



Smart Receptionist with Smart Lock System

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Abstract: Security and safety 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 upmost priority. Smart Receptionist with a smart lock system is therefore mainly designed and developed for security system purpose. The smart security system is used in situation to see visitor when the main door of office or organization is closed. The purpose of this system is to control the door lock using Raspberry Pi 3. In this system whenever person enters the office door, image of person is captured by Camera Module which is compared with database. If the person's images is matched with the database the Solenoid Lock opens, but when the image is unidentified it Emails the owner requesting to allow or deny the access.

IndexTerms - Raspberry pi, solenoid lock, web camera, laptop

I. INTRODUCTION

Since the announcement of the COVID-19 virus as a virulent disease via way of means of WHO. It said that efforts were made via way of various events to reduce to unfold of the virus. For now, there is not any remedy or vaccine available. So that, Indonesia and different international locations are relying at the carried-out intervention's via way of means of the authorities, for example, bodily distancing and carrying a face masks within inside the general public area to obstruct COVID-19 transmission. The mask recognition with a machine learning algorithm through the image: mobilenetV2 could be a method supported Convolutional Neural Network (CNN) that developed by Google with improved performance and enhancement to be more efficient. This study conducted its experiments on two original datasets. The primary dataset was taken from the kaggle dataset and also the real-world masked face dataset (RMFD); used for the training, validation, and testing phase that the model may be implemented to the dataset. The model are often produced by following some steps which are,

- Data collection
- Pre-processing
- Split the information
- Building the model
- Testing the model and at last
- Implement model

Smart locks save one of the biggest problems. Not only do they provide excellent security, but they also eliminate the hassle of fumbling around to find your house keys. You no longer need a physical key to find or lend a friend, so you can check your home while you're away. The smart lock connects to your home Wi-Fi network and can be unlocked by scanning your finger or mask. Some smart locks require a complete replacement of the entire locking system, while others just fit into an existing locking system or require only a few modifications.

HARDWARE IMPLEMENTED

Fingerprint Scanner: Fingerprint scanner are used for recognizing and authenticating the fingerprint of an individual. Fingerprint reader and the scanners are safe and reliable devices for any security authentication. E307 fingerprint module is a fingerprint sensor with a TTL UART interface for direct connections to microcontroller UART or to PC through MAX232/ USB-Serial adapter.

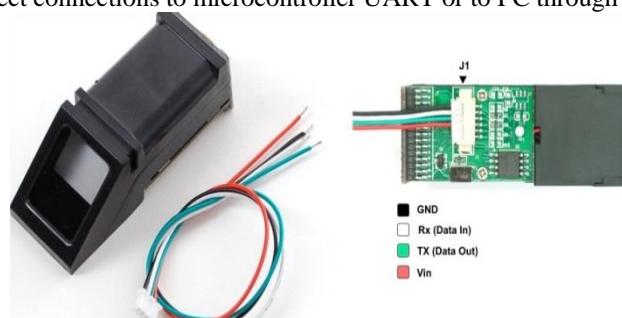


Fig. 1: Fingerprint Module

TABLE I: Pin out

Pin number	Name	Type	Function/Description of pin
1	5V	Input	Power input
2	GND	-	Signal ground
3	TXD	Output	Data output. TTL logical level
4	RXD	Input	Data input. TTL logical level
5	Touch	Output	Finger detection signal
6	3.3V	Input	Finger detection power

Solenoid Lock: The solenoid lock denotes a latch for electrical locking and unlocking. It is available in unlocking in the power-on mode type and locking and keeping in the power-on mode type, which can be used selectively for situations. The power-on unlocking type enables unlocking only while the solenoid is powered on. Solenoids valves are used to close, open, dose, distribute or mix the flow of gas or liquid in a pipe. The specific purpose of a solenoid valve is expressed by its circuit function. It operates on 12v Dc.



