

A TEXT READER FOR THE VISUALLY IMPAIRED USING RASPBERRY PI

Submitted in partial fulfillment of the requirements for the award of Bachelor of Engineering

Degree in Electronics and Communication Engineering

by

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**DEPARTMENT OF ELECTRONICS AND COMMUNICATION
ENGINEERING**

SCHOOL OF ELECTRICAL AND ELECTRONICS ENGINEERING

SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY (DEEMED TO BE UNIVERSITY)

Accredited with Grade “A” by NAAC

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MARCH 2021



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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of KOLLA DURGA NAGA SAI (37130201) who carried out the project entitled “**A TEXT READER FOR THE VISUALLY IMPAIRED USING RASPBERRY PI**” under our supervision from September 2020 to March 2021.

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DECLARATION

We, **KOLLA DURGA NAGA SAI (37130201)** hereby declare that the Project Report entitled “**A TEXT READER FOR THE VISUALLY IMPAIRED USING RASPBERRY PI**” done by us under the guidance of **DR.M.SUMATHI** is submitted in partial fulfillment of the requirements for the award of Bachelor of Engineering degree in Electronics and Communication Engineering.

1)

2)

DATE:

PLACE:

SIGNATURE OF THE CANDIDATES

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We convey our thanks to **Dr. N. M. Nandhitha, M.E, Ph.D**, Dean, School of Electrical and Electronics and **Dr. T Ravi, M.E. Ph.D**, Head of the Department, Dept. of Electronics and Communication Engineering for providing us necessary support and details at the right time during the progressive reviews.

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ABSTRACT:

Optical Character Recognition (OCR) is a subset of artificial intelligence and is a subset of computer vision. Optical Character Recognition (OCR) is the use of Raspberry Pi to convert scanned bitmap images of handwritten or written text into audio performance. OCRs designed for a variety of world languages are now in use. In this method the context subtraction method based on the Gaussian mixture is used to recover the area of the moving object. For text content, the function of text localization and recognition is used. The text localization algorithm and the Tesract algorithm and edge pixel distributions based on the gradient properties of the stroke directions were used to automatically translate text areas from the object in the Ada enhancement model. In the translated text areas text characters are converted to binaries, which OCR software understands. For the blind, known text symbols are strongly pronounced. The potential of the algorithm for the proposed text location. The text file describes the character codes using the Raspberry system, which recognises the characters by using Tesract's and Python, and the audio output is heard in the recognition step.

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CHAPTER 1

INTRODUCTION

Code systems are increasingly needed to recognise ADPS' characters when scanning data in paper records because we know a wide variety of newspapers and books are available in the operating environment. There is currently a high demand for "accessible storage of these paper plates on hardware disks and subsequent reuse of these materials through the research process". One easy way of receiving information from these ADPS documentation is to first read it and then save it as photos. However, re-processing these data by revising certain content and by examining the content of these records is very difficult on a line-by-line basis. The font for font in paper documents is completely different from the font for font in ADPS, which explains the problem. As a result, the computer cannot recognize the letters while reading. The recording method refers to the concept of placing the contents of the paper on the equipment and then reading and viewing the material. In general we want to streamline information on non-English citizens' languages all over the world in this paper-based phase. We need a code called for this paper process is CHARACTER RECOGNITION SYSTEM. Document Image Analysis Another name for this technology (DIA).

Our goal is therefore to generate a document analysis Character Recognition Code that converts documents from paper to electronic format. Various methods are used by this approach worldwide. We chose OCR as the primary method to identify letters from all of them. The conversion of paper records into electronic formats is a constant challenge for many organisations, especially R&D, large companies and government agencies. Add the importance of optical character identifying images on portable electronic

devices as a facial recognition and validation site, such as mobile phones and digital cameras, on the basis of our argument of refusal.

We have a tendency to use information in grid formatting to effectively use OCR for character recognition to manage DIA. This approach has been very successful and useful in designing and developing a virtual digital library.

CHAPTER 2

LITERATURE REVIEW

The thesis can be an integral form of system-wide research and design. The study starts with a classification of the problem definition. The importance of doing anything is determined by its practicality. The observer creates a conceptual model of the method after creating the negative consent description. The search for solutions is thoroughly investigated. In practical application analysis, there are three components.

ABILITY TO PRACTICE IN TECHNICAL FIELDS

The most difficult aspect of evaluating a practical application is the evaluation of a technical practical application. Often this is due to a lack of precise design of the current system, which makes it difficult to come to terms with issues such as capacity, cost (due to the type of hardware to be implemented). When conducting a technical review, several issues need to be considered. Understanding the Different Techniques in the Proposed Framework Before embarking on a project, we need to be very specific about the technologies required to develop a new system. Check if the company already has the required technology. Is the technology available to the company?

The proposed project will be beneficial as it develops into data structures that can meet the operational needs of operational organizations. Simply put, this practical application questions how the test system works after being built and implemented. Are there significant obstacles to implementation? Here are several questions that will help you determine if a counseling activity is possible:

Is there convenient management and customer assistance for the project?

The current setting is very popular and preferred but there may be opposition if people cannot find arguments for change.

Is the customer satisfied with the current market strategies? If not, consumers will welcome the change, which will lead to a large number of useful operating systems.

Does the client participate in the development and delivery of the project?

Early intervention reduces the opposition to the organisation and, more generally, increases the probability of a successful initiative.

The current operating method is considered because it is a system that helps to reduce the difficulties faced by the current manual system.

ABILITY TO PRACTICE FROM A FINANCIAL PERSPECTIVE

Attempts to balance the financial feasibility of designing and introducing new framework against the benefits of installing a new system. The financial justification for the new structure will be submitted to the highest management through this feasibility report. In this context, a general financial analysis that provides a fixed price and margin comparison is even more important. In addition, as the project progresses, it appears to be a useful tool for comparing actual costs. As a result of automation, there can be a wide variety of unfinished benefits. It increases customer loyalty, improves output consistency, improves data punctuality, makes tasks faster, processes more accurate, better reporting and record keeping, faster data retrieval, and improves employee confidence.

Training An important factor in using a neural network is its training. Two types of training can be used in neural networks as shown in linear networks.

They are:

1. Training without supervision
2. Training in supervision

TRAINING IN SUPERVISION

Receives neural network training sets in addition to expected support from supervised training. The neural network receives training sets from unattended training, but performance is not provided.

TRAINING WITHOUT SUPERVISION

For cochlear neural networks, unsupervised training may be the standard training method. We will discuss how to create a cochlear neural network and how to develop a general approach to education instead of management.

Routing rather than management refers to the neural network provided to the training sets, which are specific input value ranges. On the other hand, an unnoticed neural network does not receive the expected output.

In the neural classification network, unsupervised training is often used. Input models are provided for input neurons in a taxonomic neural network. These input samples are then analyzed and, in the output sheet, a plant cell is burned. This fiery plant cell is considered to belong to the neuronal input sequence block. Using a neural classification network for handwriting recognition can help.

The bullet point representation of the handwritten letter is used as the input model for the Kohonen neural network. We then have twenty-six resultant neurons, which lead to the twenty-six letters of the English alphabet. The input

model can be classified as one of twenty-six input models by the Kohonen neural network.

Cohonen Neural Network at WrThe training process is often provided with the introduction of twenty-six models. The grid is designed to support twenty-six performance modes. The weights are adjusted after being taught by the Kohonen neural network so that the input patterns can be classified into twenty-six resultant neurons. This technique contributes to a relatively accurate character recognition process.

Data mining is another popular application for unnoticed training. In this scenario, you have a large amount of data, but you are not sure what to look for. Neural network You want to divide this information into several categories. You do not have to tell the neural network beforehand that the input pattern can be classified as a block. When training for neural network input models, corresponding bands are created. This allows you to see if feedback trends are the same on different teams.

SUPERVISORY TRAINING

Training sets are performed in a controlled training manner, similar to an unobserved training method. These workouts, including unexpected training, identify input signals for the neural network.

The major difference between supervised and unattractive training is that supervised education determines the results that are expected. The load matrix can be managed by a rules-controlled training Algorithm, while keeping the distinction between the neural network and output.

Supervised instructions are used with different standard training algorithms. The basis of the reverse propagation algorithm is mostly used. You can use a basic algorithm, such as a virtual strengthening or a genetic algorithm, to apply controlled training.

NEURAL NETWORK PREPARATION FOR THE KOHONEN PHASE

The neural rear grid is very different from the neural cochlear grid. In the adjustment and remembrance of patterns the neural network of Kohonen is different than the others. The neural network of Kohonen functions without activation. In addition, in the neural Kohonen network there is no weight bias.

Many neurons are not involved in the processing of the cochlear neural network. One of the outcoming neurons is selected as the 'winner' following a sample to the Kohonen network. This "winning" neuron is part of the Network of Kohonen. In most cases, these "winning" neurons reflect the difference of cohort network knowledge. Twenty-six output neurons, for example, twenty-six output neurons in the OCR Associate's degree program, translate input patterns through twenty-six Latin letters.

The major difference between cochlear neural and posterior neural networks is the unattended arrangement of the cochlear neural network. This means, but not the quality of this information, that the Kohön network acquired knowledge. This data is managed in groups and the Kohonen network has been abused. By examining the training process, we start our analysis of the Kohonen Network.

The limitations of the Kohonen neural network must also be understood. Only two-layer neural networks can solve separable problems. An example of this is the Kohonen Network. Neural kohone networks are used because

it is an easy to create and rarely teach network.

The neural network "feed forward" is similar to the neural network categories we are exploring. The forward neural network, like other types of neural networks, begins with a degree of insertion. Entries to this layer must be associated with a secret layer. Most neural networks have a single secret layer in common use.

There are more than two opaque layers in the neural network. We will now examine Forward Neural Network Mapping in detail.

FUTURE NEUROTROPHIC NETWORK STRUCTURE

The future neural network differs from the previously studied neural networks. A standard, single secret layer, automatic neural network as shown in Fig.2.1.

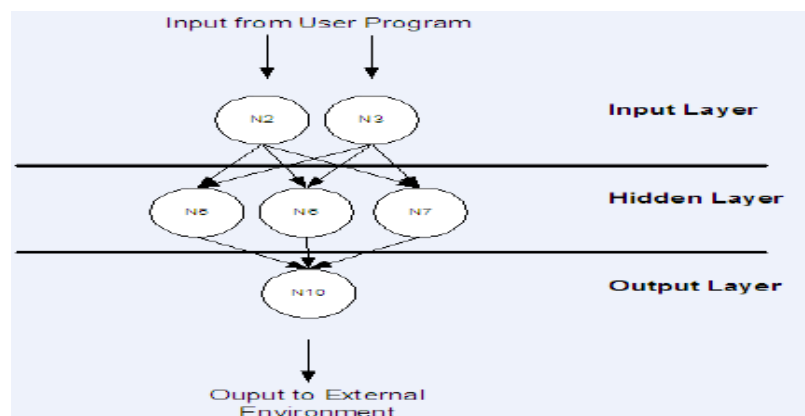


Fig 2.1 Feed Forward Neural Network

THE INPUT LAYER

The external environment of the neural network is the layer that provides a template in the behavioural neural network. After submitting a sample to the neural network input layer, the output layer creates another pattern. In essence, a neural network can only do so much. The tendency to specify the area unit of the neural network should be represented in the input layer when we have it. An experimental variable that controls the function of the

neural network should be introduced into each neuron. It is important to note that floating point numbers

are neural network entries. The type defined by the "double" Java primitive is used to give these values. Do not claim to use a neural network only to process digital data. If you want to process non-digital types of data, you need to create a process that converts data into digital representation.

PRODUCT LAYER

The neural network output layer shows the trend to the outside world. The output layer copies each pattern back to the input layer immediately. The amount of neurons produced should be proportionate to the neural network's performance.

Consider how many neurons to use in the output layer the use of the neural network. When using a neural network to divide items into classes, it is a good idea to provide an output neuron for each class assigned to the object. The amount of input neurons may be equal to the number of the resulting neurons, when noise is decreased on the neural network symbol. The models leave the neural network as they are entered in this case. We start with the input layer in order to find out how many neurons are used in the OCR state. An input neuron is the number of pixels which any character is able to use. Optical Character Recognition software comes with a virtual training file that is qualified to recognize twenty-six characters. There are twenty-six neurons in the neural network produced as a result of this coil injury. The introduction of a pattern on the input neuron excites an acceptable output neuron that matches the Letter corresponding to the input pattern.

