ENG5220:Real Time Embedded Programming

Project Report

**Team Number:**

**Project Title:** Fun Door Security System

**GitHub Link of the project:**

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**Introduction**

People often have the need of installing an effective security system to protect their private spaces and to grant access to themselves and their family or friends. Following this clue, our team thought about developing a raspberry-pi-based real-time security system and using face recognition to control the opening of the door lock. Face recognition is a quick and accurate way to distinguish between authorized hosts and unwelcomed people.

**Key Factors or Problems considered Before Starting**

1. How to ensure the performance of camera in abnormal circumstance (e.g., too light or too dark, camera angle)
2. How to upload and save face data to database easily and quickly. The form of face data saved.
3. What methods could be applied to matching the scanned face and face data.

**Devices used in this project:**

1. Raspberry Pi 3B
2. Sound Sensor
3. 8MP Auto Focus Camera Module
4. Digital Programmable LED Strip
5. SG90 Micro Motor
6. Breadboard, Dupont Lines, etc.

**How this system works(create a figure is better?)**

To develop a door security system that will activate the camera and the LED light for face recognition when detecting someone approaching the door. If the face captured by the camera can match a face in the pre-created facial recognition library, a motor controlling the door lock will unlock the door, otherwise, the motor will not turn and keep the door locked. There is also a light strip put inside the door. If someone comes and tries to unlock the door but fails, the light strip will turn red, which indicates to the house host that an unauthorised visitor has been outside.