MAIDS

Meis Alarm Intrusion Detection System

Claudio F. Meis – Humber College – Computer Engineering Program – CENG355 – April 2020

INTRODUCTION

Break-ins occur every 90 seconds in Canada!

MEIS ALARM
INTRUSION DETECTION SYSTEM

MAIDS (Meis Alarm Intrusion Detection System) is a real-world IoT distributed system alarm project providing multi-channel alerts and remote Android application control during an intrusion event.

RESOURCES

Raspberry Pi 4 Model B 2019 Quad Core – MNP: 2GB-9003 - https://www.buyapi.ca

LED Sensor Module – MNP: 2SSR - https://www.amazon.ca

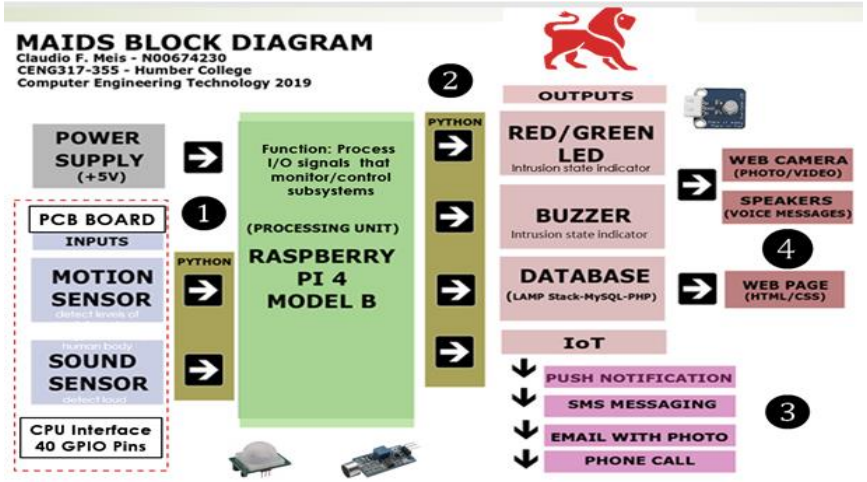
HC-SR501 Pyroelectric Infrared Sensor – MPN: 4260474030781 - https://www.amazon.ca

Microphone Audio Amplifier Module – MNP: STK01140116717 – https://www.amazon.ca

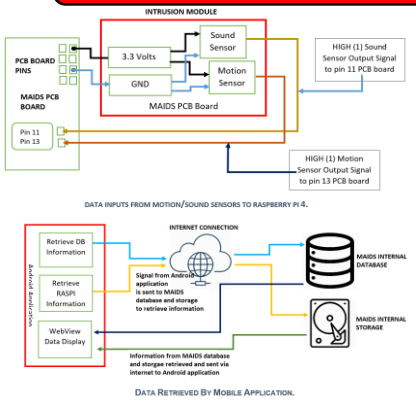
Facilities & Tools:

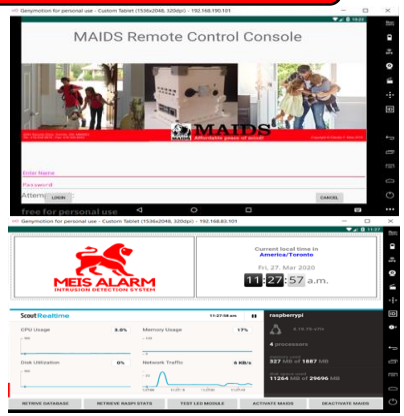
HC Prototyping Lab Bld. J, Room J201 - ProtoLaser S - ProtoMat S103 - Speedy 100 Laser Engraver - Weller Soldering Station - GDM-8135 Multi Meter

ELECTRONICS & FIRMWARE INTERACTION



MOBILE APPLICATION AND DATABASE





The Android application is composed of two activities: login activity (authenticates user) and Data/Control activity (remote control and retrieval of information). The Android application uses button elements to retrieve, via Internet, intrusion data (i.e. time of intrusion, intrusion location, etc.) from the MySQL database located on the MAIDS device along with real-time statistical information information and displays said information on the Android application screen via WebView elements.

ENCLOSURE

The MAIDS' enclosure was designed in CorelDraw 2018 for laser cutting and exported as a .svg file in landscape orientation. The artwork employed vector lines with hairline (0.000 mm) stroke width. The outside laser cuts were colored green; inside cuts were colored red. Etching of words/logos required other colors and thicker lines resulting in burning off a light layer of the top material. The MAIDS enclosure is 85 mm long and 56 mm wide and made from 3 mm thick acrylic. The enclosure has a small-footprint, hollow shell design for easy assembly and component protection and replacement. Also, it includes heat dissipation measures: 1) 30 mm fan, and 2) four aluminum heatsinks.

CONCLUSIONS

- Surveillance Capabilities
- Multi-channel Alerts
- Motion & Sound Detection
- Visual Capabilities
- Signal Processing Circuitry
- Android Tablet Remote Control
- Secure Interaction (SSH)
- Web-Based Intrusion DB

REFERENCES

MAIDS Capstone Project Report. pdf