CHAPTER-3

SCOPE AND EXISTING AND PROPOSED SYSTEM AND REQUIREMENTS

SCOPE

The scope of our offer is that OCR's mission on network infrastructure is to provide users with a cost-effective and more robust computer coding tool for document image review, document processing and a wide range of research, character recognition in government and commercial organizations. Images captured and scanned. Regarden, objects may identify, search and process them according to the size of the records or the number of characters within them.

CURRENT SYSTEM

In today's environment, there is a growing demand for consumers to move paper records to electronic documents to protect their privacy. As a result, the base OCR system was invented to translate marketable materials from paper into computer records into place records, making them editable and reusable. In network service, OCR's current / previous scheme is actually optical character recognition, which is not a practical application of the network. That is, the current scheme is to identify international characters or letters in a language.

SEE CURRENT SYSTEM

The downside of early OCR software is that documents written in English or a specific language can only be converted and recognised. The old system of OCR is monolingual in other words.

PROPOSED SYSTEM

The solution we suggest is the Network Infrastructure Optical Character Recognition (OCR) system, which can be used to identify characters in different language. This function is called a Rule Grid Infrastructure

because it avoids the problem of different recognition characters and allows various functions to be

carried out in the text. As written text contents remain in the current layout, different features provide written material and search everywhere. Network infrastructure, in this sense, refers to a system that provides a set of languages. As a result, OCR is multilingual on network infrastructure.

THE BENEFITS OF THE SYSTEM OUTWEIGH THE BENEFITS

The disadvantage of the layout is that it supports various functions such as written content and viewing, which outweighs the disadvantages of the current system. It provides value by allowing different character recognition.

Estimated system geometry

The three main elements of the OCR method on network infrastructure are shown in Figure 3.1.

And they are as follows:

- Scanner - OCR hardware or software - Output interface

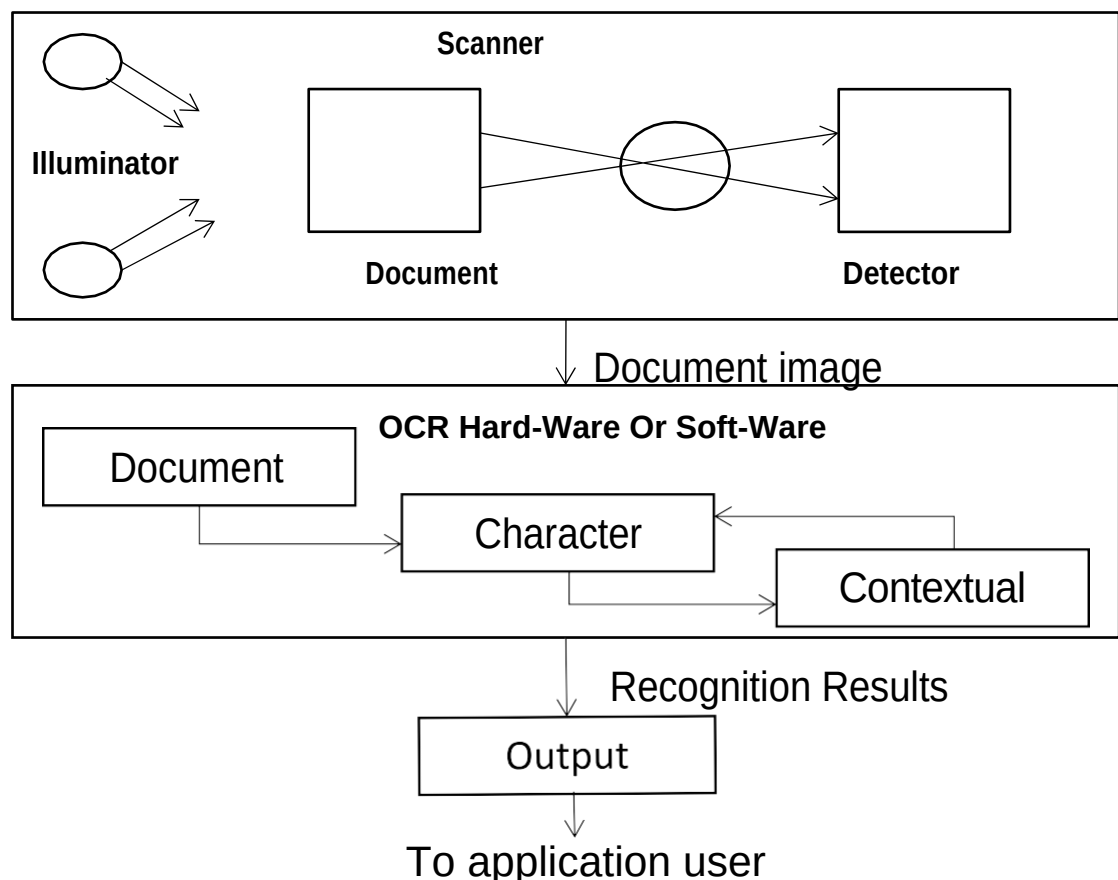


Fig 3.1 OCR Architecture

INTENDED AUDIENCE AND READING SUGGESTIONS

In this section we identify members of the public who are directly or indirectly interested in the product and who are involved. In our research, the OCR method in a wide range of research organisations, legislatures and large business organisations is particularly useful in research and development. Consequently, as an audience of many interested in the application of the OCR system, we have a tendency to define the following:

- In telecommunications organizations, physicists, research students, and analytical colleagues are interested in processing the OCR method word document containing the basic paper for its analysis. The library uses the OCR framework to convert the contents of old book data to create a virtual digital library. Many e-book selling platforms have high requirements for this OCR device to read all books and convert them to electronic format for revenue. The book world of Amazon promotes this concept for the construction of interactive libraries.

We now offer customers or customers reading suggestions to enable them to better understand the various product stages. These recommendations may be helpful and beneficial to newcomer customers, in contrast to current customers such as research students, librarians and website administrators. With these tips, consumers do not have to spend time scrolling up and down the papers, browsing the web, visiting bookstores for different books, and so on. Here are various reading tips that users can use to gain a comprehensive understanding of our product and save time: - A good place to start is with Wikipedia.com. This will help you to understand the basic concept of each keyword you need. To begin with, what is OCR? How does it work with network infrastructure?

You are now continuing to read an introduction to our product used in our documentation. These two steps give you an extensive overview of how our product is used and a number of other related actions.

Fulfillment is something you all want. To do so, go to FreeOCR.com and read our sample OCR business before giving a shot.

There are still traditional methods like problem statement braille, which require the blind to follow and understand the text, which can be time consuming and inconvenient.

Current OCR systems are useless because they are not automated and have fully functional computers.

Reader Mobile is a mobile application that helps users to read mail, receipts, flyers and many other papers.

HARDWARE REQUIREMENTS

- Camera,
- GSM,
- Raspberry Pi,
- Ultrasonic Sensor,
- GPS,
- Headset
- Vibration Motor,

SOFTWARE REQUIREMENTS

- Python
- Raspbian OS
- Tesseract OCR
- Open CV

CHAPTER 4

MATERIALS AND METHODS

4.1 LABEL DETECTION SYSTEM WITH FOCUS-BASED AUDIO OUTPUT

The camera-based text scanning frame helps the blind to understand text etiquette and handheld product packaging everyday. In order to determine the area of interest (ROI) of a video, we propose a cheap and effective motion based technique by telling the viewer to move the object from cluttered backgrounds or from other nearby objects for camera reading. The ROI collected to collect text details was used for locating and identifying text. By learning gradient options for the stroke direction and gradient distribution of edge pixels in the Adabust model to mechanically locate text zones from the ROI subject, we offer a completely unique text location rule. Binary conversion and identification of text characters in translated text areas is then performed using ready-to-wear optical character recognition tools. Recognized text symbols are pronounced strongly for the blind.

PRETREATMENT AND PHOTO CAPTURE

The footage was filmed with a malicious webcam and the frames were separated from the video and processed separately. First, get everyday objects from the camera and customize them for the process. After removing the worries content from the camera file, it will turn into a gray image. To determine the character of the subject, use the Hor Cascade. Training and introduction to working in a sequencing workbook are two main steps. I would like a sample list for training. True and negative models are two types of models.

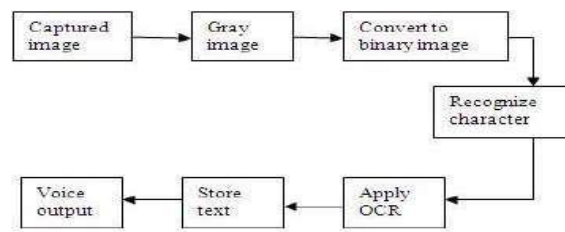


Fig. 4.1 IMAGE CAPTURING AND PRE-PROCESSING

Users move hand-held objects containing the text that they need to distinguish interesting content from other elements in the camera, then use motion-based technology to locate items in the chaotic context, as shown in Figure 4.1.

EXTRACTING TEXT

In order to find text options to address specific themes in stroke commands and edge distributions, two innovative functional maps helped. The stroke is described as an ongoing, small area of importance. A working book on Adapust is developed when these work maps are combined.

TEXT LOCALIZATION BY REGION

The camera-based image is then used to perform text localization. Cascade-Adabost taxonomy verifies that the image patch contains text details but not the whole image, and experimental architectural analysis is used to collect candidate image corrections that can be used to classify the text. Text data in the image appears as horizontal text strings of no more than three characters.

VOICE OUTPUT AND TEXT RECOGNITION

Recognizes ready-to-wear OCR identification text to extract catchy words from translated text areas. The edge of the text area touches the sting boundaries of the text letters, indicating the smallest rectangular area to place the letters inside. This experience shows however that OCR generates high-performance text fields when using the right margin and binaries to distinguish text characters from contexts.

Script files are filled with acceptable symbols of text. Then download these files and listen to the voice quality of the text data using the Microsoft Speech Software Development Kit. Blind users can adjust their speech rate, speed and volume to suit their needs. Created to communicate easily with the same USB devices on most computer systems.

The LAN9512 / LAN9512i is built on two USB ports.

It has 0 hub, 2 USB downstream ports, co-grade built-in pop-up USB ports with 0PHVs. PHY of 10/100 LAN, 10/100 LAN controller, tap controller and EEPROM controller are included in the kit. Non-volatile storage is an automated non-volatile working medium that can wipe out and regenerate electricity. Earbuds have cable connections, such as a speaker, TV, CD player or mobile video player, or a Wireless Receiver that captures the signal without wired use. They can also use wireless connection.

The text written on the scanned objects will be scanned to help the blind in the proposed framework. To overcome the typical target problem faced by the blind, a motion-based strategy for seeing the object of interest is proposed in which the blind man moves the object for one or two seconds. In camera reading, this approach draws interest from the background or other artifacts. The AdaBoost study model is used to locate text in camera-based pictures. For the blind, OCR is used to recognise and convert word in localised text fields into voice output.

