VIRTUAL REALITY (HOLOGRAM) BASED NECESSITY PROVIDING SYSTEM FOR DISASTER VICTIMS

PREETHI.P

DEPT OF ELECTRONICS AND COMMUNICATION

JEPPIAAR SRR

Engineering College

PADUR, CHENNAI-603103.

Ppreethi2016@gmail.com

SANDHIYA.H

DEPT OF ELECTRONICS AND COMMUNICATION

JEPPIAAR SRR Engineering College

PADUR, CHENNAI-603103.

ssandhiyah@gmail.com

SHAMILI.G

DEPT OF ELECTRONICS AND COMMUNICATION

JEPPIAAR SRR Engineering College

PADUR, CHENNAI-603103.

dachanashamili@gmail.com

Miss. T.SUNITHA BIJI.ME ASSISTANT PROFESSOR

DEPT OF ELECTRONICS AND COMMUNICATION

JEPPIAAR SRR Engineering College

PADUR, CHENNAI-603103.

bijiraj29@gmail.com

ABSTRACT:

Virtual Reality is seen as the high-end of human-computer interactions and it has the potential to target a wide range of applications. To improve the standardization and automation of post disaster management operation, a new method of emergency management, based on the active network technology is presented. Firstly, during the post disaster period the necessities are being thrown as baggages from the top of the helicopter without knowing the need of the victims. While a virtual trajectory may be represented using straight lines connecting waypoints of interest, this simple model does not accurately represent typical user behavior. Thus with this virtual reality, We implemented the model within a framework that can be used for redirecting food and necessity distribution within different virtual and physical environments. Thereby, we are providing necessities by knowing the victim people needs rather throwing it from the helicopter. It is useful for the evaluation of redirected parameters under varying conditions. The characteristics of each operation mode are analyzed, which provides an important reference for the researchers of the operation and management of the process food supply chain. In this project, virtual reality is projected from helicopter or far distance. The projected image with listed basic needs like food, water, medicine.... For example, if the person needs medicine they need to stand on that projected medicine image then the dispatch section will distribute medicine for them.

CHAPTER -1

INTRODUCTION

A hologram is the recorded interference pattern between a point sourced of light of fixed wavelength (reference beam) and a wave field scattered from the object (object beam). A hologram is recorded in a two- or three-dimensional medium and contains information about the entire three-dimensional wave field of the recorded object. When the hologram is illuminated by the reference beam, the diffraction pattern recreates the light field of the original object. The viewer is then able to see an image that is indistinguishable from the recorded object.

The holographic plate is a kind of recording medium, in which the 3D virtual image of an object is stored. While in a recording media the grooves contain information about sound that can be used to reconstruct a song, a holographic plate contains information about light that is used to reconstruct an object

The information is coded in the form of bright and dark micro interferences. Usually, these are not visible to the human eye due to the high spatial frequencies. Reconstructing the object wave by illuminating the hologram with the reference wave creates a 3D image that exhibits the effects of perspective and depth of focus.

This photographic technique of recording light scattered from an object and presenting it as a 3D image is called **Holography**. The object's representations generated by this technique are the mostly like a 3D conditions because it records information in a way closer to what our eyes use to see the world around us. Therefore, it is an attractive imaging technique since it allows the viewer to see a complete three-dimensional volume of one image.

Throughout the years, several types of holograms have been created. These include transmission holograms, that allow light to be shined through them and the image to be viewed from the side, and rainbow holograms. These are common in credit cards and driver's licenses (used for security reasons).

While various holograms have been used in movies like Star Wars and Iron Man, the real world technology has not achieved the same level as presented in those cinematic stories. Currently, holograms are still static, but they can look incredible such as in the case of large-scale holograms that are illuminated with lasers or displayed in a darkened room with carefully directed lighting. Some holograms can even appear to move as the viewer walks past them, looking at them from different angles. Others can change colours or include views of different objects, depending on how the viewer looks at them.

One of the interesting traits of a hologram is that cutting one in half. Each half will contain the pattern to recreate the original object. Even if a small piece is cut out, it will still contain the entire holographic image. Another feature is that making a hologram of a magnifying glass will create a hologram that will magnify the other objects in the hologram

To create a hologram, holography uses the wave nature of light. In a normal photograph, lenses are used to focus an image on film or an electronic chip, recording where there is light or not. With the holographic technique, the

shape of a light wave takes after it bounces off an object is recorded. It uses interfering waves of light to capture images that can be 3D. When waves of light meet they interfere with each other, analogous to what happens with waves of water. The pattern created by the interference of waves contains the information used to make the holograms.