Fig.2: Solenoid Valve

Web Camera: 5 MP camera which may directly be plugged into Raspberry Pi board. This camera module is compatible with all the models of Raspberry Pi. When the finger scanner is scan camera is additionally switched on, and it captures image and send it to Raspberry Pi using CSI bus.



Fig.3: Web Camera

Power Supply: As all the components used works on the low voltage power supply provided is 5 volts. It's accustomed give the ability supply to the Raspberry Pi. Its require 3 A current.



Fig.4: Power supply

Raspberry Pi: Comes with different packages like Android, FreeBSD, Linux, PLAN 9 and more. This project uses Linux packages. The Raspberry Pi is the main building block of the project and controls all components used in this project. All models feature Broad-com System-on-Chip (SOC) with ARM-compatible Central Processing Unit (CPU) and integrated Graphics Processing Unit (GPU).



Fig.5: Raspberry Pi

BLOCK DIAGRAM

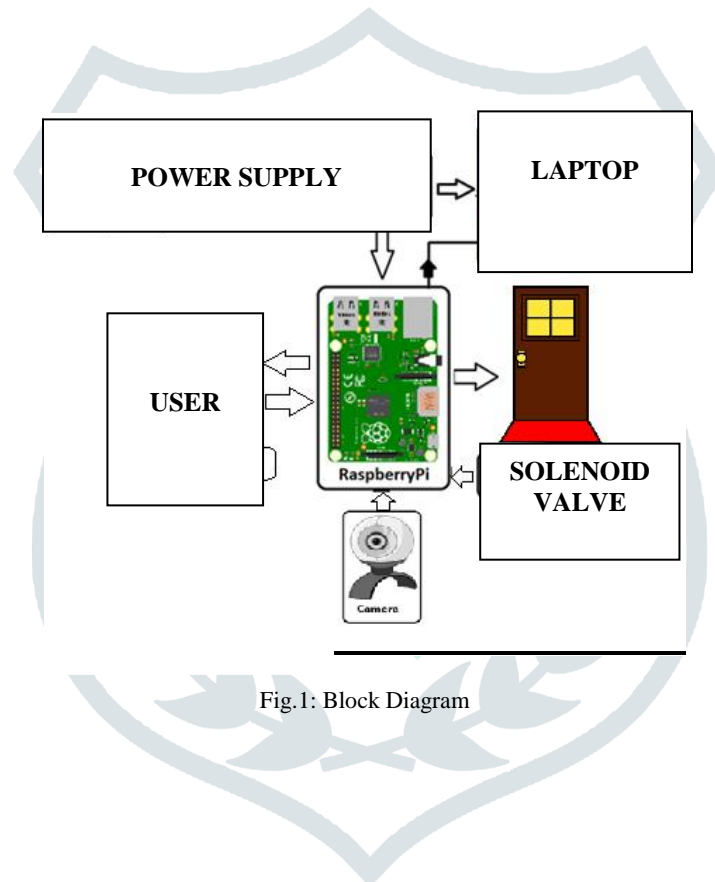
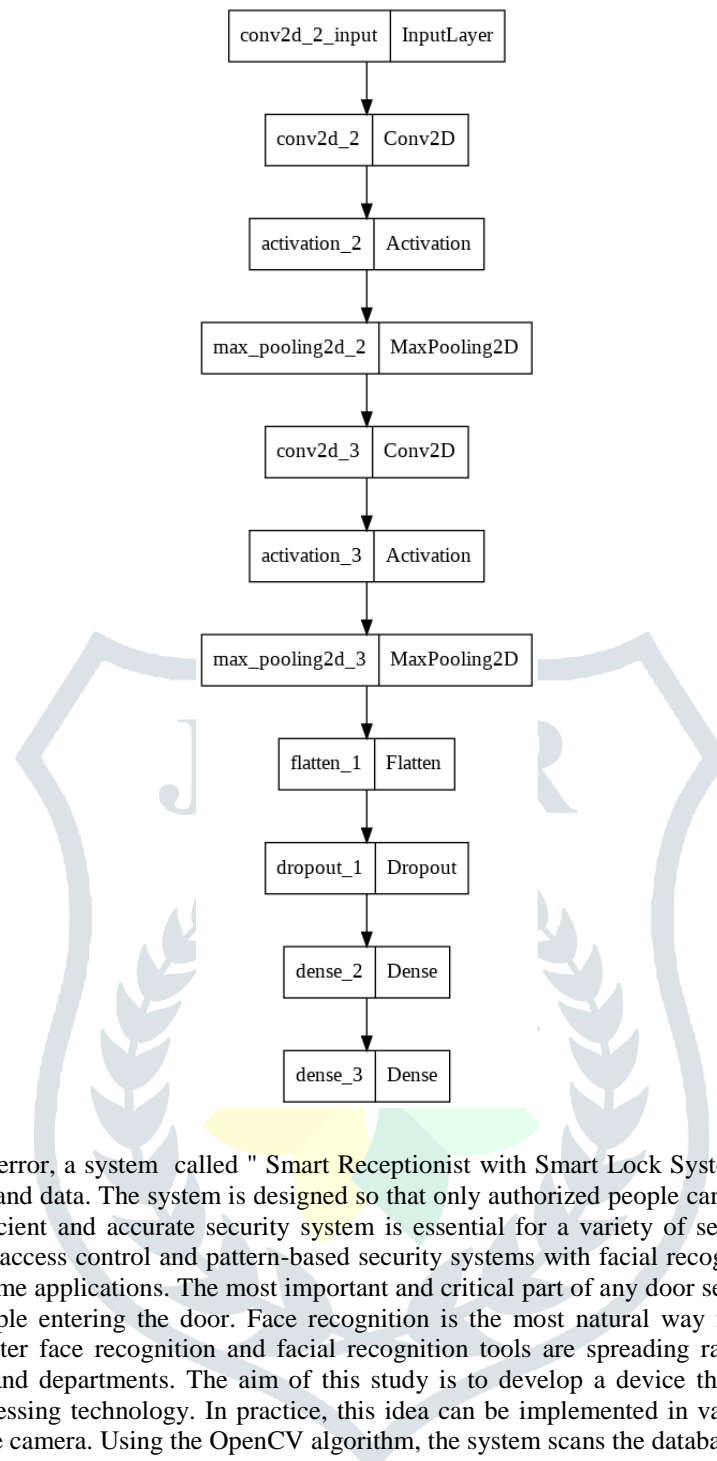