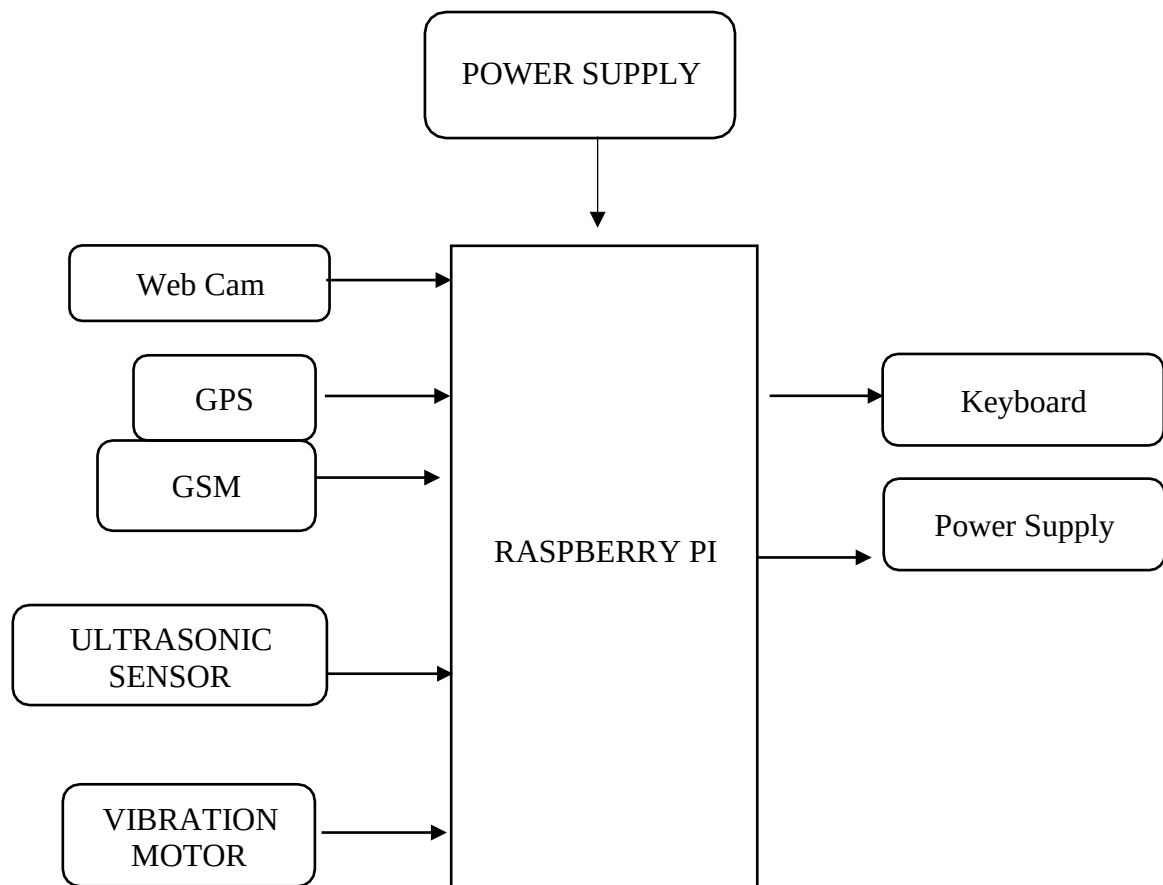
BLOCK DIAGRAM

For the purpose of helping the blind, we have developed an image blueprint that allows you to browse text written on handheld topics. To overcome the common problem of blind shooting, we created a motion-based method to view an interesting article in which the blind move the essay for a few seconds.

Algorithms and their steps for automatic ROI detection are designed to be unit tests to assess the effectiveness and appetite of the system of text localization.

Interview: Interview We like the evaluation of this image system for useful text readings of abusive images of handheld objects captured by 10 people, and we evaluate this image system from useful word- misreading images of handheld objects captured by ten-blind users. Since we are evaluating this film system for use in face-to-face instrumental testing, two settings were used. First, we usually instruct blind users to place handheld objects within the

period set by the camera. We used a reasonably small ANG camera because it was difficult for blind users to focus their controls.



We add finger intent detection and stacking to potential systems to guide blind users in targeting the post. Second, in the Blind Auxiliary Practical Scheme, the text localization algorithm program can opt for high retrieval at the cost of accuracy.

When our software first launches, it checks to see if it can access the hardware and services it needs. It then reviews the machine reference and provides maintenance to the customer. The following options are included in the GUI for the user. The image captured by the camera is displayed on the poster as a gift. The stand box is used to display the detected image details. The capture button is used to display image details. Using the view button, the person who transfers live video before the cameras is identified. This is the audio jack port output port. Installed peripherals such as USB, ADC and serial are included

with the Raspberry Pi. We normally install on this board the Unix package, which contains all the necessary drivers.

WORKING PRINCIPLE

The image of the objects in front of the screen can be captured through an internet connected via USB to the microcontroller when the capture button is pressed. The captured image is subject to OCR technology once the compression process has been determined. OCR technique allows the conversion to text or information that can be incorrectly perceived or modified in scanned images of text or symbols (such as a page of a book). The possibility to scan a document from a computer, which can then be modified via popular word processors such as Microsoft Word, is a very well-known example. However, OCR technology is part of a wider structure that requires identification capabilities such as quantitative plate recognition systems or many other applications such as tools that create opportunities for SALT development from print-based texts. We abuse the TESSERACT library on the OCR technology chart. Information from the abuse flight library is re-created in the form of audio files. After that the picture or painting of the goods logo is internally processed and the mark separated from the image by abusing the open CV library and eventually identifying the object. The image received is now recognised and converted with the Tesract library into text. After the famous La-Bell name is changed to an icon, the changed text appears on the console display. Currently, when using the flight library, text- to-speech can be used to hear the naming name as audio from earphones connected to the audio jack port.

RASPBERRY PI

OVERVIEW

Raspberry pie is still a very small concept in the country, and not many people know what it is. The raspberry pie is a computer of a coffee table, which connects to the computer or TV and uses an all-inclusive mouse and keyboard. It's a small computer, capable of

introducing individuals in Scratch or Python of all ages for coding and programming. A computer can do all it wants, such as watching HD screenshots and surfing the web, creating tablets, word processing and playing games. Collaborating with the Arduino is a lot of fun and you can do a lot with it.

EXPLORING THE BOARD ON RASPBERRY

Model A and Model B are the two available versions of the Raspberry Pi. The Model B has a few more advanced options than the Model A. The Model B has 512 MB RAM and two USB ports, while the Model A has only 256 MB RAM and one USB port. Also, Model B has a LAN port and Model A does not have a LAN port. The different elements of the upper area unit are classified in Figure 4-2 and each of the following sections contains a variable definition of the fraction. Figure 4.2 shows the reduction of the Model B. SD card slot on the raspberry

SD CARD SLOT

Since Raspberry Pi doesn't have a phone-like drive, the SD card is used for the installation of software while storing it. This card must be inserted into the wound site of the raspberry pie. A 2GB, 4GB or 16GB SD card is also available.

USB POWER MICRO

Since it does not have an onboard voltage regulator, the power port 5V must be a micro- USB input and the supply may be specifically 5V. As a result, the power supply does not reach 5 volts.

HDMI OUTPUT

This HDMI output port is used to connect to the display (high definition transmission interface) on the raspberry. As a result, every monitor or TV can be connected to an HDMI port.

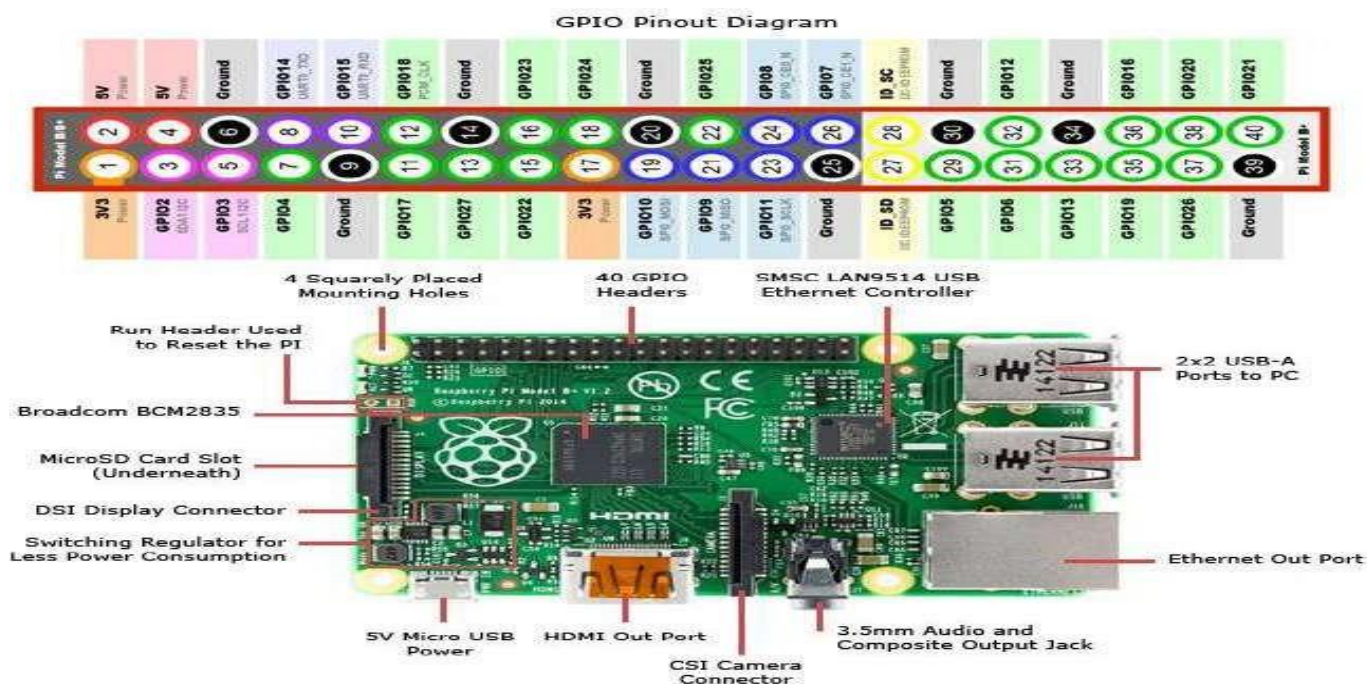


Fig 4.2 Raspberry Pi Model B

Ethernet and USB port

The LAN9512 chip is equipped with an Ethernet and a USB port in Model B. It has a 10/100 LAN interface with high-speed USB 2.0 hub (DONAT, 2014). USB ports for connecting input devices (keyboard, mouse). Nearly all connections via USB to the computer can also be connected to the top of the raspberry.

RCA VIDEO OUT AND AUDIO OUT

Recording Corporation of America stands for RCA. Audio and video in foreign countries RCA audio and video jacks are available on the ground for audio and video output.

The Raspberry Pi can support the audio from its HDMI output, although the USM microphones do not support or support it is also a standard 3.5mm audio jack to connect headphones. Video is sent to each RCA video unit connected with this RCA jack.

SUBTITLES GPIO (PINS)

Input / Output pins for a variety of purposes are the term "GPIO pins." These pins are used to attach the tops of the frame to different physical extensions.

Comes with pre-installed libraries on Raspberry, allowing North American users to access PINs using programming languages such as C, C ++ or Python.

SHIPPING (BROADCOM)

The broadcomp chip in the center of the board is the most important part of the raspberry pie. The chip features a 700MHz ARM11 processor and a Videocore 4 GPU that can overlock at least 800MHz without the need to drag.

RASPBERRY PI TWO MODEL B

Broadcom has announced a supercharged 900MHz laptop with a BCM2836 ARM Cortex-A7 quad-core processor, 1GB RAM and four USB ports for two more Model B on the Raspberry 4 recently. It is six times faster than B raspberry pie. It also has a built-in power control along with a 4-pole jack to connect stereo audio and composite video outputs.

RASPBERRY PI POWER REQUIRES HARDWARE DISPLAY

On the raspberry, as mentioned earlier in the theory section, a 5V power supply is required. If the supply voltage is higher than 5V, it may not work properly. As a result, the power supply must be at least 500 mA (mA) and preferably more than one ampere (A). Operation of the keyboard and mouse is required if the width is less than 500 mA. It is not advisable to run the laptop on the raspberry from the USB port or USB hub because they have such a small amount of current. As a result, the Raspberry Pi requires a micro-USB connection that can deliver at least 700 mA (or zero 7% amps) at 5V.

KEYWORD: STORAGE

In the raspberry pie, special hardware is required for storage. This is done with the Mount Rushmore state card, which is usually four GB but can be up to eight GB if needed. The operating system and all data are stored in the wallet. We can get a blank Mount Rushmore state card and load the OS ourselves or get an already loaded card.

DELIVERY

To give your raspberry top view, you need an external keyboard and mouse. To use the

keyboard and mouse, no additional software is required.

MONITOR

A computer or TV with HDMI or DVI inputs may be used as a screen for the raspberry pie. DVI converters from HDMI that are easily found in the market are required for DVI input. Raspberry up screen is important because it's the only way we know what we've achieved on it.

