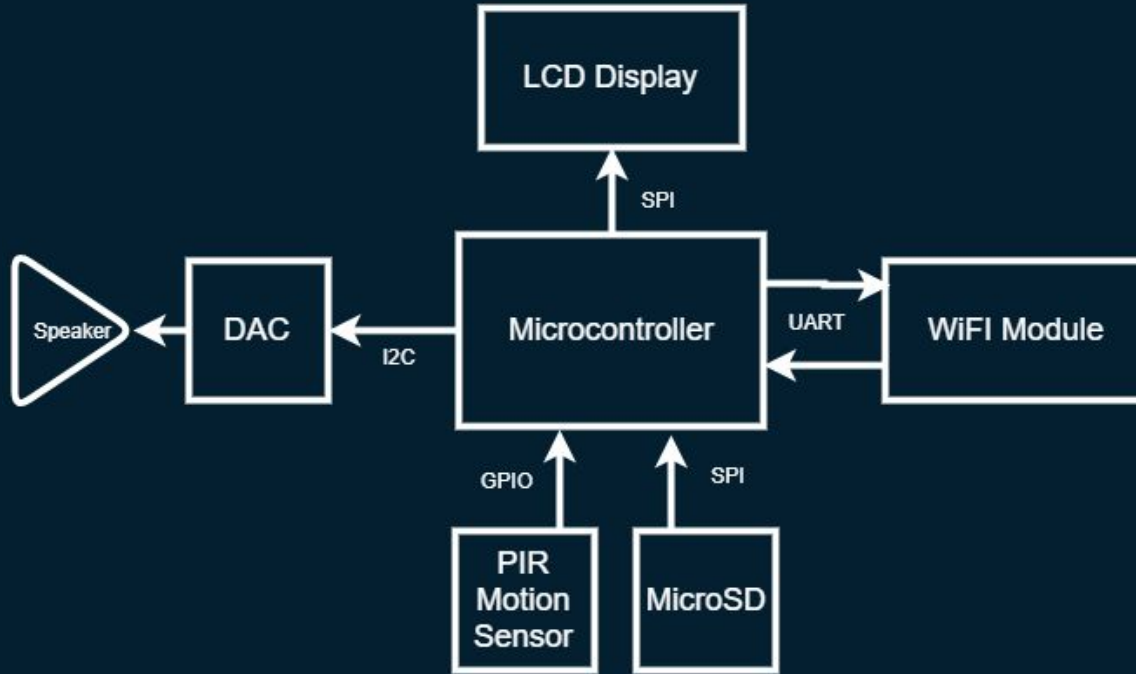


Overview

We intend our project to be able to track incoming and outgoing participants within an enclosed space.

- › The device will be situated within the entryway of the space and present a visible tally of participants.
- › The device will provide audio indication whenever a new participant is counted as well as alert when the capacity of the room is met.
- › Room capacity and alarm condition will be accessed by HMI over WiFi communications.

Block Diagram



Components

- › Microcontroller : MSP430FR6989
- › LCD Display : ST7735
- › MicroSD Reader : ST7735 Breakout
- › DAC : MCP4725
- › WiFi : ESP8266
- › PIR Motion Sensor : HC-SR501

LCD: TFT Display ST7735

- › Used to display info on traffic on coming in and coming out
- › Communicates via SPI (MOSI)
- › Progress
 - › Able to communicate and display text
- › Challenges
 - › Screen is finicky, blanks on start occasionally

DAC : MCP4725

- > I2C
- > Software
 - > MSP430 Driver Library : EUSCI_B_I2C Module Driver
 - > Functions to perform specific operations for MCP4725
- > Progress
 - > Acquired, started developing software

MicroSD Reader : ST7735 Breakout

- > SPI
- > Software
 - > MSP430 Driver Library : EUSCI_B_SPI Module Driver
 - > Functions to perform specific operations for ST7735
- > Progress
 - > Acquired

Wi-Fi : ESP8266

Simply acts as a web server by providing data transmission from MSP-430FR6989 to a client on the network using TCP,IP,HTTP,and FTP protocols. This will be accessed by an HMI interface.

- **Software:** ESP8266 WiFi library, Arduino IDE
- **Progress:** Acquired, able to communicate over Wifi.
- **Challenges:** Establishing Uart serial communications.

