IMAGE CAPTURING BY USING RASPBERRY PI SYSTEM

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ABSTRACT

An image capture scheme with embedded computing allows data to be extracted from pictures without the need for an internal processing unit and interface devices used to make findings accessible to other systems. Embedded platform selection is very unique and simple to deploy. In an embedded system based on the Raspberry Pi board, the article suggested an image capture method. Taking into account the demands of the image capture and recognition algorithm, the Raspberry Pi processing module and its peripherals, implementing Embedded Image Capture using Raspberry Pi System (EICSRS) based on this platform, are finally updated. Experimental results show that the designed system is fast enough to run the capture of images, the recognition algorithm, and the data stream can flow smoothly between the camera and the Raspberry Pi.

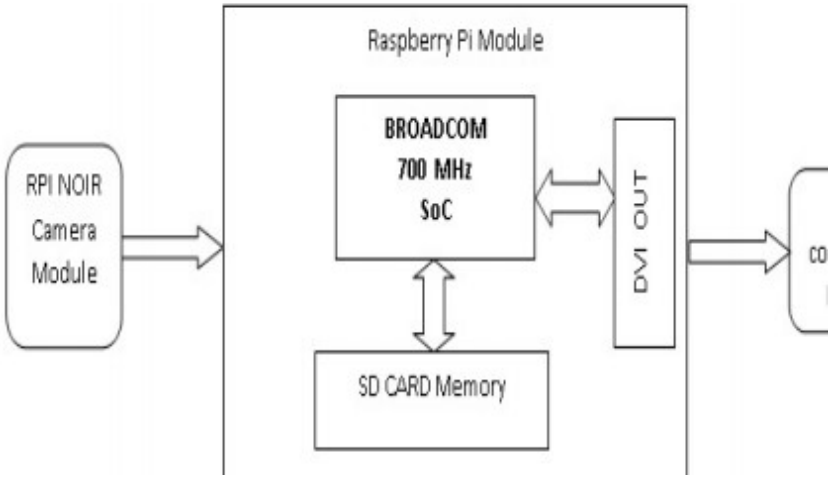
KEYWORDS: Raspberry pi, image processing, embedded system

INTRODUCTION

Traditional ways to identify yourself rely on outside stuff like keys, passwords, etc. But there may be lost or forgotten such things[1]. One way to solve these issues is by biometrics, because each person certainly has its particular biometric characteristics. Identification of biometrics has attracted growing attention from around the world. Biometrics features that can be used to identify fingerprints, palm prints, handwriting, vein pattern, facial features, face, and some other techniques such as speech pattern, etc. [2]. Face recognition has the following benefits compared to other biometric techniques: Face image acquisition involves no physical contact, so face identification is non-invasive[3].

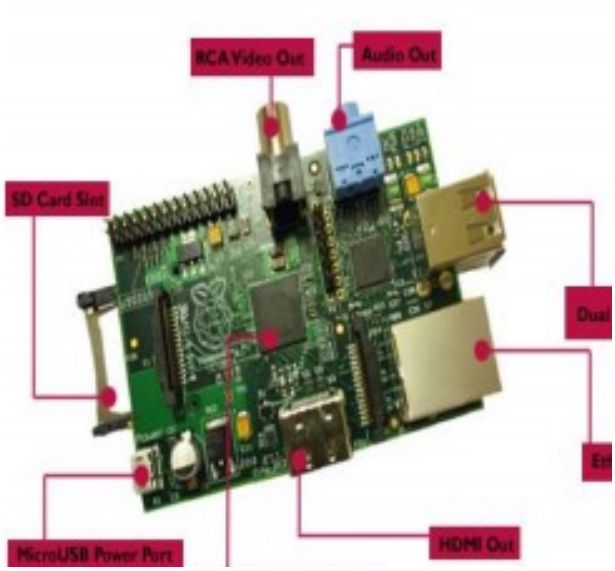
SYSTEM DESIGN

The whole system is composed by following parts: an image capturing camera, Raspberry Pi[4] board to run image recognition programs on it. DVI compatible monitors also connected with this system during initial stages to preview the captured images and give the user indication[5].



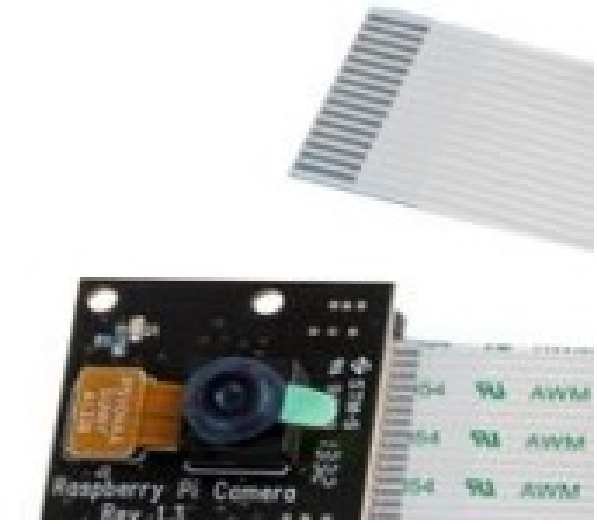
RASPBERRY PI BOARD

This board is the central module of the whole embedded image capturing and processing system as given in figure 2. Its main parts include: main processing chip, memory, power supply HDMI Out, Ethernet port, USB ports and abundant global interfaces[6].



CAMERA INTERFACE

The camera module used in this project is RPI NOIR CAMERA BOARD i.e. Raspberry Pi No IR camera board as shown in the Figure 3. The camera plugs directly into the CSI connector on the Raspberry Pi. It's able to deliver clear 5MP resolution image, or 1080p HD video recording at 30fps. The module attaches to Raspberry Pi, by way of a 15 pin Ribbon Cable, to the dedicated 15 pin MIPI Camera Serial Interface (CSI), which was designed especially for interfacing to cameras. The CSI bus is capable of extremely high data rates, and it exclusively carries pixel data to the BCM2835 processor [7].



METHODOLOGY

The system designed system can be operated in two different sessions, i.e. one for capturing and creating a data base and the other session is to capture the image and which can be used for identifying or comparing the images in the database. Here in the second session we use Eigen faces methodology of face recognition for finding the matches.

CONCLUSION

It's a progress of realizing embedded image capturing system. We describe our design method in this paper. Based on these methods, we design the experimental prototype of the embedded image capturing system with Raspberry Pi system. This system is smaller, lighter and with lower power consumption, so it is more convenient than the PC-based face recognition system. Because of the open source code, it is freer to do software development on Linux. Experimental results show that it's an effective method of using Raspberry Pi board to actualize embedded image capturing system.

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