SHARED NETWORK

Raspberry Pi can browse the internet and network just like we browse on a laptop or tablet device. To do this, a less complicated option for wired LAN connections can be used or a Wi-Fi module for Raspberry connection to a Wi-Fi network.

DISPLAY UNIT FOR POWER

A computer or system that provides electrical or alternative power for a load or bloc of blocks is a power source (also known as a power supply unit or PSU). Figures f4.3 and 4.4 show how the ground is often extended to power supply, more often to mechanical supply and very rarely to others.

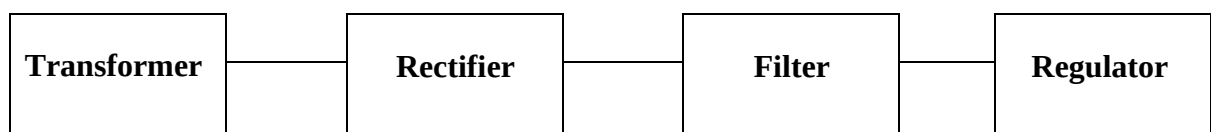


FIG 4.3 DIAGRAM OF POWER OFFER

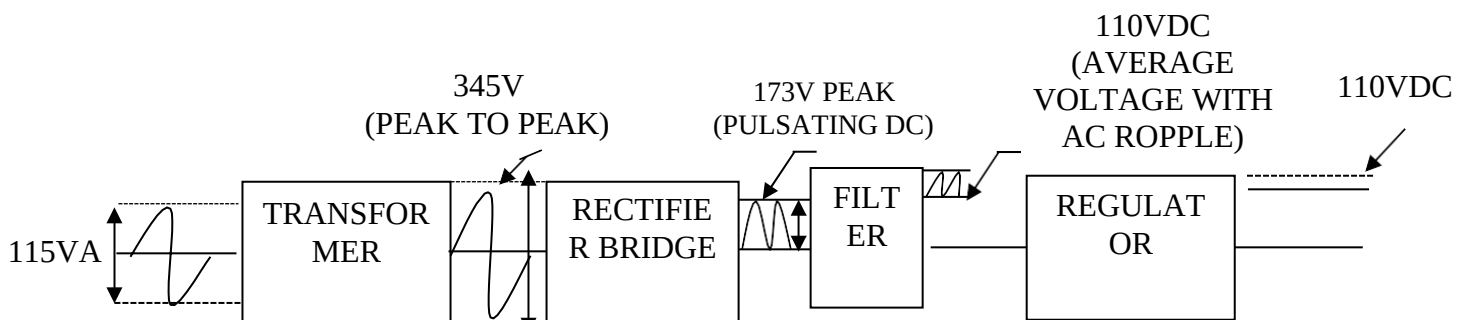


FIG 4.4 PROCESS OF POWER OFFER

The electrical interface separates the utility width from the facility line by increasing or decreasing the input line voltage. The correcting component converts the voltage signal into a rhythmic electrical amplitude. However, as you progress through this component, you will find that Rhythmic DC is not very interesting. The rhythmic DC is therefore converted into a purer and more interesting DC voltage with a filter clip.

As its name suggests the last part, "Organized." This keeps the comfort performance stable even if the load current or input line voltages fluctuate greatly. Let us track our Associate in Nursing AC reference through our Facility Quote so you know what each segment can do. Now you need to know if this signal is different depending on what part of the attachment you are looking for. You will see how similar improvements are manifested in the next class. The first electrical equipment is rated at one hundred and fifteen volts. A transformer with a 1: 3 aspect ratio can be an electrical unit. By multiplying the input voltage by the relation of the voltage of the turns within the side to the voltage of the turns inside it is calculated by calculating the output of this power system. For example, 115 VAC at the output is three = 345 VAC (peak-to-peak). The rectifier performance becomes a simple fraction or 173 volts of rhythmic DC, as each diode in the rectifier section leads to one hundred and eighty degrees of 360-degree supply. The varying signal is controlled by the filter component that includes a network of resistors, condensers and inducers to ensure that a signal is at a constant frequency of DC. When describing certain filter circuits, the filter system is more detailed. The output signal of the filter can be 110V DC signal, which is AC wave riding in DC. This section discusses later on the causes of low voltage (medium voltage). The controller keeps its voltage at the device's 110V DC frequency (commonly called load).

Install a 5V power supply on digital circuits

Brief Operation Overview: Provides a well-controlled + 5V supply with 100mA output current capacity.

When the IC regulator is too hot, it shuts off the internal heating safety output.

Component availability: Motivational convenience with very similar specific elements. Complexity of the circuit: easy and simple to do

Performance of the circuit: incredibly stable voltage + 5V, efficient use. Complexity of the circuit: easy to produce

Design Test: The circuit is an example of a curated data sheet, which I successfully used during several physical experiments.

Applications: Physical tools, small experimental power source

Power supply voltage: DC 8-18V Uncontrolled power supply

Power Supply Included: Output Current Required + Five mA

Component Values: A few dollars for physical components + Electrical input unit calculation

WEBCAM

A digital camera is a video camera that sends images on a laptop or a network in real time, generally via USB, LAN or Wi-Fi, as Figure IV shows. Creating video connections, allowing computers to function as video cable or video conferencing stations. This is the normal use of land as a video camera. The digital camera got its name from the internet. Other common applications include security police investigation and laptop visibility.

Webcams are known for their low production costs and compatibility, making them a low-cost video calling option. Some government webcams can be controlled remotely by spyware, which can be a source of security and privacy issues.

LENSES

Mirror, photo machine, auxiliary physics and audio microphone are all common features of webcams. A variety of lenses are available, and the

most popular among consumer webcams are plastic lenses, which are stabilized to focus the image. Open are fixed focus lenses that have no adjustment. Since the depth of the camera device's field is great for large focal length (small aperture) narrow image size and lenses, the devices used in webcams have relatively wide depths. The lens has not much effect on the sharpness of the image by using a strong and quick focus.

Image sensors, formerly most popular than low-cost cameras, are CMOS or CCD. In this price range, CCD cameras are often higher than CMOS. VGA quality footage is available at most customer webcams at a frame rate of thirty FPS. Most modern cameras generate multi-megapixel resolution video, while some play at fast frame rates such as the PlayStation Eye, capable of generating 320 x 240 video with 120 frames a second. We avoid Due to space and money, the computer and the physics that support it are built on a single silico chip.

Convenience or convenience

The video and video conferencing are made much easier for most webcams. Users are permitted to connect to computers without using device drivers by means of USB Video Device Class (Uvc) standards. UVC support is integrated into Microsoft Windows XP SP2, UNIX and Mac OS X (since October 2005) and does not require external system drivers, but is usually installed to include more options.

Features (Logitech C100 Digital Camera) Plug and Play (UVC)

Configuration Video Capture: up to 640 x 480 pixels Photo: up to one.
(With the proposed system)

High Speed Fixed Focus USB 2.0 Certified

Notebooks, alphanumeric displays, and cathode ray tubes are all compatible with this universal clip. -ray tube monitor



Fig 4.5 WEBCA

OCR

OCR is the converter process to digitally edible information file for scanned bitmap images from written or written content. OCRs produced for various world languages are now widely used.

PC VISION

Human intelligence has been described as the ability to make decisions based on unreliable and informal information. This diversity has identified us as the best creatures on earth. Humans have five senses that provide the information needed to make daily decisions, and hearing and vision are very intense. Auditory cognition helps us to identify and classify vibrations. This intuition teaches us that the person at the other end of the line may be friends because his voice is well known. We can distinguish between infinite voices, sounds, and voices, and place them exactly where they belong, such as the sounds of animals, musical notes, the sounds of the wind, and the footsteps of a friend, both of which can be detected at regular intervals with normal hearing. Another, and much deeper, human understanding, which allows a person to identify a famous person in a group of strangers.

In addition to recognizing a word that is misspelled in a phrase and inadvertently correcting it, it helps us to choose an element that is unique to us from those who are trying to be direct like us. The truth is that human ination can create an image based on better choices than pre-determined or pre-determined.

These human mechanisms have been simulated to form intelligent machines as a result of technological advances, especially intelligent and highly intelligent cognitive systems with the brilliant development of artificial intelligence, but the work done at this stage does not understand involuntary natural behavior or mechanisms.

The issue is that the entire work of the human mind is not easy to reflect so that computer vision is as effective and exact as the human eye.

Every effort is made to achieve such progress as soon as possible, although not clear. Artificial intelligence is a common computer field that covers many different areas of research. "Artificial Intelligence (AI) studying how computers are created, the things that make people better at the moment" is one of the most popular definitions of Artificial Intelligence (AI), as defined by Ellen Three and Kevin Knight.

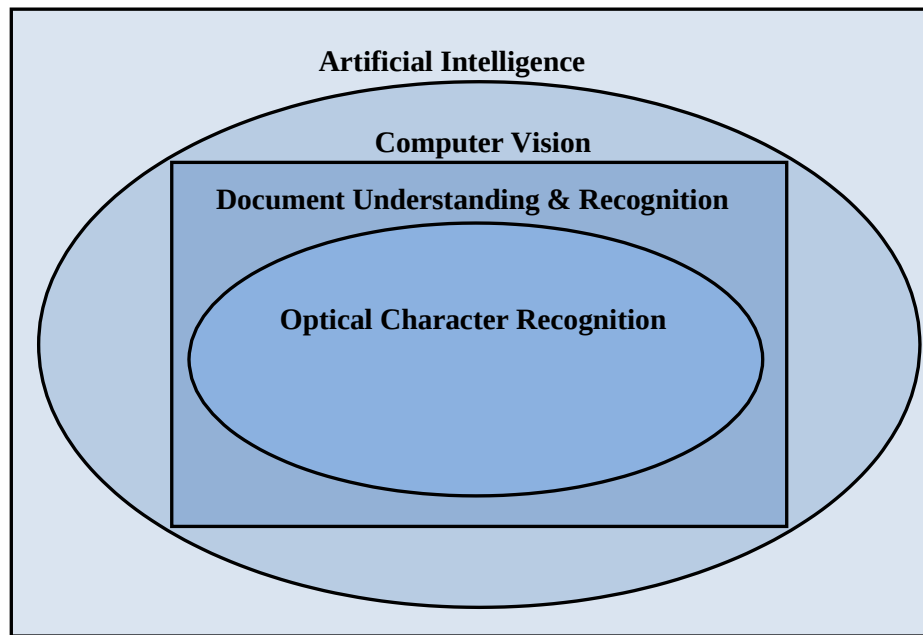


Fig 4.6 SUB-FIELDS OF A

As seen in the picture. For.6, it reveals some sub-branches of PC Vision, the analytical world that seeks to mimic human vision and create a concept of method, understanding and recognition that captures all images, an important branch of artificial intelligence. To gain a clear understanding of the values of individual parts, including the shape of an object, and to identify artifacts using engineering information or probability strategies, a computer vision requires a clear understanding of the physical process of creating an image.

CHARACTER RECOGNITION

Character recognition is a sample identification subfield in which character images are determined from the text image and individual character codes are generated as a result of the recognition process, which is then done to render the text in the image. Character recognition Configuration can have the problem of automatically recognizing images as letters, numbers, or any other image and may resemble some other error in computer vision.

