Project Semester 5 (IoT)

**Socio-Technical Analysis Report**

Project Title: <Anti-Theft Flooring System using Raspberry-Pi>

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# 1. Project Outline and Objectives

My project 5 project is a Anti-Theft flooring system. This is a IoT based Anti-theft flooring System will be done using Raspberry Pi. This system will be designed to monitor the entire floor for movement. One single step anywhere on the floor is tracked and the user is alarmed over IoT.

This system contains a secure flooring mat with Iot connectivity. When the owner leaves the house, the system is to be turned on. If there’s unexpected detection after the owner leaves  the house the device passes the information over and alerts the owner.

# 2. Functional Requirements

This system is secure flooring tile with IOT integration. The system can be turned on in the event that the owner leaves the area.

Whenever the intruder enters the out area, and steps on the floor, the floor is immediately sensed by the sensor which will then pass on a signal to the raspberry pi controller.

The controller in turn processes it to be valid signal and then moves the camera to the area where movement motion was detected and then the information is then transmitted over the Internet for the home owner to check the image captured.

IOTGecko is used for the web based GUI of IOT system which sounds an alert and shows the image captured to user.

The system should then pass the information stating that an intruder has entered the space and this will be done over the IOT integration.

# 3. Technologies Used

1. Electronic Components
   * Peizo Sensor
   * Resistors
   * Capacitors
   * LEDs
   * Diodes
2. PCB
3. Raspberry Pi
4. Display
5. Servo-Motor
6. Camera
7. SD-Card
8. Push button
9. Cables and Connectors
10. Floor-Mat
11. Adapter/Power Supply.

# 4. Social Analysis and Issues

## 4.1. Privacy Issues

There are some potential privacy issues within the Anti-theft flooring system. The ISDPF model is used to identify the privacy sectors. The privacy issues identified within the informational sector include release of personal information, territoriality(knowledge), distribution of personal information and use of personal information. These will come into effect if manufacturers of software and components or hackers could actually use the anti-theft device system to virtually invade a person's home. German researchers accomplished this by intercepting unencrypted data from a smart meter device to determine what television show someone was watching at that moment.

The privacy issues identified within the Physical sector include environment, territoriality(property) and physical access. These will come into effect if hackers decide virtually hijack the device further on disturbing the alert system to be able to alert the owner, which means the intruders can gain access to the environment without the owner being aware.

## 4.2. Data Protection Issues

The potential data protection issues referring to the OECD principles that will be faced within the first model of the Anti-theft flooring System will be collection limitation principle issue as the model might not be designed or coded filter any personal data. Another data protection issue will the Security safeguards principle as the first version of the anti-theft flooring system does not have the required safeguard security if needed.

## 4.4. Stakeholder and Risk Analysis

In this section, consider who the stakeholders are regarding your project/artefact i.e. people (and organisations) that could be affected by your system. Consider both positive and negative stakeholder risks and impacts. Consider how to minimise negative impacts/risks, and maximise positive impacts.

# 5. Technical Analysis and Design

<https://drive.google.com/file/d/1LPJ22hoYIoBZnC4DDZUsTKmt61hEw8nF/view?usp=sharing>

<https://drive.google.com/file/d/15CCnxY2NiIMPxU8pslNbfFXU-2pwBoZv/view?usp=sharing>

## 5.1. Functional Design and Non-Functional Requirements

## 5.2. Data Requirements and Design

The data will be stored on the IoT website IoT Gecko. IoT Gecko is a platform that offers many services for IoT Projects such as data management services.

# 6. Professional Conduct and Ethics

Reflect briefly on how you would strive to ensure a high degree of ethical professional conduct and behaviour (if you had time to develop your product/artefact into a fully marketable product).

You should keep the formatting and section headers in this document and simply replace the section descriptions with your own summaries. Note that this report should be no more than 10-12 pages long.

Indicative marking scheme for this report:

* Project Outline and Objectives = 10%
* Functional Requirements = 10%
* Privacy Issues = 10%
* Data Protection Issues = 10%
* Intellectual Property = 10%
* Stakeholder and Risk Analysis = 10%
* Functional Design and Non-Functional Requirements = 15%
* Data Requirements and Design =15%
* Professional Conduct and Ethics = 10%