

A SMARTPHONE USING RASPBERRY PI

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ABSTRACT

In 21st century everyone uses smart-phone. For example, we can read the news, play games, listen to music or watch a movie. Having a Smartphone makes it much more easy to check your email, social media or even your bank account while on the go. But there are also limitation of Smart phone because we cannot connect directly connect a USB or Ethernet cable with our phone and other multiple devices. So we add some applications of laptop in phone. so it is easy to carry only phone rather than carrying laptop.

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INTRODUCTION

Nowadays research is going on smart phone that adding extra features and makes it smarter. Actually every time we need computer for program execution and simulation, it is not easy to carry laptop everywhere easily because it is heavy as compare to Smartphone if we make such a Smartphone which is called pi-phone in that we installed such a software which is available on laptop. In this Raspberry pi Mobile phone project, we used GSM module and Raspberry pi to control whole system's features and interfacing all the components in this system.

Hardware Specification

1. Raspberry pi 3 model B.
2. GSM Module- SIM900A.
3. TFT Screen-5' inch HDMI display
4. MIC -47dBV sensitivity.
5. CMOS camera with 5 megapixel.
7. Speaker -4to 8ohm.
8. HDMI- upto 1920x1200 resolution.

Software Specification

1. Operating system used: Raspbian
2. Programming language:Python.

Block Diagram

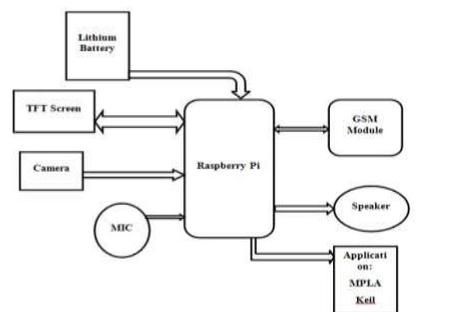


Fig 1 Block Diagram

Block Diagram Description

The Raspberry Pi is a low cost, credit-card sized computer that plugs into a computer or TV, and uses a standard keyboard and mouse. An SD card inserted into the slot on the board acts as the hard drive for the Raspberry Pi. It is powered by USB and the video output can be hooked up to a traditional RCA TV set, a more modern monitor, or even a TV using the HDMI port.

The Raspberry Pi has the ability to interact with the GSM.

Working

When a mobile phone is switched on, its radio receiver finds a nearby mobile phone network base station, and its transmitter sends a request for service.

In this project, we used power supply which is given to the GSM. In GSM we inserted the SIM. After that GSM will search the network for doing the operation like calling, SMS etc.

Then GSM send the signal to Raspberry Pi and then we gives the commands to Raspberry Pi for calling and camera capture

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image or SMS. Capture image will stores in the file of raspberry Pi. In this we used Python language for performed the operations. And we perform the computer operation like presentations; searching. A TFT is 0etc. In this we use python language. GSM Module SIM900A is used to communicate with the networking for calling and messaging

Make A Call

To make a call by using Raspberry Pi based Phone, we press 'C' and then need to enter the Mobile Number on which we want to make a call. Number will be entered by using alphanumeric keypad. After entering the number we again need to press 'C'. Now Raspberry Pi will process for connecting the call to the entered number by using AT command:

```
ATD8698000943; <Enter>
```

Receive A Call

When someone is calling to your system SIM number, which is there in GSM Module, then your system will show 'Incoming...' message over the LCD with incoming number of caller. Now we just need to Press 'A' to attend this call. When we press 'A', Raspberry Pi will send given command to GSM Module:

```
ATA <enter>
```

Camera Capture

When capturing image from camera we gives commands to raspberry pi :

```
<Cd camera.py>
```

Raspberry Pi 3

Raspberry Pi 3 is a low cost, credit-card sized computer that plugs into a computer monitor or TV, and uses a standard keyboard and mouse. It has 256/512 MB SDRAM.

Tft Screen

This 5 inch TFT Display with Touch Screen is a mini panel-mountable HDMI monitor. So small and simple, but we can use this display with any computer that has HDMI output.

Mic

In this we used -47 dBV sensitivity MIC. It is used to when we dial a number or make a call then it will decode our speaking sound. The Model C-ML is an omni-directional, low impedance, electrets condenser microphone with level audio. Normal pick-up pattern is approximately 15' from the microphone location, all directions, or within 30' diameter circle.

Gsm Module

A GSM900A modem is a specialized type of modem which accepts a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone.

Speaker

-4to8 ohm Speakers on mobile phones are used to produce sound alerts for events such as incoming calls, incoming

messages and alarms. It is used to decode the data when we will receive the call.

Camera

It raspberry pi camera board plugs directly into the CSI connector on the raspberry pi. Its able to deliver a crystal clear 5MP resolution image or 108p HD video recording at 30fps. The sensor has a resolution of 5megapixel and has fixed focus lens on board.

Advantages

1. Calling and sms: This is the fist functionality to be implemented, and will be considered crucial in the development.
2. All the basics apps: alarm clock, calendar, calculator, phonebook, file, browser, web browser and music player.
3. Running linux software-since it's a computer after all.you can run ARM compatible linux program on it.
4. Security and privacy: one of the feature that isn't typically provided but can mean anything from something simply bringing peace of mind to a matter of life and death.

Disadvantages

1. It does not have hard disk associated with it for permanent storage pdf files, we have to connect one externally or have to use SD card for the purpose.
2. It has only 1Gb RAM.

RESULT

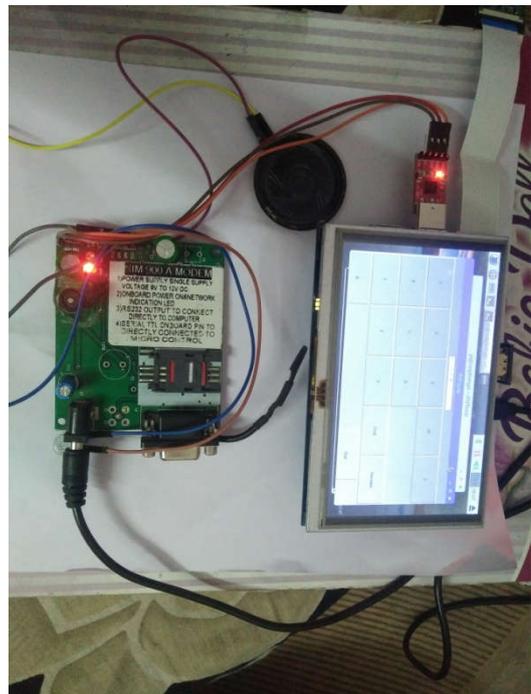


Fig 2 Snapshot of Smartphone Using Raspberry Pi

CONCLUSION

Raspberry Pi can be used to perform different task. In this project we studied there is no need to carrying laptop other than carrying Smartphone becomes easier. This is possible only when we used Raspberry Pi.

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