Character recognition is divided into two types based on the feedback style given to the popularity drive. In fig light. 4.7,

There are two types of character recognition that describe character recognition hierarchy:

a. Online Character Recognition and

B. Offline character recognition

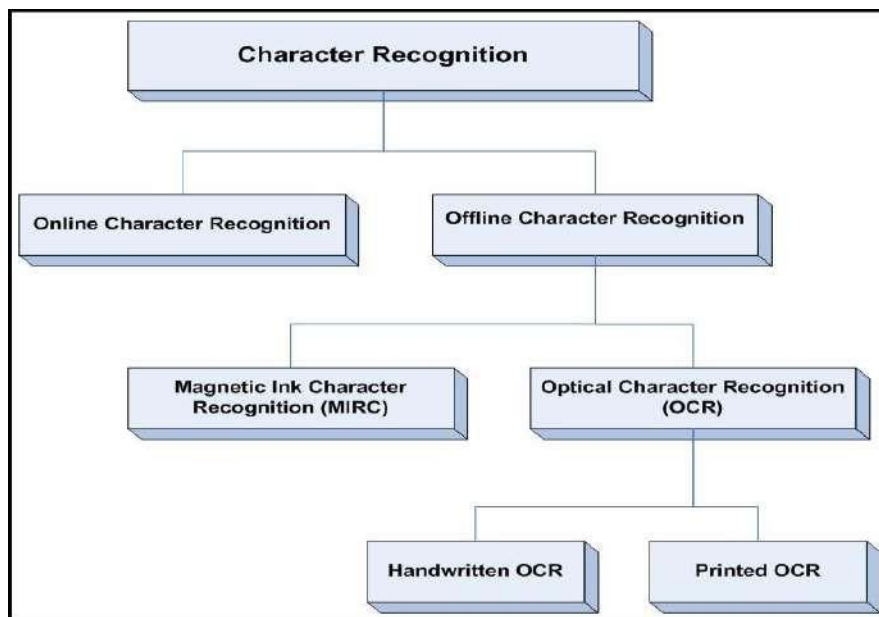


Fig 4.7 CLASSIFICATION OF CHARACTER RECOGNITION

ONLINE CHARACTER RECOGNITION

Real-time character recognition is controlled by online character recognition systems. This procedure involves a complex process that uses specific detector-based tools to extract data from the electrical system while writing text on a pressure-sensitive, static or magnetic digital disk. The text of the input is mechanically restored to a series of electronic signals through the recognition law, which are stored in the form of character codes for further processing.

The popularity chart depends upon whether gestures of the pen tip generate identifiable patterns in a certain analogue scanner when the text is printed, so that x and y coordinates are produced during a very long time.

OFFLINE CHARACTER RECOGNITION

There is a significant difference between offline and online character recognition entry systems that affect the setup, architecture and methods used to build both identity systems. The input file for online identification is provided in chronological or real-time text form generated on a sensory computer, resulting in chronological speech information. On the other hand, in the offline system, data | After the selection begins Details | The information is written in a way that doesn't contain the information in the real time letter. Offline character recognition is divided into two types according to the information provided to the device. Two of these include MICR and OCR character recognition (OCR) (OCR).

RECOGNITION OF THE MAGNETIC INK CHARACTER (MICR)

The technology MICR is a unique one, usually identifying text with ink lines containing a chemical compound of iron.

As the scanner is ready to scan the code, the typed letters become magnetic on the page, with the north pole to the right of the MICR character, resulting in visible waveforms and patterns being detected and used in other processes. The reading unit is similar to a magnetic recording head, which detects patterns of sound waves captured on a magn tape. This device has been widely used in banks around the world for a long time to perform process tests as the results have good stability rates and low error rates. There are separate MICR lines, which include E-13B and CMC-7.

OPTICAL CHARACTER RECOGNITION (OCR)

OCR is a text recognition system that converts printed copies of written or written text into editable electronic copies.

This is the process of conversion to digitely editing data files of scanned images of text or written text. With OCR it has become easier to translate the feature into an engineering display object that can be numerically expressed in a Unicode symbol or in a numeric character scenario. An editable exemplaire of our document, such as faxes, pages of a book or magazine, is to be presented as a hard copy. The machine uses an optical medium such as a camera or printer to collect the images and send

them to the identification system, which

converts them into an electronic copy, such as an MS Word document, after going through a series of operations.

When we read a piece of paper, we convert it from text to electronic copy, and then save it as a photograph. The image is always considered as a whole, but the text cannot be changed one by one. If we want to do this, the computer will recognize the text internally and allow us to exploit it just like the text in a word document.

OCR software does the same; It recognizes letters and allows document editing and searching, which is all we need. These products can be stored with much less space than text materials, thanks to technological advances. OCR technology has had a major impact on how information is stored, exchanged and transmitted.

OCR comes in two forms: those that recognize typed letters and those that recognize handwritten text.

Since the characters belong to simple font files and it is very easy to compare images with images already in the library, the OCR identification of the written text is more accurate and consistent. As for the recognition of manuscripts, the diversity of Nazi styles and customs makes it all the more difficult to challenge popularity. We have now OCR for the latin script as our standard office tool, and OCR for manuscript still is in the research and development phase to make the results more accurate.

OCR is one of the most popular and useful machine vision applications, an informatics subsection and an extensive topic. With the advent of digital library models, i.e. electronic submission of paper or film through the imaging process, OCR has recently achieved a much higher quality.

OCR HISTORY

The origins of OCR can be traced back to the 1950s, when a program called Gismo was invented that could convert written messages into machine codes for computer processing. David Shepard and Medico Cook, cryptographers at the Armed Forces Security Agency (AFSA), collaborated on the items.

This was a joyous feat before David Shepherd invented the world's first OCR device, which is still overseen by the Intelligent Machine Analysis Company. Readers' Digest, the US standard

for making MasterCard fingerprints, the Ohio Public Service Bill for Bill Reader, and U.S. Air Force Shepherd clients for reading and writing teletype messages. Scoping has been another success in the field of communication, which, while initially fundamental, has evolved further with the advancement of technology. By 1965, Jacob Rainbow, an American inventor, had developed a patent for OCR to regulate mail, which was later adopted by the US Postal Service.

OCR has since developed into a fascinating area of study in the fields of computer science and computer vision with wide nuances and unique capabilities. With the development of emerging technologies and the taking up of new tasks, it turned out that it was overwhelming and funny despite this appeal.

OCR ACTIVITIES

The OCR method begins with scanning and digital duplication. It requires the following different sub-processes as shown in Fig.4.8.

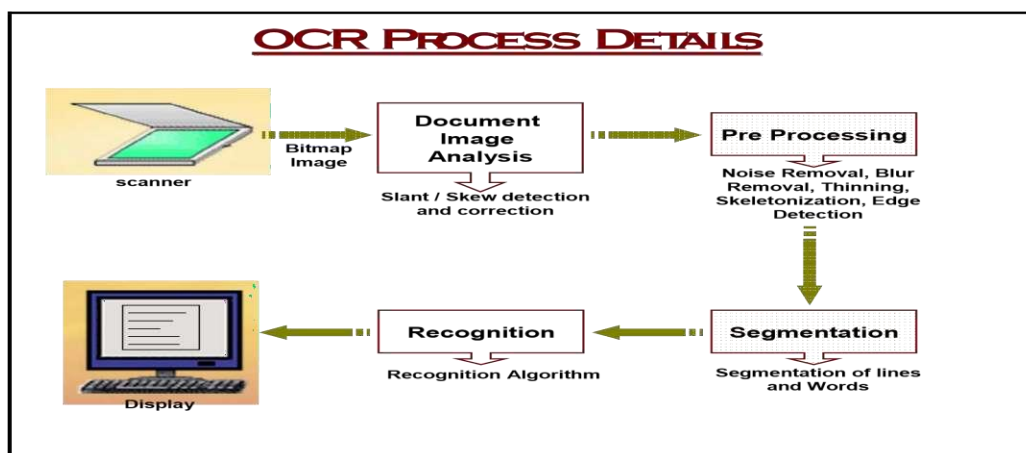


Fig 4.8 OCR PROCESSES

SCANNING

Typically, a 300-dpi flatbed scanner translates scanned content into an electronic file image on a scanned page.

ANALYZE DOCUMENT IMAGES

The electronic representation of the text checks the appearance of the image distortion or italics and is removed as a result. Text, charts, graphs and a variety of examples abound in the published literature. Consequently, the text area should be described one by one from the corresponding images and then localized and deleted.

PRE-PROCESSING

Many processes such as noise reduction and opacity, coding, attenuation, skeleton, edge detection and some syntax are applied to the text image in this section, resulting in an OCR ready image of the text area without noise and blur.

PARTITION

If the image is entirely text, it is first divided into different lines. These lines are divided into sentences, which are then divided into individual letters. If individual characters are identified, translated, and divided into text images, it will be easier to define the recognition mode for nudging the text in the image to the text processor.

WITH APPRECIATION

The metadata formula is added to the gift of images in the sectional text image at the character stage and this is a very important introduction. The device generates a code character that looks like a template, then redirects it to the computer-displayed application programme that can be modified, changed and stored in another file format.

DESCRIPTION OF THE PROGRAM

INSTALL OS ON RASPBERRY PI AND START WITH RASPBERRY PI

Since it is such a small device on Raspberry, it requires an operating system (OS). Since there is no hard disk on top of the raspberry, the operating system is

stored in external

memory. The OS is installed in the memory card (SD card) and all applications and support files required are saved on the SD card.

There are many variations for operating systems, but we will focus on NOOBS (new software out of the box) which is suitable for beginners. We have the option of purchasing a pre-installed SD card or an unused SD card. NOOBS is already copied and ready to boot into the preinstalled SD card. A blank SD card in Appendix B contains a detailed description of how to install the OS.

Uses for laptop, keyboard and indicator on raspberry.

If you do not have a computer on a good raspberry we can use a laptop screen. Additionally, you can use the keyboard and mouse to control the top of the raspberry. The two softwares used to display Raspberry Pi should be included on the desktop. On the following pages, we will go over how to install and configure the program. Xming Xming Xming Xm This is the first software to be updated, and can be found on this page. Download and install Xming on your laptop. Run "XLaunch" after the installation is complete to make sure the settings are correct.

PUTTY

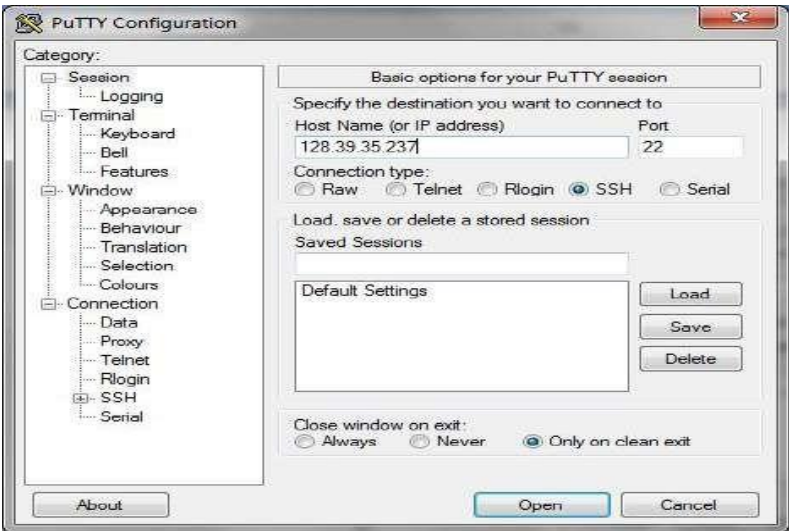


Fig 4.9 PUTTY CONFIGURATION STEP

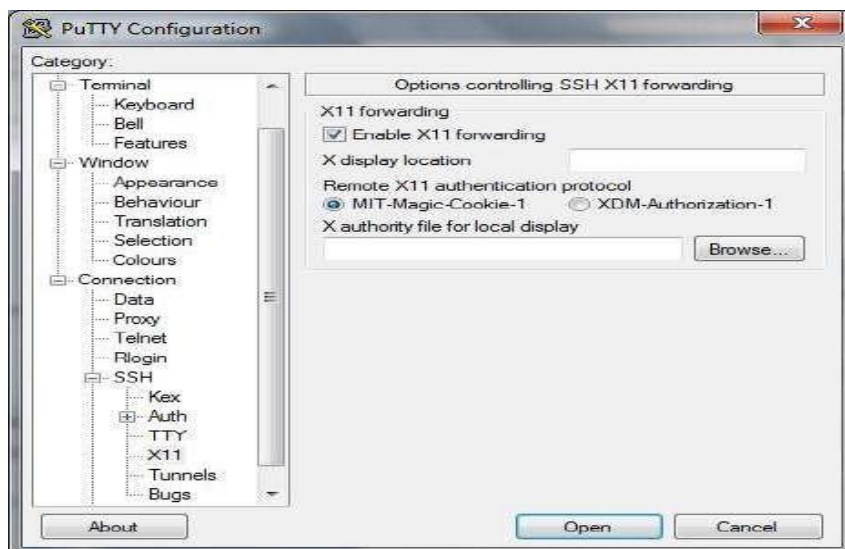


Fig4.9.1PUTTY CONFIGURATION STEP 2

Finally, press the "activate" icon, and the window will appear as seen in Figure 4.9.1.

