

Smart Receptionist with Smart Lock System

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Abstract: Security and safety are popular and the popularity is increasing day by day and with improvements brought in the past decade and innovations to bring comfort in our lives. In today's world technology has become a part of an integrated part of the society and therefore the security of an individual's home, office or their organization had to be considered with utmost priority. Smart Receptionist with a smart lock system is therefore mainly designed and specifically developed for security system purposes. This smart security system is used in a situation to see a visitor when the main door of the office or the organization is closed. The purpose of this system is to control the door lock using Raspberry Pi. In this system whenever a person enters the office door, image of the person is captured by the camera and then the smart lock system will send the image to android application and database. Once the image is uploaded on the android application, an option will be available of either unlocking the door or keeping the door locked. In a situation where the person accepts the permission to enter, the system will open the door but if the person chooses to deny the permission to open the door, door will remain locked. In such a circumstance, the system will display and delivers an audio message which is "Access Denied".

Keywords: Smart receptionist, Smart lock, Raspberry pi.

1. Introduction

After considerable trials and approaches, a system was developed to increase the security level of critical area and data which is called as "Smart Receptionist with Smart Lock System". The system was designed in such a way so as to open the door using a mobile device and thereby to give access only to the authorized personnel. This efficient and accurate security system provides access to home security and also access control to the doors and security system which is based on a face recognition pattern, making it important for a wide variety of security applications. Security is an important factor or a feature in smart home applications. Many of the countries are adopting the smart door security system. The most important and major part of any door security system is identification and accuracy for recognition of the person who enters through the door. Face recognition is by far the most natural way to perform authentication and recognition accuracy among human beings. Computerized face recognition and detection structure are speedily spreading at various sectors such as shopping centers, Institutes, and departments. The aim of this research is to

develop a structure that can identify and recognize faces of human beings using Image-Processing techniques. Practically, this idea can be executed in a wide range of places to provide security.

2. Block Diagram

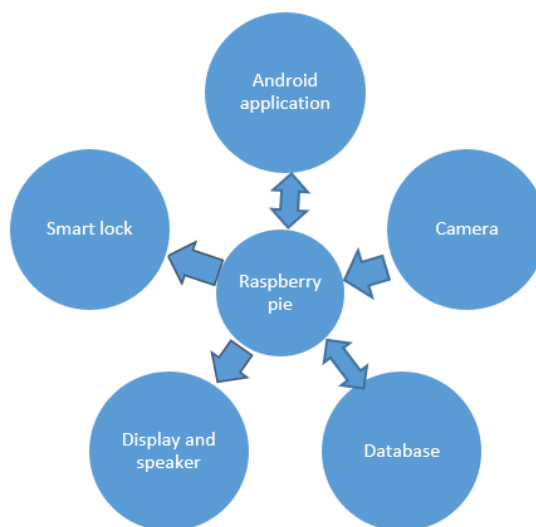


Fig. 1. Block diagram

Raspberry pie is the brain of the system. Initially it will take input from camera. Using OpenCV algorithm system looks through the database, if recognizes a face. It checks through the system database and if the face matches to a client or employee it will initiate the smart lock with a response by making its respective pins and update the database for attendance in-case of an employ, this will be updated on the android application "The office".

3. Flow Chart

The system is initialized. It takes input from camera and check for face, if it is true or if a face is found it will check for it in database. Else if false or if no face is found it will keep checking for it. Now after recognizing the face from the database, if found in the employee database it will mark present and open the door with an acknowledgement and, update database, reflect on app and repeat the loop. If the face is not

detected it will notify the staff chooses to let the client in, staff can authenticate and open the door. Or else the client or the unrecognized person will be asked to take appointment and come later and end that session.

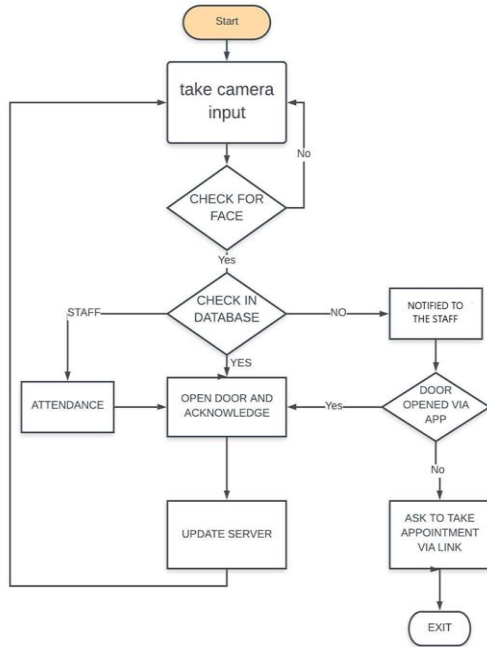


Fig. 2. Flowchart

4. Advantages and Disadvantages

A. Advantages

1. Automation of entrance and exit in an office premise.
2. Automated and smart attendance register.
3. Management of Clients.
4. Reduction of over-crowding and unwanted visitors to an office environment.

5. Enabling the Staff to remotely control the door if needed through the app.
6. The app in the system can also provide announcements and notifications related to office functioning.

B. Disadvantages

1. No Artificial Intelligence used.
2. Needs good lighting for proper functioning.
3. Its bit costly as Raspberry Pi used and restricting the processing power a bit

5. Conclusion and Future Scope

This smart receptionist with smart lock can make office management easier. The main entrance of the work place is controlled by the system autonomously. It can save time by notifying and managing staffs and customers. Unwanted visits and confrontations in office environment can be avoided using this system. This system can take staff attendance by facial recognition, making the work environment more efficient.

Using artificial intelligence and a better processing unit can make the system faster, efficient and secure. With addition of a voice feedback the system can give appropriate messages and acknowledgment to user when needed.

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