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Smart Interactive Advertising Board Using Raspberry Pi

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Abstract: *The implementation of controlling system for the multimedia content on multiple Raspberry PI platforms in this project the android mobile or the computer in which the web page is made by using PHP language is used to type the data which the user has to advertise. The data from the android mobile is transferred to the raspberry pi chip then from the chip the data will be displayed on the display. The storage of the user or the data related to the user is stored in the SD card Here the mobile phone is very important element because the message or the advertising is written in it. The information or the notice is given to the raspberry PI kit by using the Wi-Fi in between the android phone and the kit. This project is to display the advertising from long distance by using the Wi-Fi connection to the raspberry PI kit. The webpage is made by using the PHP language the advantage of this is that we can use one code for a web page in PC and in android mobile. The purpose of the system is to implement a cheap solution for upgrading an existing video advertising solution to that can display content according to local conditions Server with the purpose of controlling the content that will be sent to the clients or multiple Clients that control the local multimedia content. Commands and responses sent by the two subsystems through the network which are encrypted using the AES cipher.*

Keywords: *Raspberry Pi, PHP, PAYTHAN, HDMI, VGA.*

I. INTRODUCTION

Mobile Phones and the related technologies are becoming more and more universal. Various technical arenas in the plat of Telecommunication and Embedded Systems have come very near to the common people. The number of folk with cell phones is on the rise. A day will come, somewhere in the snug future, when a mobile phone is referred in the same class of meat, clothes, and asylum. Development of the Networking technologies has fostered the growth of very intensive networks. Landline phones have been becoming less and less popular and people now prefer communicating while on the ruse. A distant Control is perhaps the most popular gadget today. Right from the intense creativity of distantly controlling laser chip marker to the highly destructive remotely ignitable bombs, from the pins to the airplane remote control is not only take up an Omnipresence state, but is also enhancing its scope and domains. When people have a good valency at their order, with the tremendous power of mobile computing to supplement the same, we think of connecting their home instruments to a mobile phone in wireless connection. With this, people would be able to turn on or off and control the devices at their home even from a remote place. One of the very basic examples of a utility of this is switching on the air conditioner in the room just for some time before reaching home, so that the room is sufficiently cool by this. The usefulness of a long range remote control to home appliances has no limits. A chassis facilitating such a thing would be to connect the home appliances to a micro controller interfaced to a GSM modem that obtains the controls from the user that means of transferring signals to the devices being a mobile phone. This project is an execution of the volition of the wireless communication between a mobile phone and a Raspberry Pi with the help of which we are going to display the notice on the notice board. We are going to use a Wi-Fi module to send the notice to display on display. The range of communication is large.

The execution of controlling system for the multimedia acquiescent on multiple Raspberry PI platforms. The reason for the system is to implement a cheap solution for updating a current video advertising is a solution to a smart solution that can display content according to local conditions. A software system designed in Java has two components- a Server with the intention of controlling the content that will be sent to the clients or multiple Clients that control local multimedia content for each client running on Raspberry PI. Commands and reactions sent by the two subsystems through the networks are encrypted using the AES cipher.

In this project, the android mobile is used to type the data which the user has to advertise. The data from the android mobile is transferred to the raspberry pi chip then from the chip the data will be displayed on the display. The storage of the user or the data related to the user is stored in the SD card Here the mobile phone is very important element because the message or the advertising is written in it. The information or the notice is given to the raspberry PI kit by using the Wi-Fi in between android phone and the kit

In the block diagram, there is raspberry pi kit to which the Wi-Fi is connected. The HDMI to VGA converter is used to convert HDMI video to display on the LCD display the power supply used for raspberry pi is less than 2 Amp. Another display or the smart phone is used to make the webpage using PHP language when the user put the IP address of the corresponding system then the webpage is displayed in that one text box is present in that the user has to write the command for video or the image according to the MySQL table then click on submit button then video or the image is displayed on the display.

II. OBJECTIVE

The objective of my project is to display the advertising from long distance by using the Wi-Fi connection to the raspberry pi kit.

1. We are using the Wi-Fi module to send message or advertise to long distance
2. Here we are using the PHP language to design a webpage, therefore, it can be used in smart phone or desktop.
3. In raspberry Pi, there is a presence of SD card to store the data of the user.