Fig.1: Block Diagram

FLOW CHART



After much trial and error, a system called " Smart Receptionist with Smart Lock System " was developed to improve the security of sensitive areas and data. The system is designed so that only authorized people can enter by opening the door with a fingerprint reader. This efficient and accurate security system is essential for a variety of security applications that provide access to home security, door access control and pattern-based security systems with facial recognition. Security is an important element or feature of smart home applications. The most important and critical part of any door security system is the accuracy in identifying and detecting people entering the door. Face recognition is the most natural way for humans to authenticate and recognize themselves. Computer face recognition and facial recognition tools are spreading rapidly in various fields such as shopping malls, institutions, and departments. The aim of this study is to develop a device that can identify and recognize a human face using image processing technology. In practice, this idea can be implemented in various places to ensure security. First, the data is taken from the camera. Using the OpenCV algorithm, the system scans the database when a face is detected.

ADVANTAGES

- Automation of entrance and exit in an office premise.
- Automated and smart attendance registers.
- Management of Clients.
- Reduction of over-crowding and unwanted visitors to an office environment.
- Enabling the Staff to remotely control the door if needed through the app.
- The app in the system can also provide announcements and notifications related to office functioning.

FUTURE SCOPE

- Surveillance system (ATMs, Public places).
- Crowd estimation (Gatherings, tourist spots).
- Finding missing children at shopping malls.
- Control access to sensitive areas.
- Object checking at entrance of competitive exams.
- Tracking attendance

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