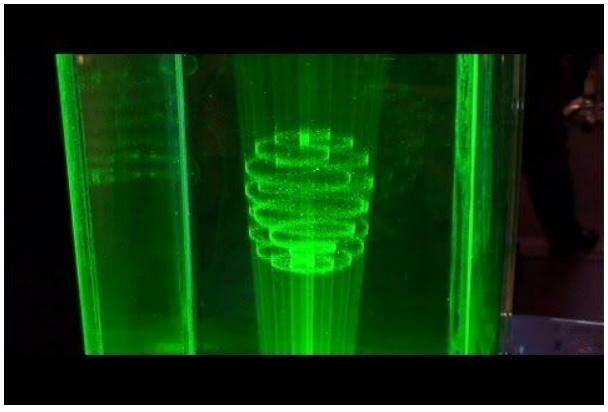
True 3D holograms could not be a practical reality without the invention of the laser. A laser creates waves of light that are coherent. It is this coherent light that makes it possible to record the light wave interference patterns of holography. While white light contains all of the different frequencies of light traveling in all directions, laser light produces light that has only one wavelength and one colour.

In its basic form, three elements are necessary to create a hologram- an object or person, a laser beam, and a recording medium. A clear environment is also recommended to enable the light beams to intersect.

The laser beam is separated into two beams and redirected using mirrors. One of the beams is directed at the object, while the other - the reference beam - is directed to the recording medium. Some of the light of the object beam is reflected off the object onto the recording medium. The beams intersect and interfere with each other, creating an interference pattern that is imprinted on the recording medium. This medium can be composed of various materials. A common recording medium is a photographic film with an added amount of light reactive grains, enabling a higher resolution for the two beams, and making the image more realistic than using silver halide material.

A developed film from a regular camera shows the negative view of the original scene, with light and dark areas. Looking at it, it is still possible to more or less understand what the original scene looked like. However, when looking at a revealed holographic tape, there is nothing that resembles the original scene. There can be dark frames of film or a random pattern of lines and circles, and only with the right illumination the captured object is properly shown.

Using a transmission hologram made with silver halide emulsion as an example, there needs to be the right light source to recreate the original object beam. This beam is recreated due to the diffraction grating and reflective surfaces inside the hologram that were caused by the interference of the two light sources. The recreated beam is identical to the original object beam before it was combined with the reference wave. Furthermore, it also travels in the same direction as the original beam. This means that since the object was on the other side of the holographic plate, the beam travels towards the viewer. The eyes focus the light, and the brain interprets it as a 3D image located behind the recording medium.



EMBEDDED SYSTEMS

Overview of embedded systems

An embedded system is a special-purpose computer system designed to perform one or a few dedicated functions, often with real-time computing constraints. It is usually embedded as part of a complete device including hardware and mechanical parts. In contrast, a general-purpose computer, such as a personal computer, can do many different tasks depending on programming. Embedded systems have become very important today as they control many of the common devices we use. Since the embedded system is dedicated to specific tasks, design engineers can optimize it, reducing the size and cost of the product, or increasing the reliability and performance. Some embedded systems are mass-produced, benefiting from economies of scale. Embedded systems range from portable devices such as digital watches and MP3 players, to large stationary installations like traffic lights, factory controllers, or the systems controlling nuclear power plants. Complexity varies from low, with a single microcontroller chip, to very high with multiple units, peripherals and networks mounted inside a large chassis or enclosure. In general, "embedded system" is not an exactly defined term, as many systems have some element of programmability. For example, Handheld computers share some elements with embedded systems such as the operating systems and microprocessors which power them but are not truly embedded systems, because they allow different applications to be loaded and peripherals to be connected.

Embedded systems provide several functions

• Monitor the environment: embedded systems read data from input sensors. This data is then processed and the results displayed in some format to a user or users

• Control the environment: embedded systems generate and transmit commands for actuators.

• Transform the information: The embedded systems transform the data collected in some meaningful way, such as data compression/ decompression although interaction with the external world via sensors and actuators is an important aspect of embedded systems, these systems also provide functionality specific to their applications. Embedded systems typically execute applications such as control laws, finite state machines, and signal processing algorithms.