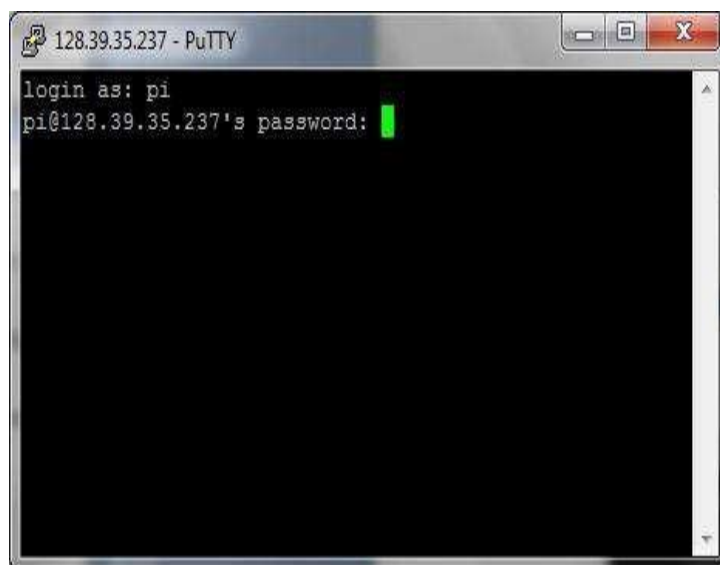


Fig 4.9.2 PUTTY LOGIN WINDOWS

The username and password must be entered on Raspberry in this browser. On the default username of Raspberry Pi. After entering the

correct username and password, press Enter to see the windows for entering the text "Text" as shown in Figure 4.9.2.

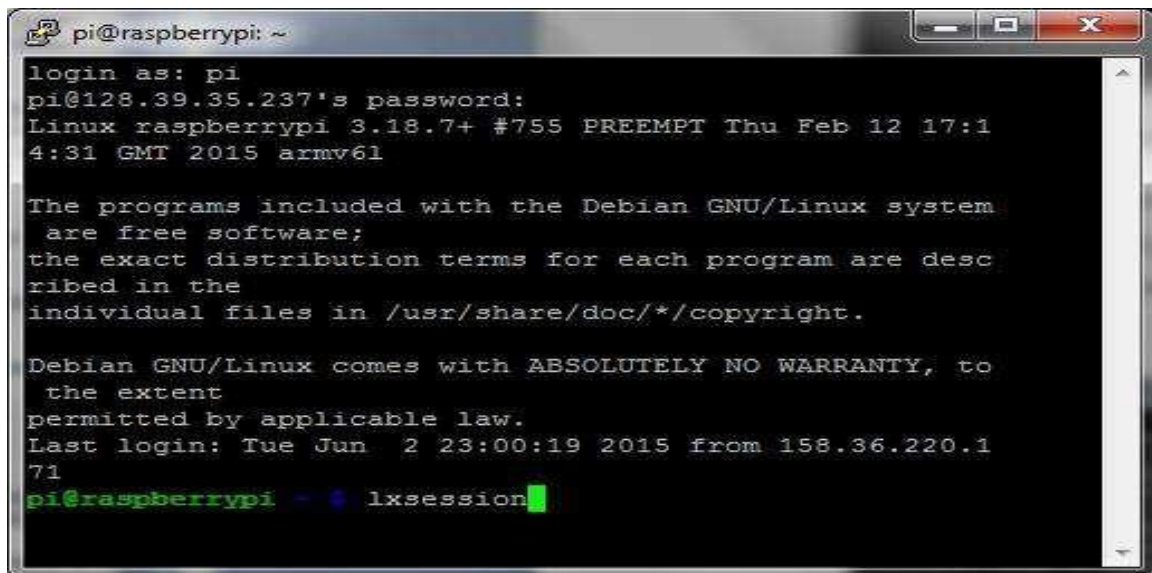


Fig 4.9.3 PUTTY SUCCESS WINDOWS

The desktop on the Raspberry on the laptop looks like the one shown in Figure 4.9.3 and you can use the mouse and keyboard to control the Raspberry above.

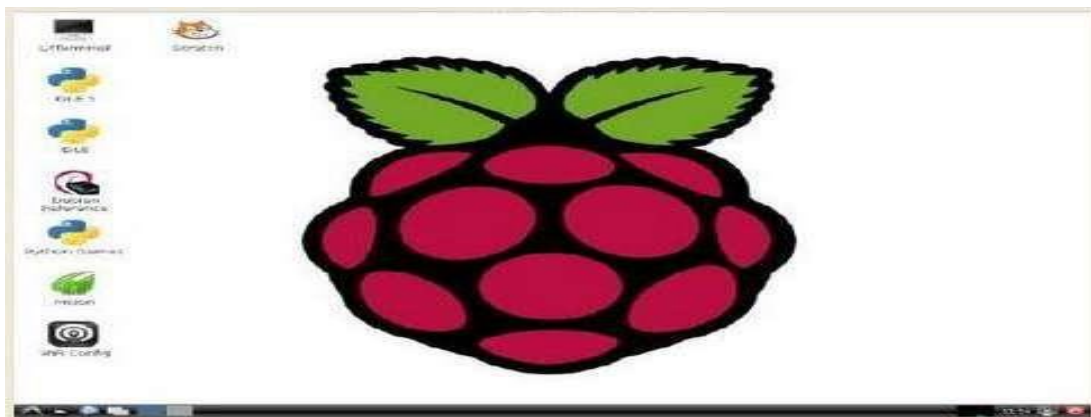


Fig 4.9.4 Raspberry Pi Desktop on your Laptop Display

_On Raspberry Pi, install the required apps.

To complete the study, several programs must be installed on the raspberry pie. MySQL, apache5 and php must be installed to monitor

data, but PHP must be installed to create a web page. Used for web page reporting and maintenance.

ULTRASOUND SENSOR

Ultrasound machines use ultrasound waves to travel long distances. The unit head sends out a supersonic pulse that reflects the target. By occupying the time between transmission and transmission, ultrasound sensors reduce the distance to the mark.



FIG: 4.10 ULTRASONIC SENSOR

Supersonic audio requires a supersonic component for each transmission and reception, including an optical interface transmitter and receiver. A generator alternately operates and absorbs the ultrasound highly reflective pattern in a supersonic system. This allows the unit head to be lowered as shown in the figure. 4.10.

ULTRASOUND SENSOR IS IN USE

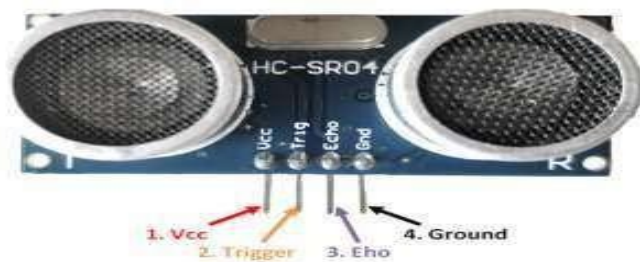
The 4-pin unit with the PC names VCC, Trigger, Echo and Ground can be located on the Supersonic (US) HC-SR04 unit. This system is a popular device for a range of operational distance or sensors applications. The front of the unit has two eyes around the supersonic transceiver. The unit general high school formula is based on distance = speed time. The supersonic transmitter sends a hypersonic wave, which passes through the air and is reflected back into the system until it ides with some material as shown in the figure. 4.11. The supersonic receiver determines the repetitive wave. Now, to determine the distance using the above principles, we must always consider speed and time. We all know that the world speed of people's waves in space is 330 m / s, so we have a tendency to skip supersonic

waves.



FIG: 4.11 ULTRASONIC SENSOR WORKING

Connected to the unit, the electronic devices measure the time needed to return for the American wave and simultaneously set the high echo pin which permits the calculation of time. Currently, a microcontroller or chip is used to determine distance. The computer is often used for a wide variety of microcontrollers and chip platforms, including Arduino, ARM, PIC, Raspberry Pi and others. The following instructions are universal and should be followed regardless of the type of computer unit. The system is powered by a + 5V controller supplied by VCC and ground pins. The current consumption of the device is less than 15mA, so it can be moved instantly through the 5V pins on the board. All I/O pins, connected to the I/O pins microcontroller, are the trigger and the echo pins. Set the trigger pin to 10 seconds and then shut it off to start the action. This behaviour transmitter emits an ultrasonic wave at 40 Hz and is expected to revert to the recipient wave. The echo pin increases for a predetermined time period, which allows time that the wave returns to unity, when the wave is



reflected by a different subject.

Fig: 4.12 Ultrasonic pin Details

The MCU / MPU Echo pin measures the uptime and provides information on how long it takes to return to the wave system. Using this information, the spacing is calculated as indicated in the title.

TABLE 4.1 ULTRASONIC SENSOR PIN CONFIGURATION

Pin Number	Pin Name	Description
1	Vcc	The Vcc pin powers the sensor, typically with +5V
2	Trigger	Trigger pin is an Input pin. This pin has to be kept high for 10us to initialize measurement by sending US wave.
3	Echo	Echo pin is an Output pin. This pin goes high for a period of time which will be equal to the time taker for the US wave to return back to the sensor.
4	Ground	This pin is connected to the Ground of the system.

ULTRASONIC SENSOR FEATURES

- Theoretical Measuring Distance: 2cm to 450cm
- Operating voltage: +5V
- Accuracy: 3mm
- Practical Measuring Distance: 2cm to 80cm
- Operating Current: <15mA
- Measuring angle covered: <15°
- Operating Frequency: 40Hz

GLOBAL SYSTEM FOR MOBILE COMMUNICATION (GSM)

DEFINITION

GSM can become the widely recognised standard for digital cellular communication. GSM (Global Mobile Communications) The European standard for mobile phones defining the global mobile communications system standards and the panseuropean

cellular radio system operating at 900 MHz was established in 1982 by GSM. GSM has now been established. The majority of countries outside Europe can reasonably be expected to join the GSM alliance.

THE EVOLUTION OF MOBILE PHONE SYSTEMS: AN INTRODUCTION

Cellular is one of the most rapidly growing and demanding technologies of communication. Today, this represents a growing percentage of all new phone subscriptions worldwide, as shown in Figure 4. There are already over 45 million wireless subscriptions worldwide, with half of these subscribers living in the United States. Wireless networks that use modern technology are expected to become the standard communication process. Meteorologists estimate that by 2005 there will be over one hundred million wireless subscribers worldwide. By 2000, it was also estimated that some countries would have more cell phones than cell phones. Cellular coverage is based on the use of low-power transmitters in frequency-frequency areas around a regional area. Bell Labs introduced the idea of a mobile radio in the United States in the early 1970s. With the advent of the Scandinavian mobile phone (NMT) in 1981, the Nordic countries were the first to adopt wireless networks for commercial use.

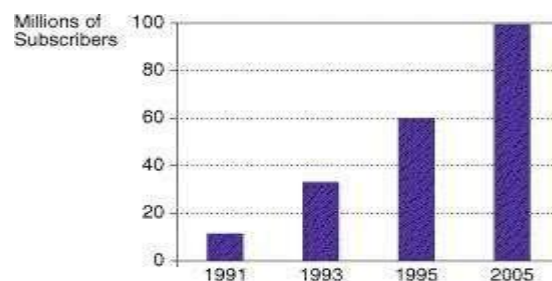


Fig 4.13 CELLULAR SUBSCRIBER GROWTH WORLDWIDE

Advanced Transport Service (AMPS) technology was released in 1983 and marks the beginning of cellular systems in the United States. Countries in Asia, the Pacific and

Oceania have adopted the AMPS standard, creating the world's largest demand for cell phones. At the beginning of the 1980s the majority of cellular telephone services were analogue, not digital, like new systems today. The failure to meet the growing demands for capacity for low cost is one of the problems with analogue systems. As a result, the emerging digital systems were embraced with open arms. Advantages of digital systems over analog systems with clear logic and low level suspension and combination.

