

SMART DOORBELL SYSTEM

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College : *K.L.S. Vishwanathrao Deshpande Institute of Technology
Haliyal, Uttara Kannada*

Branch : *Department of Computer Science and Engineering*

Guide(s) : *Prof. Farzana Nadaf
Prof. Saleem Hebbal*

Student(S) : *Mr. Abhishek Ashok Jangali
Ms. Aishwarya Badiger
Ms. Asha Devaraddi
Mr. Mohammad Annan S Adhoni*

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Introduction:

In the early years, smart door locks were almost synonymous with high-end home improvement. In fact, since the entry of smart door locks into our country, there have been nearly 20 years of development history. However, the cost of smart door locks at that time was still very expensive, and some of them were not good enough in the experience. The earliest use of smart door locks in the country is the hotel industry. This kind of hotel lock is opened through a card and other radio frequency schemes, it brings convenience to the users to the greatest extent, and also makes the management of the hotel more simple and effective, avoiding the storage inconvenience and management confusion caused by mechanical keys.

According to the 2017 Smart Lock Application and Development White Paper released by Alibaba in conjunction with a number of smart door lock manufacturers in 2017, smart door locks are often presented in a stand-alone smart form (in the form of a combination of passwords and fingerprints) before 2010, and the mechanical lock structure is retained. But in actual use, this kind of door lock is almost a single solution to the problem of unlocking and there is no other redundant function. At that time, the smart door lock is more like an "electronic door lock", and many hotel door locks are still in this form.

Face identification represents one in every of the fore most used styles of biometry. The face recognition embedded systems are good enough to be employed in totally different applications like terrorist's identification, security systems and identity verification access. After all it's enforced in several public and even dedicated areas. Due to the well-developed technologies linked to engineering, we will get satisfying results of face identification. The extracted details from faces are analysed and compared with the already existing similar face operated details within the database. For example in monitoring systems the detection of an anonymous face more than once leads to saving this face traits in the database for further identification. This strategy is very useful in detecting criminals and thieves.

Objectives

- Project objective is to provide a system that notifies the user about the entry of visitor via a smart device using raspberry pi and camera.
- Primary objective of the project is to interface USB camera with raspberry pi and to obtain the picture of visitor.
- Providing video live streaming for the owner through an android application, to monitor visitor's action.

Methodology

The proposed system mainly consists of two parts, which are pre-processing and image recognition. The Raspberry Pi has a dedicated camera input port that allows users to record HD video and high-resolution photos. Using Python and specific libraries written for the Pi, users can create tools that take photos and video, and analyse them in real-time or save them for later processing. In this tutorial, we will use the 5MP Pi camera to take photos and analyse them with Python and an Pi Zero W. This creates a self-contained system that could work as an item identification tool, security system, or other image processing application. The goal is to establish the basics of recording video and images onto the Pi, and using Python and statistics to analyse those images.

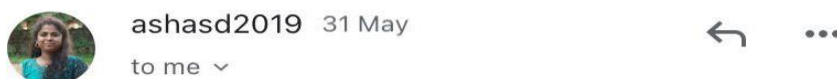
Result and Conclusion



Authorised Person



Authorised person Email sent to the owner



UnAuthorised Person



Conclusion

Our proposed system will be helpful for those who aren't at home most of the times and need to keep track on visitors. Its utility is to be set as an alert for home visitors and provide information about the visitors in a dynamic website and phone application, could be used in other fields like industries, offices and even air-ports for identifying wanted people. We believe that these results can be improved in terms of performance. In this project, face recognition system has been developed in order to study the potential application for home automation door security with real time response and better recognition rate. Among the other biometric techniques, face recognition approach offers one great advantage which is user friendliness.

Scope for future work:

There are some improvements to the system. Future work includes working on the environmental lighting conditions, training the classifier with more images and identifying people with masked faces as well. Further by adding a solenoid, this project can be integrated with a door-lock system too so that the door can be opened directly thus allowing a familiar person direct entry to home.