These systems must also detect and react to faults in both the internal computing environment as well as the surrounding electromechanical systems. There are many categories of embedded systems, from communication devices to home appliances to control systems. It includes:

- Communication devices

  e.g.: modems, cellular phones

- Home Appliances

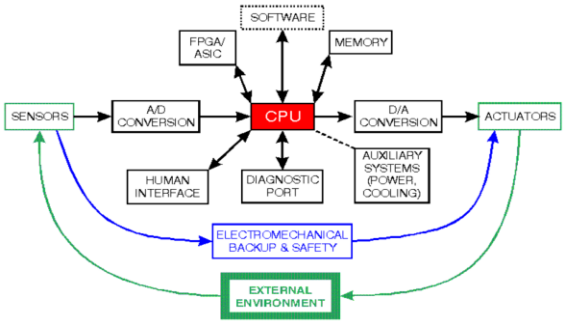
  e.g.: VCR, microwave oven

- Control Systems

  e.g.: Automobile anti-lock braking systems, robotics, satellite controls

Block diagram of an embedded system:

An embedded system usually contains an embedded processor. Many appliances that have a digital interface microwaves, VCRs, cars utilize embedded systems. Some embedded systems include an operating system. Others are very specialized resulting in the entire logic being implemented as a single program. These systems are embedded into some device for some specific purpose other than to provide general purpose computing.



Characteristics of embedded systems

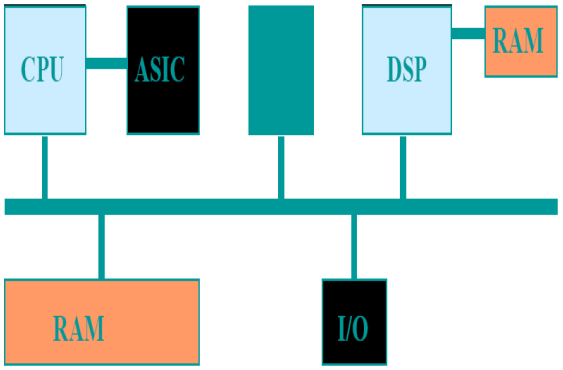
Embedded systems are characterized by a unique set of characteristics. Each of these characteristics imposed a specific set of design constraints on embedded systems designers. The challenge to designing embedded systems is to conform to the specific set of constraints for the application.

Application Specific Systems:

Embedded systems are not general-purpose computers. Embedded system designs are optimized for a specific application. Many of the job characteristics are known before the hardware is designed. This allows the designer to focus on the specific design constraints of a well-defined application. As such, there is limited user reprogram ability. Some embedded systems, however, require the flexibility of reprogram ability. Programmable DSPs are common for such applications.

Heterogeneous Architectures

Embedded systems often are composed of heterogeneous architectures. They may contain different processors in the same system solution. They may also be mixed signal systems. The combination of I/O interfaces, local and remote memories, and sensors and actuators makes embedded system design truly unique. Embedded systems also have tight design constraints, and heterogeneity provides better design flexibility.



DESIGN OF EMBEDDED SYSTEM:

Like every other system development design cycle embedded system too have a design cycle. The flow of the system will be like as given below steps. From the initial state of the project to the final fabrication the design considerations will be taken like the software consideration and the hardware components, sensor, input and output. The electronics usually uses either a microprocessor or a microcontroller. Some large or old systems use general-purpose mainframe computers or minicomputers.

CLASSIFICATION:

- Real Time Systems.
- RTS is one which has to respond to events within a specified deadline.
- A right answer after the dead line is a wrong answer
- RTS classification
- Hard Real Time Systems
- Soft Real Time System

Hard Real Time Systems

- "Hard" real-time systems have very narrow response time.
- Example: Nuclear power system, Cardiac pacemaker.

Soft Real Time System

- "Soft" real-time systems have reduced constrains on "lateness" but still must operate very quickly and repeatable.
- Example: Railway reservation system – takes a few extra seconds the data remains valid.

