Anthony Warner

Ali Ouadirou

ECE 411

Product Design Specification Document

Background and Market

For our product, we are designing a RFID Door Lock with a camera. This will open the door whenever someone is wanting access and has the correct card. Businesses and many other establishments need to keep track or monitor activity for who is coming and going, some even need to restrict access to such places. This would be a great security enhancement for any place that needs to monitor access to rooms or buildings. With an added camera, it will allow captures whenever someone is trying to access the door to keep track of any suspicious activity or be used for delivery confirmations. To use the system, there will be a master card that will allow more access cards to use the system. It will also allow the removal of access cards. This product is perfect for anyone, from large businesses securing their whole building or certain rooms to an individual who wants an easy way to access their home or rooms with added security. With many products out in the market already, there isn't a shortage of options for RFID controlled door locks. These are usually expensive and limited on security. With the product we are designing, it will allow for a wide range of improvements and not be as costly most other products already on the market. The extra security of an integrated camera can allow the owner to know if anyone has tried to access their door and history of when someone comes in will help keep track of use. Even with the added features, this product will only cost $95.99 for one unit. We can keep the price down because of the components and building it will take to make a unit.
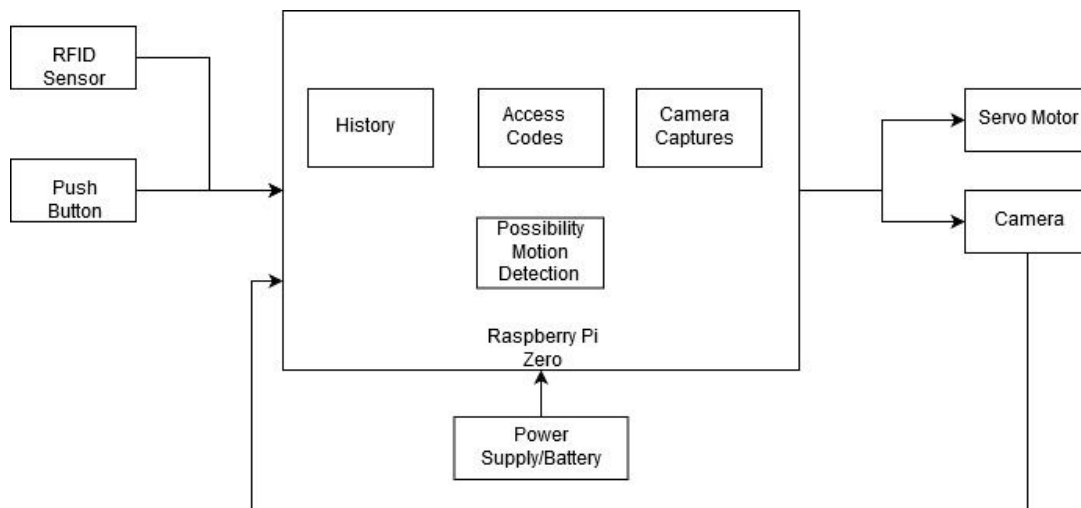
Requirements

Our device must have an enclosure that will allow it to be mounted to a door to control the lock. This enclosure must be able to use previously installed locks on doors. A push button must be available to unlock the door from the inside. It may use batteries for power to not need an outlet plug. With a master card, it must allow

the owner to add and remove access to the door. When someone is trying to access the door it must save a history of it. It may allow for the owner to receive an alert when someone is using the product. For more security, a picture must be taken when someone is trying to access the door. We may use motion detection to alert the owner if someone is approaching the door as a precaution. Users may be able to use their own phone to connect to the lock to unlock it.

System Architecture

Level 1 Block Diagram

Design Specification

- RFID-RC522 module one

- Standard S50 Blank Card

- Keychain S50 cards

- Raspberry Pi

- Power Supply or Battery

- 3D printed case

- Python

- Raspberry Pi Camera Module

- Servo Motor