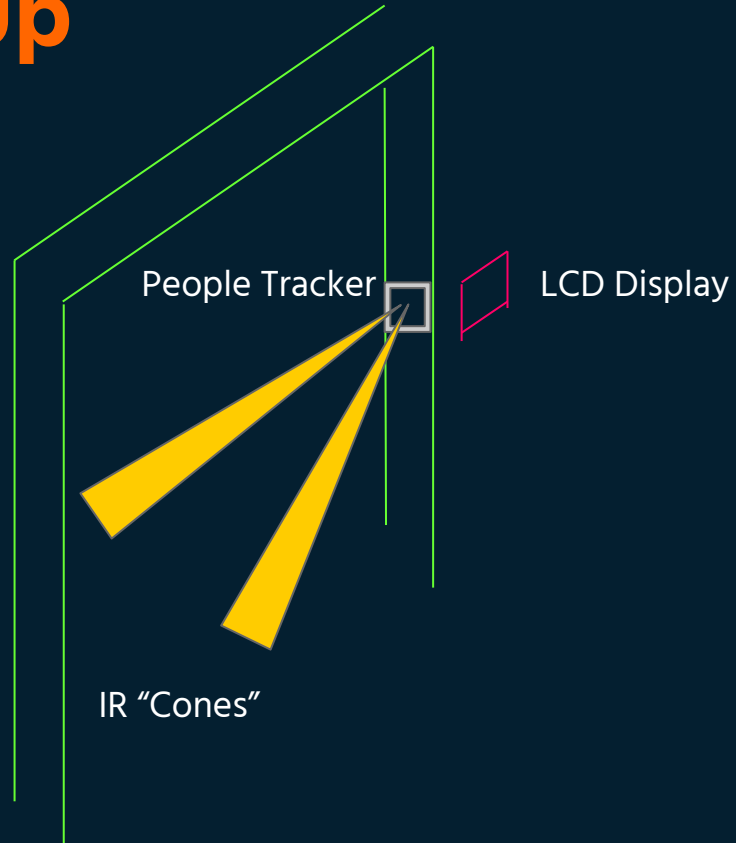
Model	RAM	Size	Protocols	Voltage
ESP8266	64KB	5x5mm	IPV4, TCP, HTTP, FTP	3.0V-3.6V

IR Sensor : HC-SR501

- > Communicates via GPIO
- > Software
 - > MSP430 Driver Library : GPIO Module Driver
- > Progress
 - > Acquired, needs to be tested individually with MSP
- > Challenges
 - > Still requires hardware adjustments to remove delay
 - > Determining each sensing “cone”, without overlap

Model	Range	Delay Time	Size	Interface
HC-SR501	≤ 100°, 7 m	5-200s (Adjustable)	32*24 mm	GPIO

Mock-Up



Task Division



Ayo -

> LCD

Logan -

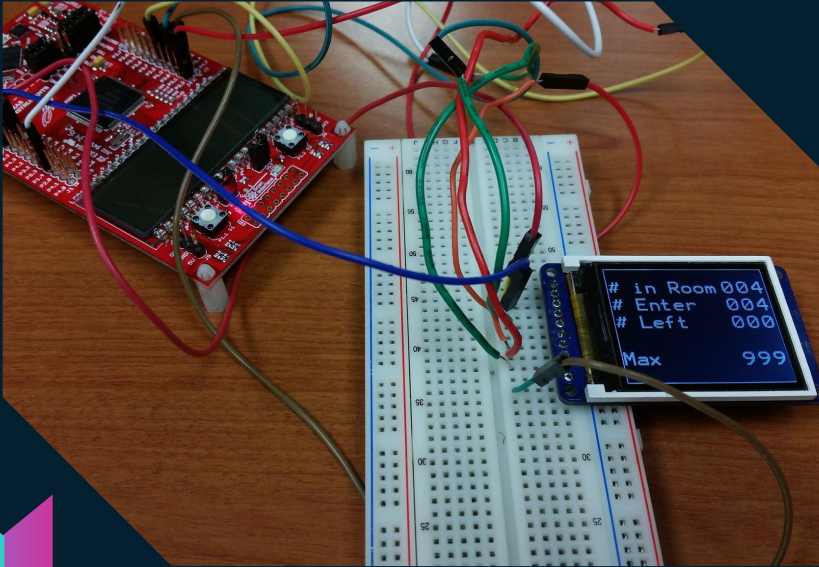
> DAC

Cody -

> IR Sensor

Aaron -

> Wifi



Progress

- > Overall organization of MSP430 software
- > Communication with LCD
- > PCB : initial circuit schematic, majority of footprints, acquired about half of PCB components
- > Have all hardware components

Plan B

Potential Issues

- > LCD screen proves too inconsistent for use
- > IR sensor does not properly register multiple individuals
 - > Does not decrement / increase

Alternative Solutions

- > Use on-board 7 segment LCD
- > Modify IR shielding or re-adjust location

THANKS!

Any questions?