III. BLOCK DIAGRAM

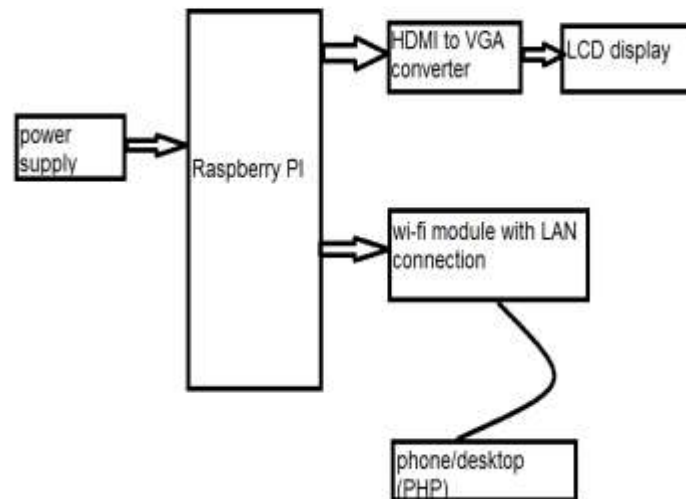


Figure1: Block Diagram of SIAB Using Raspberry pi

Raspberry Pi

The Raspberry pi [6] is a mini computer which is implemented on a single board with all the necessary components required for running an operating system. The board has a micro USB port which is used to supply 5V DC using an adaptor with rating not less than 1 A. The board can be powered up from the USB port but it is not recommended. The board has an HDMI port which can be used to connect it to the HDTV using an HDMI cable. The video input port is also available with a Raspberry pi board which can be used to attach an external camera. The board can also be attached to the PC monitor using an HDMI to VGA adaptor cable. The Raspberry pi board has an agglutinate RCA (PAL and NTSC) output which enables them to be connected directly to CRT TV screens and an audio output is also provided. The board has two USB2 ports where the keyboard and mouse can be plugged in. There is an Ethernet port which is used to connect the board to a computer network. The board also has an SD card slot and the Raspberry pi is implemented to boot from the SD card. The device using Broad com controller chip which is a System on Chip (SOC). This controller has all the fringe like timers, interrupt controller, GPIO, USB, PCM / I2S, DMA, SPI0, SPI1, SPI2, PWM, UART0, and UART1. This SoC has the powerful ARM11 processor which operates on 700 MHz at its core. The controller has a graphical processing unit (GPU) which includes Video Core, MPEG-2 and MPEG-4 it also has a 512 MB SDRAM. The operating systems versions of Windows, Mac, and Linux are existing which can be placed in the Raspberry pi board.

It is a single nano computer card ARM processor designed by David Braben video games as a division of its foundation "Raspberry pi". The following photo presents the Raspberry pi card

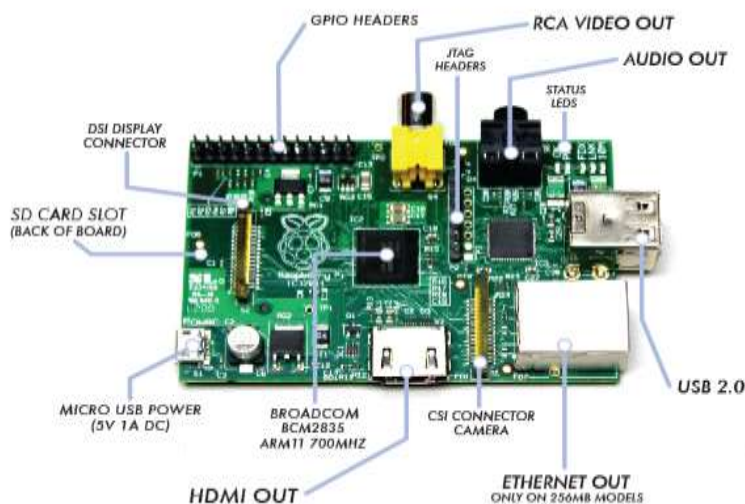


Figure 2: Raspberry Pi

The raspberry pi is a low cost, low power credit size single board computer which has recently become very popular. The raspberry pi is the cheapest ARM11 powered Linux operating system capable single board computer board. This board runs an ARM11 microcontroller @700MHz and comes with a 512 Mega Bytes of RAM memory. In this paper, raspberry pi B+ model is used as shown in figure 2, as this model has better specifications as compared to other raspberry pi models. It will anchor a number of operating systems including a Debian-rooted Linux distro and Raspbian which is recommended by the raspberry pi foundation, which is used in our contemplated. Raspberry Pi can be attached to a local area network through Ethernet tow or USB Wi-Fi adapter, and then it can be accessed by more than one client from anywhere in the world through SSH remote login or by putty software by just putting raspberry pi ip address in it. The raspberry pi is booted by external SD or micro SD card.

We now need to choose from the variety of operating systems that are available to install raspberry pi. For the purpose of my project, I am going to use the operating system called Raspbian. There are so many reasons for choosing this over another operating system that is as follows:

1. Raspbian has a desktop environment similar to Windows Mac called LXDE and it gives an easy transition for those not familiar with Linux command line.
2. It is pre-installed with software that will helpful for writing code for the Raspberry Pi and Arduino. It also includes other software that you may be interested in exploring that has an educational bent.
3. The operating system has been stiff to run on the raspberry Pi. The code compilation is optimized for on chip floating calculations (hard float) rather than slower software based method.
4. There is prevalent community support for the operating system, meaning that as you move forward with projects beyond there will be plenty of modalities as well as help available to you.

The most popular operating system for the Rasp Pi is certainly Raspbian, a custom version of Debian GNU/Linux especially stiff for the mini-computer. Debian is widely used in server systems and it forms the substratum for several popular desktop distributions, such as Ubuntu. Gratitude to the 35,000 packages in the Debian exchequer, the user can draw on a gigantic amount of free software. Raspbian is available in two species: hard float and soft float. The disagreement between these variants has to do with how the system curb floating point numbers. The hard float form is much fastest, so you will likely prefer it in almost all cases. However, if you wish to use the Java VM from Oracle, you must use the soft float image. If you program in Java, or if you plan to run applications inscribed in Java, you might lack the soft float edition.