CHAPTER-2

EXISTING METHOD

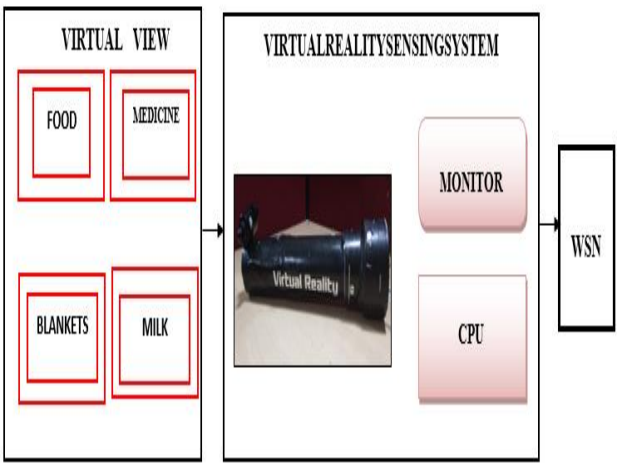
There are mainly two existing types of gesture recognition methods, i.e vision- based and accelerometer and/or gyroscope based. These have some limitations like ambient optical noise, slower dynamic response, and relatively large data collections/processing of vision-based method. The food and medicines are manually thrown from the top of the helicopter the needy people.

PROPOSED METHOD:

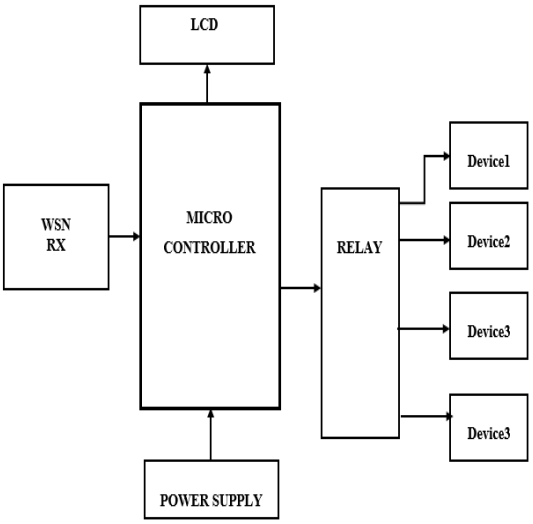
Hologram, is which detects wavelength distribution of a light source using a multiplex Fresnel hologram. In order to measure the wavelength distribution of the light source, a spectrometer is usually used, but in this case it is difficult to measure the wavelength distribution while using the light source. To separate the block in light source food, cloth etc. We are using both Transmission and receiver section. It is completely an automated process. Things are automatically dispatched as per the people needs. Thus through our project we are providing the necessities to the victims by accurately knowing their actual needs.

BLOCK DIAGRAM:

TRANSMISSION SIDE:



RECEIVER SECTION:



HARDWARE REQUIREMENT:

- TORCH LIGHT (TRANSMISSION LIGHT)
- CPU
- WSN Tx
- WSN Rx
- ARDUINO UNO (MICRO CONTROLLER)
- LCD DISPLAY
- Relay

SOFTWARE REQUIREMENT:

- Arduino ide
- Embedded c
- Proteus simulation
- Dot net

CHAPTER 3

HARDWARE REQUIREMENTS

ARDUINO UNO AND ITS PROGRAMMING

Arduino is a tool for making computers that can sense and control more of the physical world than your desktop computer. It's an open-source physical computing platform based on a simple microcontroller board, and a development environment for writing software for the board.

Arduino can be used to develop interactive objects, taking inputs from a variety of switches or sensors, and controlling a variety of lights, motors, and other physical outputs. Arduino projects can be stand-alone, or they can be communicate with software running on your computer. The boards can be assembled by hand or purchased preassembled; the open-source IDE can be downloaded for free.

The Arduino programming language is an implementation of Wiring, a similar physical computing platform, which is based on the Processing multimedia programming environment.

Arduino Uno:

The Arduino microcontroller is an easy to use yet powerful single board computer that has gained considerable traction in the hobby and professional market. The Arduino is open-source, which means hardware is reasonably priced and development software is free. With the Arduino board, you can write programs and create interface circuits to read switches and other sensors.

This is what the Arduino board looks like.

This board features an Atmel ATmega328 microcontroller operating at 5 V with 2 Kb of RAM, 32 Kb of flash memory for storing programs and 1 Kb of EEPROM for storing parameters. The clock speed is 16 MHz, which translates to about executing about 300,000 lines of C source code per second. The board has 14 digital I/O pins and 6 analog input pins. There is a USB connector for talking to the host computer and a DC power jack for connecting an external 6-20 V power source, for example a 9 V battery, when running a program while not connected to the host computer. Headers are provided for interfacing to the I/O pins using 22 g solid wire or header connectors. The Arduino programming language is a simplified version of C/C++. If you know C, programming the Arduino will be familiar. If you do not know C, no need to worry as only a few commands are needed to perform useful functions.

