

An Intriguing and Catching Attention of Face Recognition System using Raspberry Pi

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Abstract

Face recognition technology is becoming an essential component of security and police investigation. Therefore, a system that is both cost- and value-effective is needed. With the help of the Raspberry Pi kit, we intend to build a system that is high performing, cost-effective, and easy to use. There are several different security systems, including face detection, speech, voiceprint, and signature recognition. Face recognition is one of these technologies that stands out and attracts people's attention.

The webcam and raspberry pi are used to identify the faces. You must collect a set of data containing portraits of faces in order to do face detection. This information will be kept in the Raspberry Pi's database. When a person enters in front of camera raspberry pi will check for the image stored in the database and shows name on the image. If the image is not stored in the database number will be displayed on the image.

Keywords: face recognition, raspberry pi, LCD, RASPBIAN,python

1. Introduction

Any human may be recognized by their face alone. We have selected the Raspberry Pi 3 for facial recognition in order to make it accessible on all platforms. Linked to the Raspberry Pi module is a webcam. Face identification distinguishes between perceivable faces and non-perceivable faces. This module may be used for a variety of applications where facial recognition is useful for authentication.

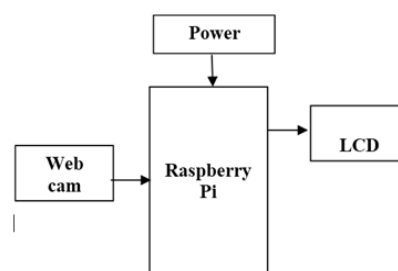
2. Existing system

In existing systems many methods are there to recognize humans like using RFID cards and also by using finger print of the humans. These methods are somewhat inefficient as their reliability is not there in these methods

3. Proposed system

In proposed system we are using face recognition method. In this web cam is used to detect and recognize the human faces and also it compares that recognized faces with predefined user database, if the face matches in user database it displays the particular name of the human. Otherwise it shows error

Block diagram



4. Hardware Requirements:

RASPBERRY PI 3:

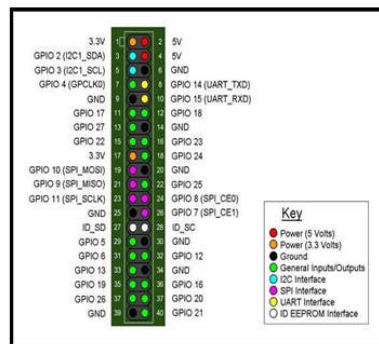
Raspberry pi is a powerful microcontroller that exists in credit card size. It serves as micro controller, also it serves as an minicomputer by connecting essential cables like HDMI cables, audio cable. Simply it is a credit card sized computer which also serves as microcontroller. It is fast as compared to other controllers.

Features of Raspberry Pi:

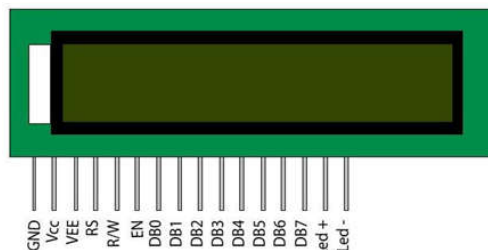
- processor: Quad Core 1.2GHz BroadcomBCM2837 64bit CPU
- Memory: 1GB RAM
- BCM43438 remote LAN and Bluetooth Low Energy (BLE) on board



LCD



LCD (Liquid Crystal Display) is electronic device which is used to display our required characters. Generally most preferable LCD is 16*2 in which it indicates we can display 16 characters in 2 lines.



CAMERA

Product summary

Logitech HD professional digital camera C270 passes on HD video line and attending to the dominant half. The C270 has worked in programming that upgrades quality with three megapixel pictures and Fluid Crystal improvement, which provides you the most effective video encounter – even in low light-weight and foundation whine – therefore you'll gyrate what's basic.



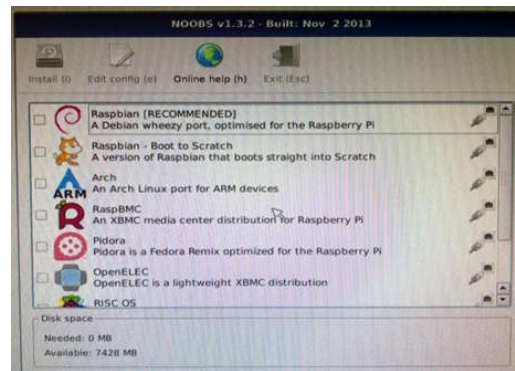
Software components: RASPBIAN

Operating system of Raspberry Pi is Raspbian. This is the suggested operating system for normal use on a Raspberry Pi.

It is a free operating system. Raspbian come with over 35,000 packages; precompiled software bundle in a nice format for easy setting up on your RaspberryPi.

PYTHON

Python is a general purpose, dynamic, high level and interpreted programming language. It supports Object Oriented programming approach to develop applications. It is simple and easy to learn and provides lots of high-level datastructures.



OPEN CV

Open CC is an open source and learning of software library. It provides a common infrastructure for computer vision applications and to accelerate the use of machine perception in the commercial products. it is BSD-licensed product ,and easy for business and modify the code.

The working principle of project is simple. it captures pictures frame by frame and compare with the existing image which is stored in data base and update the status according to the database.

Applications:

- a. Banks, offices.
- b. Homes.
- c. Industries etc.,
- d. High security offices and companies.

Conclusion

Compared to other approaches, such as biometric techniques, face recognition is more accurate. This system is simple to use and user-friendly. It offers more security. Other biometric approaches do not support multi-model biometric systems, but this system does. There is always room for improvement by enhancing image quality and accelerating CPU performance for real-time application.

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