After booting, Raspbian directly starts the raspi-config tool that lets you customize key settings, such as the parole and time zone in a short menu. Here, you can also select whether to boot to the lean LXDE graphical desktop at boot time. The user interfaces and Start menu of the graphic desktop help unknown person immediately find important programs: Thanks to the nimble Web Kit engine, the Midori browser lets you surf the web at fast speeds the visual evolution environment Scratch is also preinstalled.

Python Language

Python is a mostly consumed general-purpose, high-level programming language Its design philosophy emphasizes code readability and its syntax assent programmers to manifest concepts in fewer lines of code than would be possible in languages such as C++ or Java. The language procures constructs intended to enable clear programs on both a small and large scale. Python espouses multiple programming paradigms, including object-oriented, imperative and functional programming or procedural styles and it features a dynamic type system and automatic memory management and has a large and comprehensive standard library. Python translator is available for installation on many operating systems, allowing Python code praxis on a huge variety of systems. Using third-party instruments, such as Py2exe or Pyinstaller, Python code can be involved into separate executable programs for some of the most popular operating systems, allowing the distribution of Python rooted software for use utiliation on those environments without requiring the installation of a Python interpreter.

CPython, the context execution of Python, is free and open-source software and has a community-based development model, as do closely all of its alternative executions. CPython is managed by the non-profit Python Software Foundation.

Python is high-level, illustrate and object oriented scripting language. Python is designed to be highly readable. It uses English keywords oftenly where as other languages used the punctuation, and it has fewer syntactical constructions than other languages.

1. Python is translator language: Python is processed at a run time by the interpreter. You do not need to compile your program before complying it. This is similar to PERL and PHP.
2. Python is Interactive: You can actually sit at a Python propel and interact with the interpreter directly to write your programs.
3. Python is Object-Oriented: Python espouses Object-Oriented style or technique of programming that encapsulates code within objects.
4. Python is a Beginner's Language: Python is a numerous language for the beginner-level programmers and supports the development of a wide range of consumption from simple text technology to WWW browsers to games.

IV.FLOW CHART

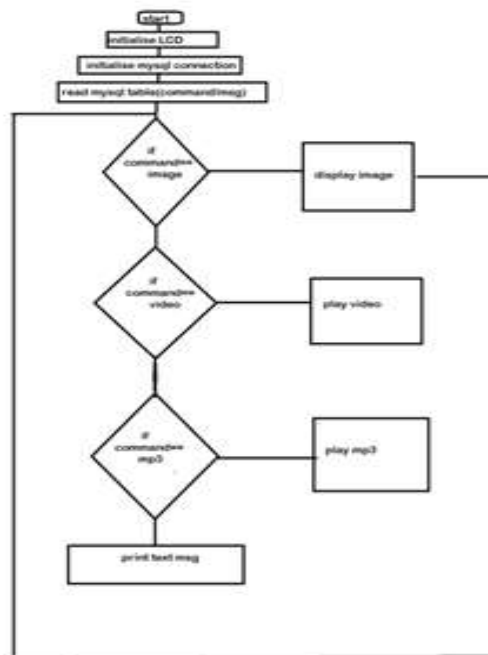


Figure 3: Flow Chart Of Siab Using Raspberry Pi

V. EXPERIMENTAL SETUP



Image 1.Experimental Setup of SIAB Using Raspberry pi

VI. RESULT

1. The webpage is made by using PHP language it will be displayed on the smart phone or desktop when ip address is entered

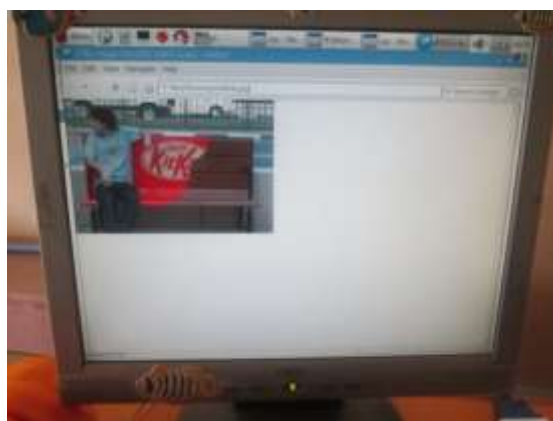


2. When we enter the command for video, audio, image as saved in the MySQL table then it will display on the LCD display through raspberry pi by using wi-fi.

Output Video of the Dairy Milk Advertise



Optput Image



3. The data of the user is saved in the SD card of raspberry pi

VII. CONCLUSION

The smart interactive advertising board is successfully implemented by using the raspberry Pi and Wi-Fi module to overcome the distance or the range problem to send the advertise. The system will be useful for reducing total in-store printing expenses, reduce manpower, boost return on investment, and increase customer satisfaction and it is user friendly

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