GSM (GLOBAL SYSTEM FOR MOBILE COMMUNICATIONS)

GSM offers instructions rather than requests. GSM's features and interface requirements are very detailed but ignore the hardware. The reason for this is that designers can shop for devices from a range of suppliers to as much as possible. The GSM network is divided into three main systems: a switch system (SS), the Base Station system (BSS) (OSS). The core components of the GSM network are presented in Figure 14.14.

GSM NETWORK PARTS

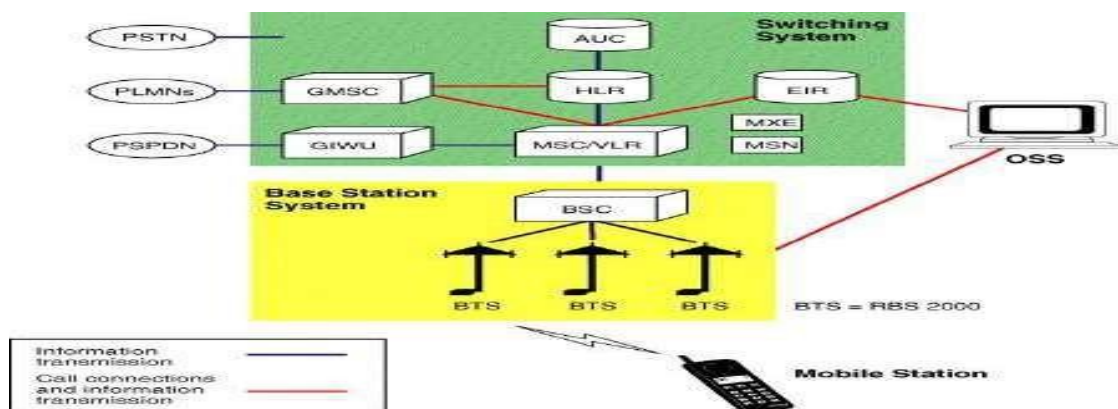


FIG 4.14 GSM NETWORK PARTS

THE CHANGE SYSTEM

Participants' duties and acting judgment are responsible for the transmission method (SS). The following functional units make up the transition system:

HLR - HLR is a database that is used to store and track subscriptions. HLR (HOME LOCATION REGISTER). HLR is considered to be very important information as it has a lasting knowledge of the customers such as subscriber service history, location details and operation status. When an individual purchases a membership from a PCS operator, they are registered with the operator's HLR.

Mobile Services Change Center (MSc) - The Master of Science is responsible for transforming communications in the system. Handles alternate telephone and information networks and incoming and outgoing calls. It also does things like ticketing, network connectivity and traditional channel tagging.

Visitor Website Record (VLR) - VLR is a database containing transient details about subscribers who need a Master of Science to provide services to visiting subscribers. VLR is often combined with an MSc. As the mobile station moves into the new MSC room, the MSC affiliate VLR requests from HLR for details about the mobile station. If the mobile station makes a decision at a later time, the VLR will contain the information needed to set up the decision without questioning the HLR each time.

Authentication Center (AUC) - A unit called the FTO that verifies user identification and provides authentication and encryption standards that ensure that any decision is kept confidential. In today's wireless landscape, the FTO defends network providers against a variety of scams.

Equipment Identification Record (EIR) - EIR is a mobile device's identity information file that prevents calls from being stolen, illegal or defective. FTO and EIR may be executed separately or as an AUC/EIR node.

4.11.1 THE SIM 900 GSM / GPRS

The module is equipped with GSM / GPRS modem-RS232 dual-band GSM / GPRS driver (SIM 900) and operates at 900/1800 MHz frequencies and is



shown in Figure 4.15..

Fig 4.15 SIM 900 GSM/GPRS MODULE

FEATURES

RS232 interface for easy connection to monitor or connect package. Dual band GSM / GPRS 900/1800 MHz.

Bad rate can be adjusted.

29302WU IC is used for power control. ESD compatibility.

MIC and speaker jack should be allowed.

Slide in and out of SIM card tray, plus stub antenna and SMA jack. 12V DC is the input voltage.

Force Knock

Power Down Mode: "AT + CPOWD = 0" is the power down mode of SIM900A. There are two ways to keep a unit in low current consumption.

Practicality to the minimum mode: Minimal practicality mode minimizes the practicality of the unit, resulting in as little use as possible.

If "AT + CFUN = 0" is used to limit the SIM900A to the minimum practicality. If "AT + CFUN = 1" is used to set SIM900A to maximum practicality.

If SIM900A is about "AT + CFUN = 4", disable all that is more than practical. Sleep mode: With the DTR signal, we can control the SIM900A to join or exit sleep mode in client applications. The SIM900A automatically enters sleep mode until the DTR is fully set and there is no interruption to air or equipment (such as GPIO interruption or serial port details). While in this mode the SIM900A can receive relay or SMS from the network, but the port is not available.

Get SIM900A out of sleep mode

The SIM900A comes to life if the DTR pin is powerful. This signal appears on the SIM900A from power saving mode when the DTR pin needs to reach the coffee stage. Once the DTR is set to less than about 50 ms, the port is ready to go.

The SIM900A comes to life after receiving a letter or knowledge decision from the network.

The SIM900A comes to life after receiving an SMS from the network.

TABLE 4.2 PIN SPECIFICATIONS

PIN	NAME	DETAILS
1	GND	Power supply ground
2	TX	transmitter

3	RX	receiver
4	Line_r & Line_l	Line input

5	Spk_p & spk_n	Speaker positive & negative
6	Mic_p & mic_n	Mic positive & negative
7	DTR	Data terminal ready
8	CTS	Clear to send
9	RTS	Request to send

WORKING

A GSM computer unit, unlike a cell phone, has no data input device or screen to switch with. It basically detects and detects commands bound by the serial device. AT commands are short for these commands. Here is a list of AT commands used by electronic devices to tell you how to perform its functions. Each request begins with the letters "AT". They are referred to as AT commands for this purpose only. AT is an abbreviation for the word "attention". The program is waiting in our simple project to enter different types of smartphones through the keyboard. The program instructs electronic devices to send a text message using a series of AT commands until a 10-digit phone number is provided.

Testing of GSM electronic devices

Connecting a GSM electronic device to a device allows scanning. RS232 cable with electrical equipment included. Link the device to the USB adapter using the serial.

Now you need some serial communication software like HyperTerminal or Minicom to send requests to electronic devices. As a result, if the serial parameters are set to 8N1 the baud rate should be approximately 9600 bps.

Electronic devices respond to every request you make with the code. For example, try the "AT" cause of electronic devices. The resulting code

responds with "OK", indicating

that the electronic devices are working. If it does not work properly it will send a "ERROR" message.

GPS

The Global Placement System is a satellite navigation system that provides information to users regarding location, time and weather, as illustrated in Figure

16.4. In addition to aircraft, vehicles, cars and trucks, GPS is used for navigation. Military and civilian customers around the world are taking advantage of the system's capabilities. GPS provides 3D maps, direction and timeline continuously around the world in real time. The Global Positioning System (GPS) is a satellite- based navigation system of at least twenty-four satellites. GPS works 24 hours a day, seven days a week, anywhere in the world, without subscription or start-up costs. The satellites were launched into space by the United States Department of Defense (USDOD) for military purposes, but were later modified for civilian use in the 1980s.



Fig 4.16 international POSITIONING SYSTEM

WORKING OF GPS

Twice in a very precise orbit, GPS satellites orbit the Earth. Every satellite sends a single signal and orbital parameter that enables GPS devices to rewrite and encode the satellite's exact position. The GPS receivers use this information together with the triangle to determine the user's exact location. The GPS receiver determines

how far the distance between each

satellite is transmitted. The receiver can verify the user's location with additional satellite distance meters and display them electronically so that you can monitor the running route, map the golf course, know your distance from home or travel anywhere. You must install a GPS receiver on at least three satellite signals to measure your two dimensional position (latitude and longitude) and map motion. If four or more satellites appear (latitude, great circle and height) the receiver can confirm your location in 3D. Typically, a GPS receiver detects eight or more satellites, depending on the time of day and where you are in the world. Some gadgets do any of these functions directly from your outline.

After determining your location, the GPS device can measure other data such as speed, direction, route, flight size and distance to the destination. Sunrise and sunset time and other details.

GPS phase

The GPS device is divided into three parts:

- 1) Global Positioning System (GPS) satellites are part of the field division.
- 2) Machine operated by the US Army,
- 3) Customer operation, which includes military and civilian users in addition to the Global Positioning System (GPS) capabilities.

Space phase

The number of satellites in a constellation is called the field phase. It consists of 29 satellites, each 12 hours, orbiting the earth, 12,000 miles away. The role of the area phase is to direct / route signals and store and execute the message from the management phase for routing/navigation. These extremely reliable atomic satellite clocks control these transmissions. As shown in Fig. 4.17, the GPS area process is generated by a set of satellites

that are sufficient to ensure that users can see at least four simultaneous satellites at any one time on the planet's surface.

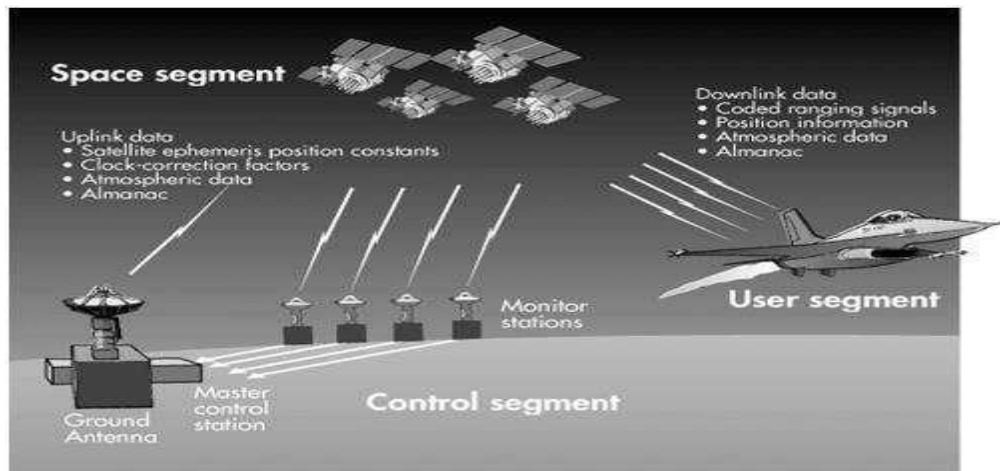


FIG 4.17 AREA PHASE

CONTROL PHASE

The maintenance process includes an atomic clock-and-five display station worldwide. Five monitoring centres track GPS satellite signals and send them to the main station where anomalies are corrected and returned via ground antenna to the GPS satellites. The control procedure is known as stop control, as shown in the picture. 4.18.



FIG 4.18 MANAGEMENT PHASE

USER PHASE

The user process includes a GPS detector that detects signals from GPS satellites and examines how far each satellite is separated (see Figure 4.19). This process is primarily used in nearly all fields by the US military, missile navigation and civil GPS applications. It is used for everything from surveys, transportation, natural resources and then farming and geography by the majority of citizens.

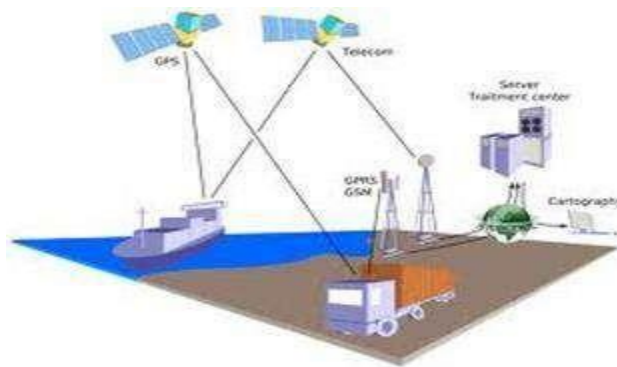


FIG 4.19 USER PHAS

GPS POSITIONING

The "three-dimensional" mathematical theory used to apply the GPS scheme is shown in Figure 4.20. The position is determined by satellite measurements taken from orbit. According to the diagram, four satellites will be used to determine the location of the receiver on the ground. The fourth moon determines the location of the target. In addition, three satellites will be launched to monitor the installation site. A fourth satellite will be used to determine the target location of each vehicle in the area. Satellites, maintenance stations, tracking stations and receivers make up the Global Positioning System. The GPS receiver uses

information from satellite and triangular technology to determine the exact location of the user.

