

PROJECT REPORT

On

SMART DOOR UNLOCK USING FACE RECOGNITION



BACHELOR OF TECHNOLOGY

(Electronics and Communication Engineering)

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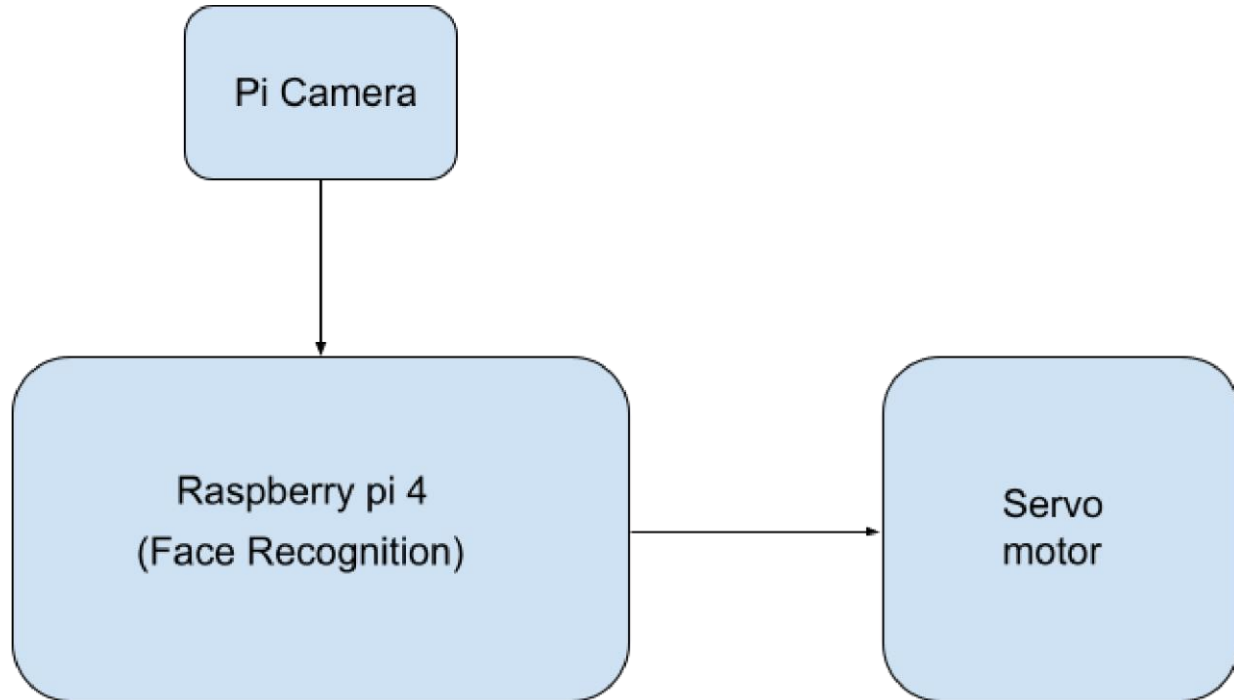
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1. Project Description :

In this type of smart door lock, the lock uses facial recognition to identify a person's face at the door.

Eventually, the facial recognition technology will be able to differentiate between friends and strangers. Alerts can be sent directly to the account owner to let them know someone they don't know is at the door.

It uses python to recognize the face of the person at the door.



2. Hardware & Software Specifications

2.1 Hardware & specifications:

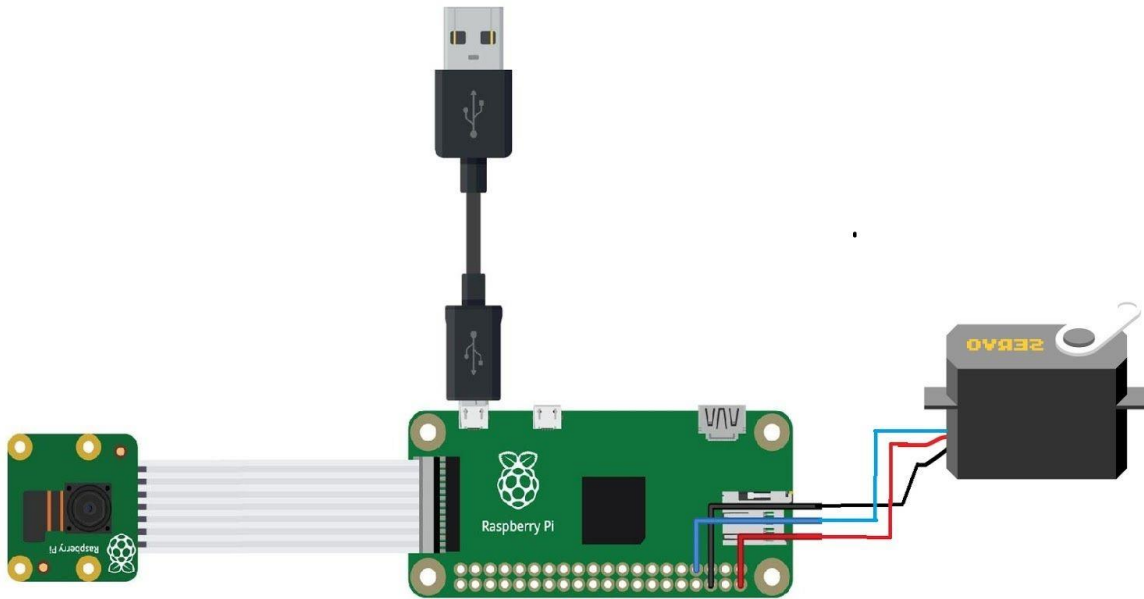
- ☐ Raspberry pi 4 (8GB RAM)
- ☐ Pi camera,
- ☐ Servo motor,,
- ☐ Connecting Wires etc.

2.2 Software & specification:

- ☐ Visual studio code
- ☐ Python with opencv, dlib, numpy, face_recognition libraries

3. Block Diagram :

4. Circuit Diagram :



5. Working :

In this system, Libraries of python like opencv, numpy, face_recognition, dlib etc are used to recognize the face of the person. If, the face of the person is matched with the faces of the persons available with him and the raspberry pi sends a signal to Servo motor to open the gate otherwise the gate will be locked.

If the face of the person will not match with the registered person then an alert is sent to the owner of the house/room.

With wifi of raspberry pi 4, we sent an email that sent the captured picture of the unknown person to the owner. By this way, we can secure our house from strangers.

6. Applications :

- 1) It converts our home to a digital room.
- 2) It secure our home while we are not at home
- 3) We won't want to hold many keys to unlock the door. We can easily unlock doors with our own face and it also reduces the problem to protect the lock's keys.
- 4) In Covid-19 period, it helped to open the gate automatically. We don't want to touch the gate to open the gate.
- 5) If an unknown person attempts to open a smart door lock, the system will send an emergency alert to the home or owner.