

Implementation of Web Cam Server Using Raspberry Pi

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Abstract:

Security is primary concern everywhere and for everyone. Every person wants his home, Industry etc to be secured. This project describes a security system that can monitor an industry and home. This is a simple and useful security system and easy to install.

Introduction:

With the rapid development of modern communication technology, Web technology has been widely used and was a great success. As the continuous development of information society, increasingly mature network technology applied to the embedded system has become a necessary tendency. With Web access ability of the embedded devices will get rapid development, the application in communication equipment, information home appliances, instruments remote management and other fields. Embedded Web server for embedded devices provide network interface, to realize the remote management and control, which is an important technology of the network embedded equipment

Existing System:

Wireless security cameras are closed-circuit television (CCTV) cameras that transmit a video and audio signal to a wireless receiver through a radio band. Many wireless security cameras require at least one cable or wire for power; "wireless" refers to the transmission of video/audio. However, some wireless security cameras are battery-powered, making the cameras truly wireless from top to bottom.



Wireless A/V camera

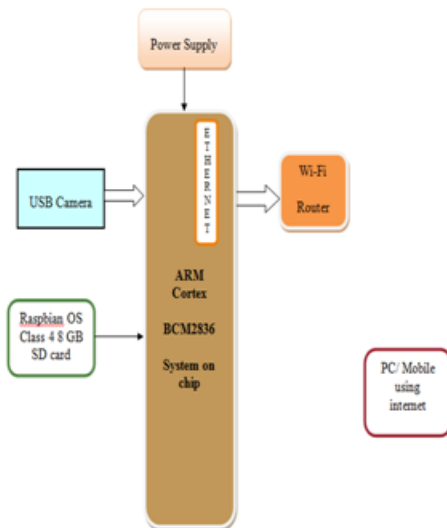
Drawback:

This can be implemented within shorter distance only.

Proposed System:

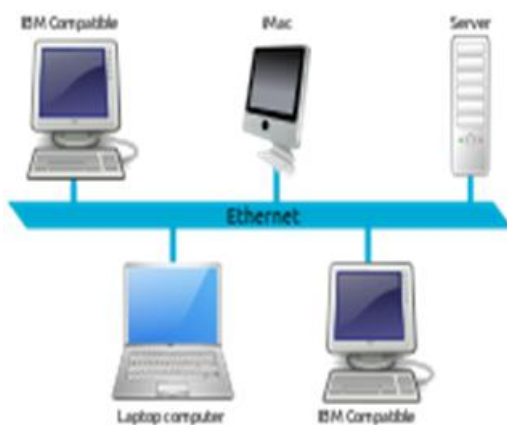
Here our application uses Raspberry Pi as its controller and this can be placed where ever required so that the image of people appeared there at that place will be captured using high sensitive camera and then our controller makes available about the picture of the people through Wi-Fi. We can place this module either at a door near home or at offices, factories or any other place where we need monitoring every minute for the purpose of security/surveillance. The Raspberry Pi is a credit-card-sized single-board computer developed in the UK by the Raspberry Pi Foundation. The Raspberry Pi has a Broadcom system on a chip which includes a processor. It does not include a built-in hard disk or solid-state drive, but Uses an SD card for booting and long-term storage.

Block Diagram



LAN:

A local area network (LAN) is a computer network that interconnects computers within a limited area such as a home, school, computer laboratory, or office building, using network media. The defining characteristics of LANs, in contrast to wide area networks (WANs), include their smaller geographic area, and non-inclusion of leased telecommunication lines. ARCNET, Token Ring and other technology standards have been used in the past, but Ethernet over twisted pair cabling, and Wi-Fi are the two most common technologies currently used to build LANs.



RASPBERRY-PI:



The Raspberry Pi 2 delivers 6 times the processing capacity of previous models. This second generation Raspberry Pi has an upgraded Broadcom BCM2836 processor, which is a powerful ARM Cortex-A7 based quad-core processor that runs at 900MHz. The board also features an increase in memory capacity to 1Gbyte.