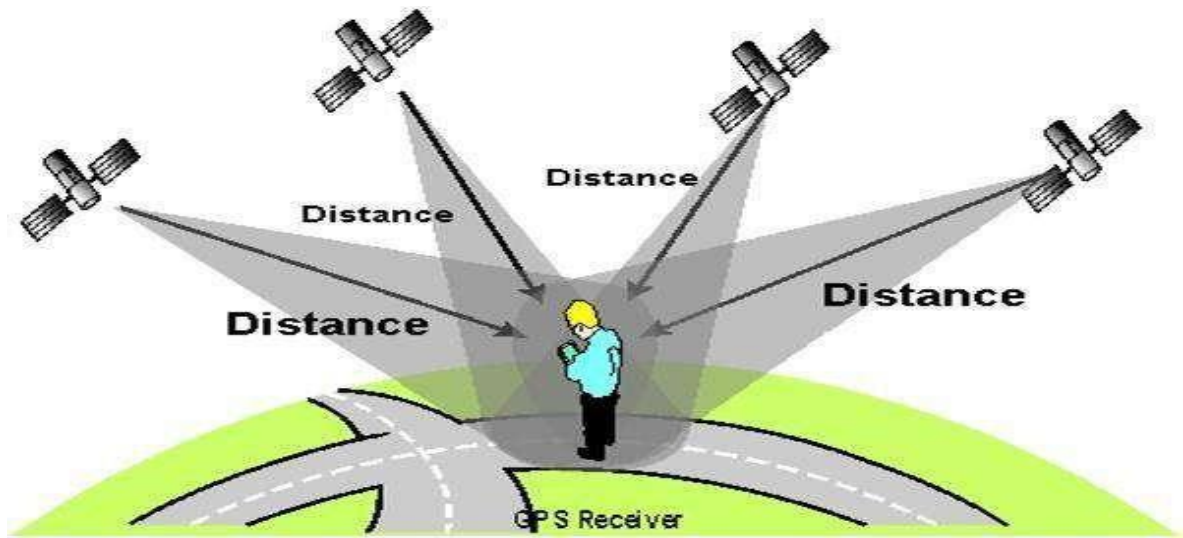


FIG 4.20 GPS POSITIONING

USING A GPS RECEIVER

Many GPS receipts are available in models and types. The use of a compass and a chart is needed for working with a GPS receiver.

GPS cable

downloaded. More

batteries needed.

Awareness on GPS receiver memory capability to prevent data failure, data accuracy decline and other issues.

Where possible, use an outdoor antenna, especially in dense wood or valley areas or when driving.

GPS receiver set up according to the protocol of the event or organization;
Frame of reference.

Notes on the receiver describing what you are saving.

Global Positioning System Advantages (GPS) For military, government or commercial users, the GPS satellite navigation device is an important tool.

GPS Navigation Systems provides step-by-step instructions for vehicle tracking technologies.

Advantages and disadvantages of GPS

Compared to phone signals, GPS satellite signals are very small, so they do not work well indoors, underwater or under trees.

A line from the receptionist to the satellite is required for maximum precision, which often explains why GPS works poorly in an urban environment.

GPS apps

The GPS application Global Positioning System (GPS) is a dual-use technology that ensures both military and civilian uses.

Auxiliary GPS for blind people can benefit from digital maps as well as real-time GPS and with audio capabilities for the most part.

Wild track GPS receivers and cellular transmitters are installed in animals. The maintenance station receives the location specified by the GPS. This information is used to monitor the animals and determine their transport habits.

CHAPTER 5

RESULT AND DISCUSSION

DEMONSTRATION

Next, set up all connections as shown in Fig.5.1 for demonstration purposes. The image is captured with a webcam and the text output is displayed at the top of the screen, the code included on the board of Raspberry Pi.

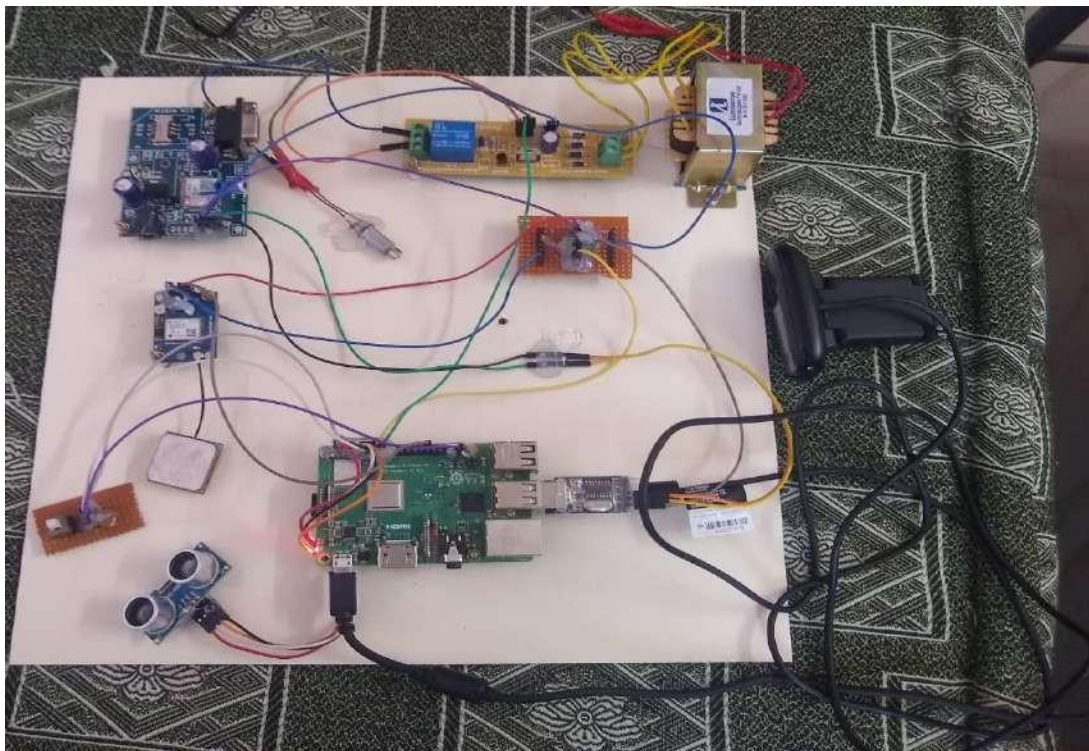
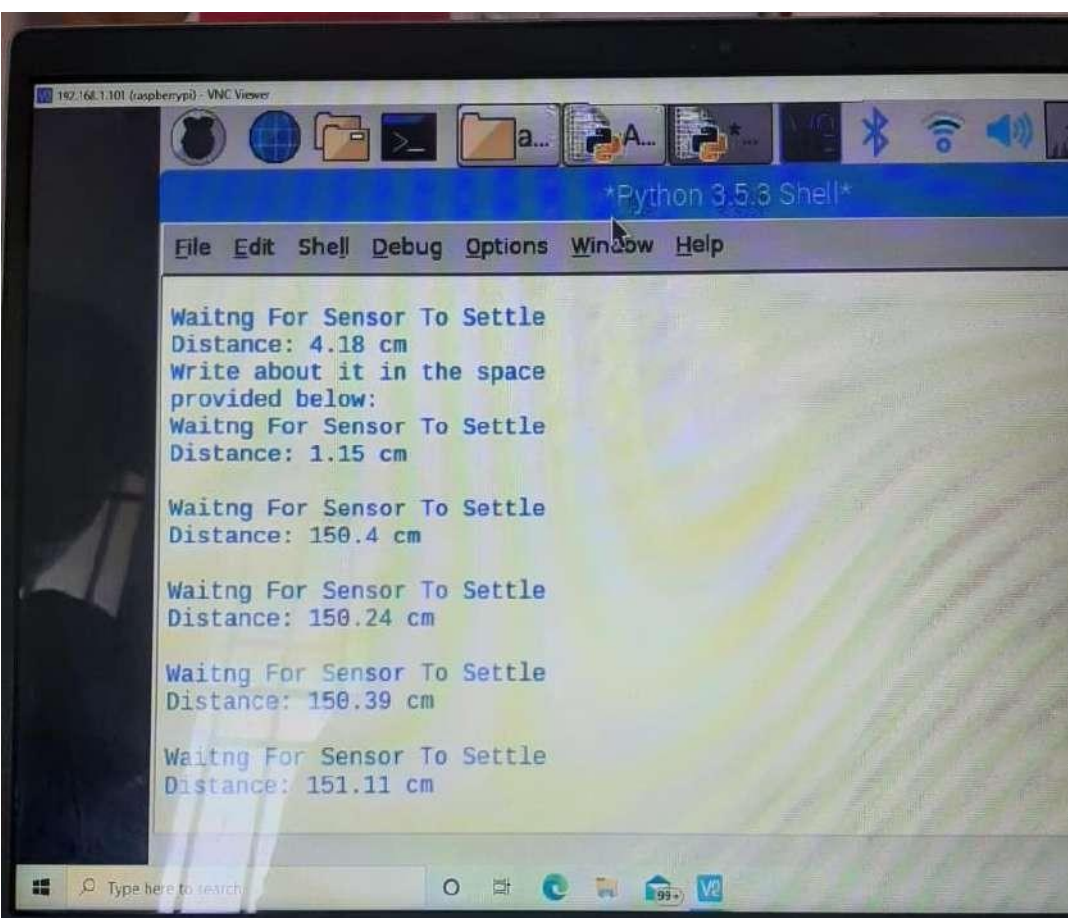


Fig 5.1 DEMONSTRATION

OUTPUT

The output of the text translated by the webcam and the calculated distance with the ultrasound sensor are shown in Figure 5.2. When the target is close to the blind, the vibrator vibrates, as shown.



Location: 12.845848,
80.229498

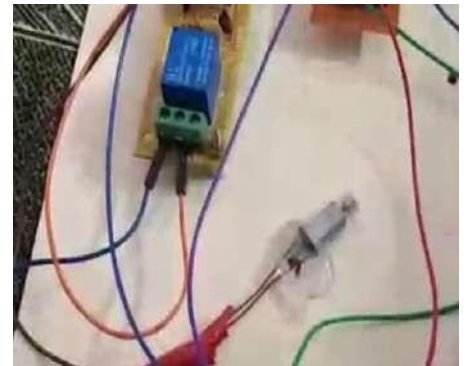


Fig 5.2 FINAL OUTPUT

CHAPTER 6

CONCLUSION

CONCLUSION

In this article, we have defined a simple framework for the blind to browse through text written on handheld topics. We developed motion-based technology to see the subject matter of interest to resolve the problem of targeting a popular blind user so that the blind user moves the object a second or two times. Within the camera reading, this technique easily distinguishes the topic of interest from the context or other aspects. We have developed a special formula for translating text based on patterns of stroke direction and edge distribution to remove text areas from advanced backgrounds. In each panel, the accompanying function maps evaluate the universal structural element of the text. Maps of the estimated functions of the image correction are shown by block patterns in the feature vector. To count candidates for code- ready text-naming corrections, an adjacent character set is used. The tutorial form is used for uploading a billboard to translate text into camera-based images. Prepared to be worn For the blind, an optical character recognition is used to recognise and convert words in translated text fields. Our future work will allow us to expand our translation syntax into text strings of less than three characters and create a large number of powerful block styles to gather text functionality. Our algorithm will also be expanded to fit horizontal text strings. We also discuss several interface issues related to blind text reading that are developed through the integration of multiple hardware and software systems. The camera acts as a paper entry during this paper. The camera starts as the frame runs on steam. The camera starts. On the affected UI application computer the transmitted data will be displayed. The capture button is pressed to create an image on the board after placing the object in front of the screen to read the poster. The Tesract Business Library is an arts collection. The image is reborn as knowledge and the information gathered from the image appears in the stand bar. The details collected are transmitted using flight library

headphones. The presence of each unit is carefully considered, which contributes

to the most efficient unit operation. The paper was applied during this period using an unusually developed ARM11 board.

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