Goal

- Develop an automated retail monitoring system that provides a centralized service for task management, inventory tracking and employee accountability for retail space. The service will comprise:
  - Central Hub – a mobile application that receives data from sensors scattered throughout a retail/commercial environment
  - Sensor Nodes – designed such that they can be adapted for different and specific purposes

Methodology

- An Arduino node sensor system is set up where each system contains sensors for various applications
- A central node connects to the sensors via Nordic’s 2.4GHz RF
- The Hub is connected to a smart device through Bluetooth
- The smart device runs an application which notifies the storefront of any pending tasks to be completed

Motivation

- Smart homes, or home automation has been significantly growing over the recent years and has proved to be successful in the future of convenience, safety and control
- Retail automation has developed in the past few years with standalone services that are consumer facing. There has not been much innovation in the automation of control tasks that aid and assist management.
- Local businesses in the area are interested in investing into such services providing a platform for potential commercialization

Challenges

- Designing a low power system to accommodate the availability of power source in a retail space
- A proprietary identification system of sensors for naming, recognition and preset programs that ease the addition of new sensor nodes to an existing setup

Conclusion and Future Work

- ARM as a proof of concept demonstrated the core functionalities that a finished product would need
- The unit would eventually be integrated into an existing POS (Point of Sales) platform and sold by the POS company as an additional service attached to the POS service
- The hardware and software would be modular and allow for easy user installation and interfacing

Acknowledgement

We would like to thank Dr. Hana Godrich for her continued support and guidance throughout the project. We’d like to thank Tacoria for allowing us to test/implement our service in their retail environment.

References

[1] https://github.com/Seeed-Studio/PN532
[4] https://create.arduino.cc/projecthub/user206876468/arduino-bluetooth-basic-tutorial-d8b737