Features:

- System Memory – 1GB LPDDR2
- Storage – micro SD card slot (push release type)
- Video & Audio Output – HDMI and AV via 3.5mm jack.
- Connectivity – 10/100M Ethernet
- USB – 4x USB 2.0 ports, 1x micro USB for power
- Expansion
 - 2x20 pin header for GPIOs
 - Camera header
 - Display header
- Power – 5V via micro USB port.
- Dimensions – 85 x 56 mm

Basic Hardware of Raspberry-PI

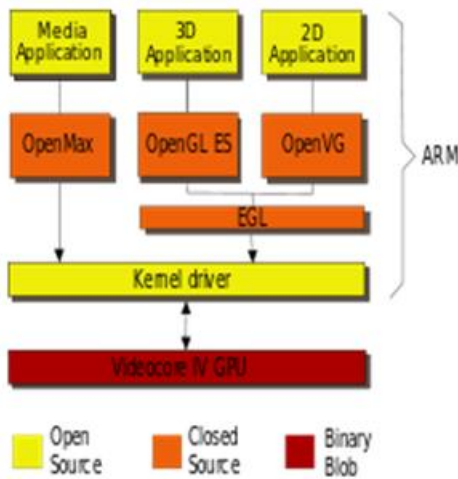
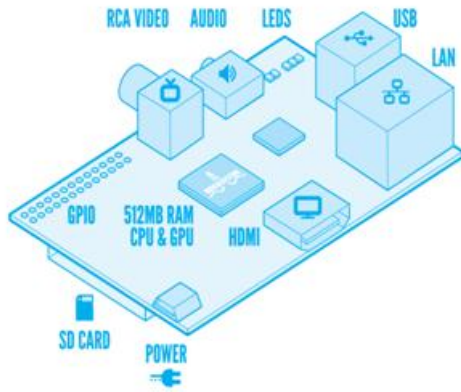


Diagram of API-Connection

USB hub:

A USB hub is a device that expands a single Universal Serial Bus (USB) port into several so that there are more ports available to connect devices to a host system. USB hubs are often built into equipment such as computers, keyboards, monitors or printers. When such a device has many USB ports, they all usually stem from one or two internal USB hubs rather than each port having independent USB circuitry.

Physically separate USB hubs come in a wide variety of form factors: from external boxes (looking similar to an Ethernet or network hub) connectible with a long cable, to small designs that can be directly plugged into a USB port (see the "compact design" picture).

In the middle case, there are "short cable" hubs which typically use an integral 6-inch cable to slightly distance a small hub away from physical port congestion and of course increase the number of available ports.

USB Camera:

USB Cameras are imaging cameras that use USB 2.0 or USB 3.0 technology to transfer image data. USB Cameras are designed to easily interface with dedicated computer systems by using the same USB technology that is found on most computers. The accessibility of USB technology in computer systems as well as the 480 Mb/s transfer rate of USB 2.0 makes USB Cameras ideal for many imaging applications. An increasing selection of USB 3.0 Cameras is also available with data transfer rates of up to 5 Gb/s.



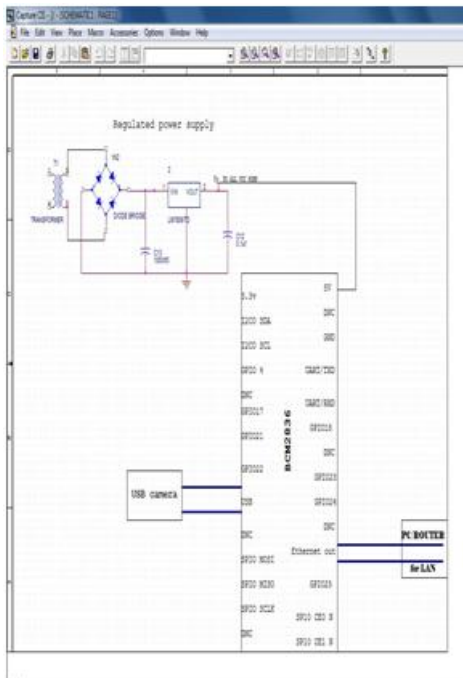
Applications:

- Museums
- Home / Office security
- Jeweler shops
- Banks

Advantages:

- Highly-flexible
- Fit & Forget System
- No need of human effort
- High security is provided

Interfacing diagram:

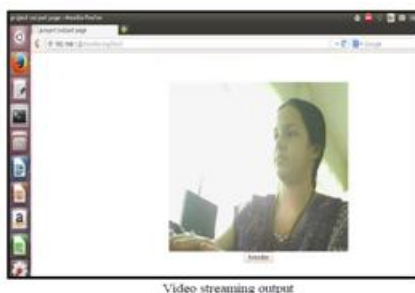


Hardware Kit:



Results:

The processed stream data packets are uploaded into server so that user input the corresponding IP-address <http://192.168.1.2:8080/?action=stream> and then the webpage is opened and the output video is streaming as shown



Conclusion:

The project “Implementation of web cam server using Raspberry pi” is successfully tested and implemented. The monitoring system based on the embedded platform has advantages of small size, longer work time and stable performance. It is widely recognized and becoming the main flush of network remote monitoring system.

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