

INTRODUCTION

Problem Statement

- Most alarm systems are motion triggered, which can lead to false alarms
- Optical monitoring may not be reliable under certain conditions
- Many security systems operate on cloud-based services, resulting in high Internet bill
- Fire suppression systems are triggered by smoke, often causing large scale water damage

Why the Home Attender?

- Uses thermal tracking for more accurate detection
- Accelerometers provide blind spot coverage
- Localized server means no extra data charges
- Mobile Application allows user to connect from anywhere

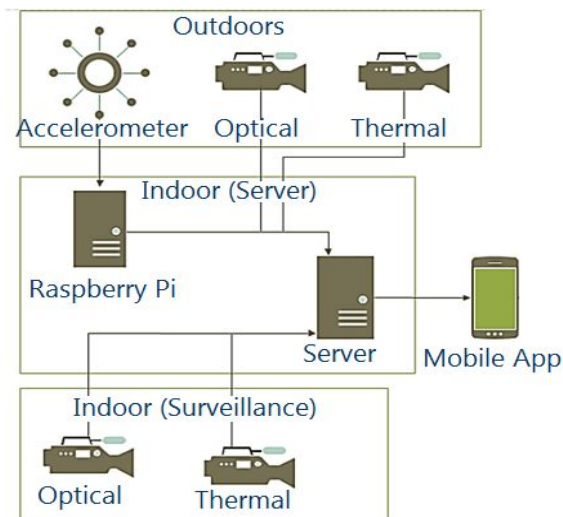
PRODUCT OVERVIEW

Camera Module

- Thermal camera provides intruder and fire detection under all visibility conditions
- Optical camera provides redundancy and allows user to view security threat and distinguish possibility of false alarm

Server

- The main hub of the system
- Stores recorded media for up to two weeks
- Performs intruder and fire detection algorithms



Accelerometers

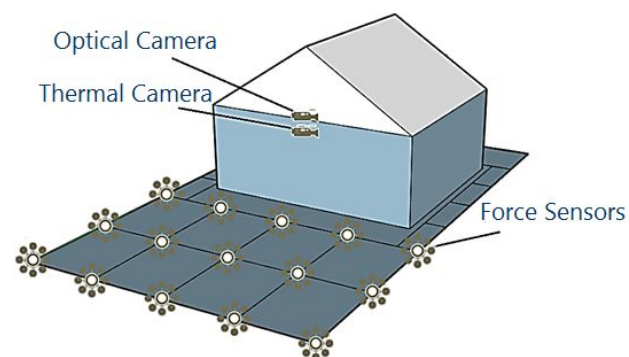
- Detects intruders that the cameras cannot see
- Pinpoints location of intruder

Mobile Application

- UI of the system
- Notifies the user of a security threat
- Allows user to view their home in real time and also recorded footage

Fire Suppression

- Uses thermal detection to localize water source and minimize water damage



CONCLUSIONS

- The Home Attender is a robust, accurate upgrade over the standard home security system
- Using thermal and optical vision along with accelerometers, our product provides reliable detection of intruders and fires

FUTURE WORK

- Machine learning algorithms for the thermal and optical cameras
- Use multiple accelerometers to pinpoint forces
- Further development of mobile application and notification system
- Alarm system in case of future failure
- Fire suppression

REFERENCES

- [github/groupgets/LeptonModule](https://github.com/groupgets/LeptonModule)
- [github/ageitgey/face_recognition](https://github.com/ageitgey/face_recognition)