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Project: Facial Recognition Smart Door Lock

This project that we will be demonstrating is a Facial Recognition Smart Door Lock. The specific door lock that is proposed is the RFID Door Lock. RFID is known as the radio frequency identification, having the ability to track tags off of any given object. A part of this project is to use RFID cards to track users entering and exiting the door in order to test individuals performances and know the number of people existing inside the place. There will be one red led for decline access and one green led to show granted access along with an LCD display that will show granted or declined access. Another part of the project is the use of Facial recognition from the user. We will be using a camera sensor connected to a raspberry pi with the addition of openCV. The raspberry pi will communicate with the Atmega328 board via the RX/TX pins allowing the Atmega328 to trigger a solenoid lock and granting access to the user. It needs to recognize your face for approval. The objective of this project is to secure an access door with RFID and Facial Recognition and monitor its use. It's important to have people safe from their surroundings. It will ensure the safety of any visitors. This has the capability towards all human users.

This is intended towards any customers. We want to ensure it is useful for any security purposes. One way it could be used would be for homeland security. Another way it could be used is Business companies or corporations. Any Revences could use this as well.

With all good ideas comes with good competition. Common things facial recognition are used for are cellular phones and tablets. Currently Samsung and Iphones installed facial recognition for users. Our product for the smart door will account when users are in and out. It counts the repetition on how many times you

visited. It will log in the time when the entered and exit door. The RFID card is another tool for us to extend to new users. We are planning to sell this product at \$399.99. This price covers a profit since the value has been doubled.

Requirements

Must

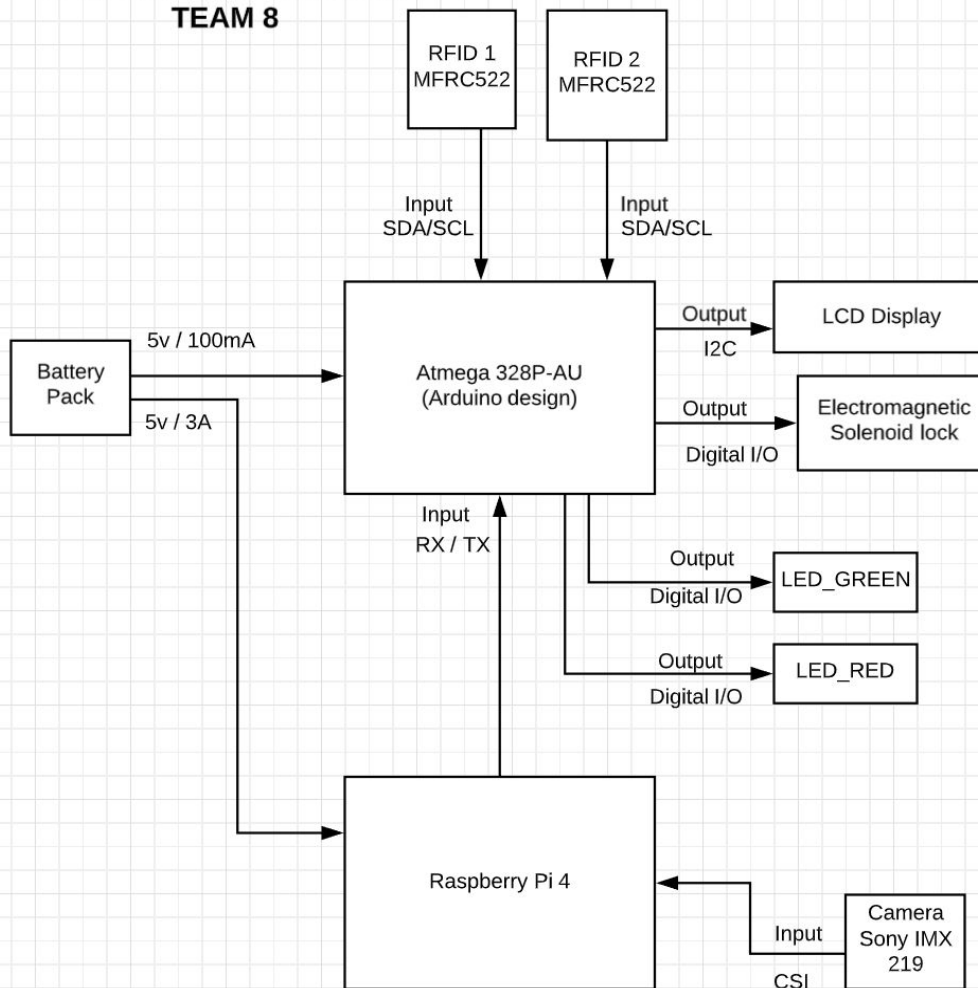
- Must use one RFID as a first authentication step to open the door.
- Must use Serial communication between Atmega328 and Raspberry Pi
- Must be able to recognize the person coming in via the facial recognition feature as a second authentication step to open the door.
- Must use Battery Pack to power the system
- Must be housed in an enclosure to be secured on a door
- Must use a Master card to edit users in the system

Should

- Should be able to communicate with the user via a 2X16 LCD screen.
- Should be able to use Green and Red LEDs to communicate “access granted” and “access denied”
- Should be able to be powered on for a week from the Battery Pack

May

- May use a second RFID to keep track of how many times people come in and leave the place, and how many are there inside the place.

**LEVEL 1 - Block Diagram
TEAM 8**

Design Specifications

- Raspberry PI
- Atmega328-Au (Arduino Design)
- Anker 20,000 mAh battery bank
- 6v 1.5A 11.4 mm Electromagnetic Solenoid Lock Assembly
- Step up/down buck converter
- Two RFID RC522 Module IC Car Reader Read RF Proximity Sensor
- Raspberry Pi Noir Camera Module V2 8MP 1080p
- LCD display Module 5v 16x2 Character LCM Blue Backlight
- 1xRed Led and 1xGreen Led
- SD cards