An important feature of the Arduino is that you can create a control program on the host PC, download it to the Arduino and it will run automatically. Remove the USB cable connection to the PC, and the program will still run from the top each time you push the reset button. Remove the battery and put the Arduino board in a closet for six months. When you reconnect the battery, the last program you stored will run. This means that you connect the board to the host PC to develop and debug your program, but once that is done, you no longer need the PC to run the program.

The Arduino Uno is a microcontroller board based on the ATmega328.It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. The Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega16U2 (Atmega8U2 up to version R2) programmed as a USB-to-serial converter.

Summary:

Microcontroller ATmega328

Operating Voltage 5V

Input Voltage (recommended) 7-12V

Input Voltage (limits) 6-20V

Digital I/O Pins 14 (of which 6 provide PWM output)

Analog Input Pins 6

DC Current per I/O Pin 40 mA

DC Current for 3.3V Pin 50 mA

Flash Memory 32 KB (ATmega328) of which 0.5 KB used by boot loader

SRAM 2 KB (ATmega328)

EEPROM 1 KB (ATmega328)

Clock Speed 16 MHz.

Arduino IDE:

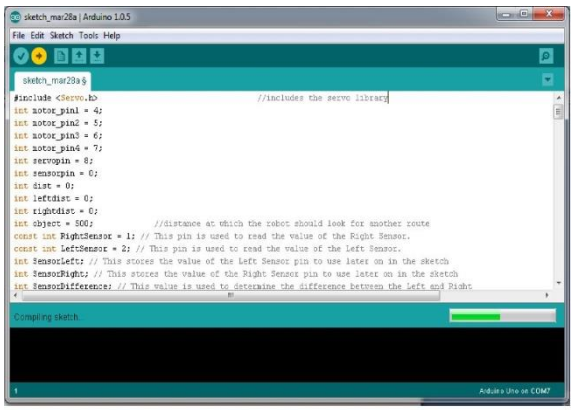
Arduino IDE (Integrated development environment) is used to write the program and dump into the Arduino board.

ARDUINO SOFTWARE:

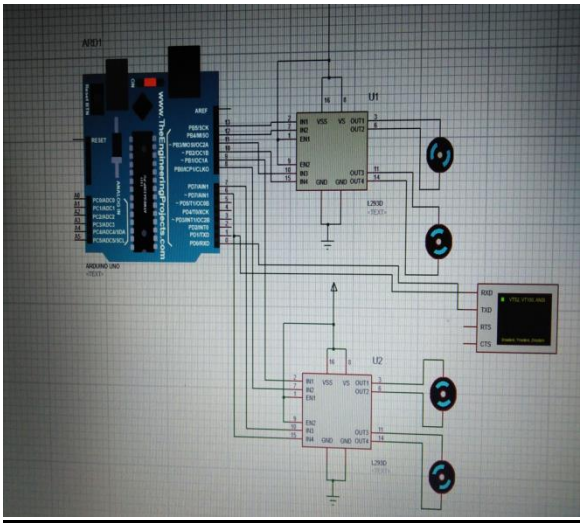
1. Open Arduino IDE
2. Select the COM Port from tool
3. Select the required Arduino board from Tools
4. Write the sketch in Arduino IDE

Sketch in Arduino IDE

5. Compile and upload the Sketch to Arduino board as shown below.



SIMUALATION SETUP:



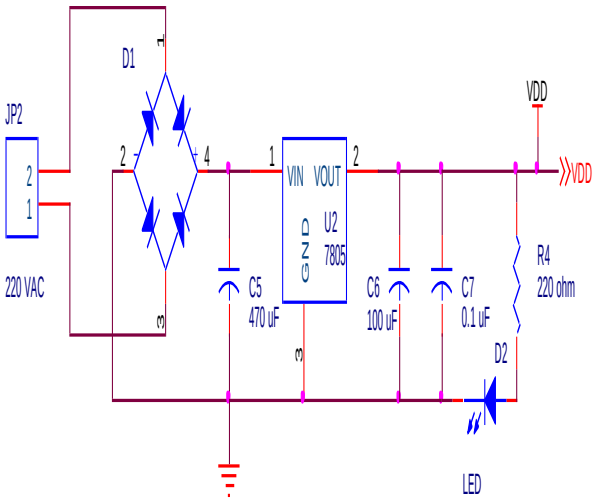
SIMULATION PROGRAM:

```
char i;
void setup()
{
  pinMode(6,OUTPUT);
  pinMode(7,OUTPUT);
  pinMode(8,OUTPUT);
  pinMode(9,OUTPUT);
  pinMode(10,OUTPUT);
  pinMode(11,OUTPUT);
  pinMode(12,OUTPUT);
  pinMode(13,OUTPUT);
  Serial.begin(9600);
  Serial.println("enter the character");

}

void loop()
{

 while(Serial.available())
  {
```

```
    i=Serial.read();
    Serial.println("enter the character");
  }
 if(i=='f')
  {
digitalWrite(6,HIGH);
digitalWrite(7,LOW);
digitalWrite(8,LOW);
digitalWrite(9,LOW);
digitalWrite(10,LOW);
digitalWrite(11,LOW);
digitalWrite(12,LOW);
digitalWrite(13,LOW);
  }
if(i=='m')
{
digitalWrite(6,LOW);
digitalWrite(7,LOW);
digitalWrite(8,HIGH);
digitalWrite(9,LOW);
digitalWrite(10,LOW);
digitalWrite(11,LOW);
digitalWrite(12,LOW);
digitalWrite(13,LOW);
}
if(i=='c')
{
digitalWrite(6,LOW);
digitalWrite(7,LOW);
digitalWrite(8,LOW);
digitalWrite(9,LOW);
digitalWrite(10,HIGH);
digitalWrite(11,LOW);
digitalWrite(12,LOW);
digitalWrite(13,LOW);
}
if(i=='w')
{
digitalWrite(6,LOW);
digitalWrite(7,LOW);
digitalWrite(8,LOW);
digitalWrite(9,LOW);
digitalWrite(10,LOW);
digitalWrite(11,LOW);
digitalWrite(12,HIGH);
digitalWrite(13,LOW);
}
}
```

Hence the above program is then dumped into the Arduino board after compilation.

POWER SUPPLY UNIT:



The AC voltage, typically 220V rms, is connected to a transformer, which steps that ac voltage down to the level of the desired DC output. A diode rectifier then provides a full-wave rectified voltage that is initially filtered

by a simple capacitor filter to produce a dc voltage. This resulting dc voltage usually has some ripple or ac voltage variation. A regulator circuit removes the ripples and also remains the same dc value even if the input dc voltage varies, or the load connected to the output dc voltage changes.

TRANSFORMER:

The potential transformer will step down the power supply voltage (0-230V) to (0-6V) level. Then the secondary of the potential transformer will be connected to the precision rectifier, which is constructed with the help of op–amp. The advantages of using precision rectifier are it will give peak voltage output as DC, rest of the circuits will give only RMS output.

BRIDGE RECTIFIER:

When four diodes are connected as shown in figure, the circuit is called as bridge rectifier. The input to the circuit is applied to the diagonally opposite corners of the network, and the output is taken from the remaining two corners.

Let us assume that the transformer is working properly and there is a positive potential, at point A and a negative potential at point B. the positive potential at point A will forward bias D3 and reverse bias D4.

The negative potential at point B will forward bias D1 and reverse D2. At this time D3 and D1 are forward biased and will allow current flow to pass through them; D4 and D2 are reverse biased and will block current flow.

The path for current flow is from point B through D1, up through RL, through D3, through the secondary of the transformer back to point B. this path is indicated by the solid arrows.

One-half cycle later the polarity across the secondary of the transformer reverse, forward biasing D2 and D4 and reverse biasing D1 and D3. Current flow will now be from point A through D4, up through RL, through D2, through the secondary of T1, and back to point A. This path is indicated by the broken arrows.

One advantage of a bridge rectifier over a conventional full-wave rectifier is that with a given transformer the bridge rectifier produces a voltage output that is nearly twice that of the conventional full-wave circuit.

IC VOLTAGE REGULATORS:

Voltage regulators comprise a class of widely used ICs. Regulator IC units contain the circuitry for reference source, comparator amplifier, control device, and overload protection all in a single IC. IC units provide regulation of either a fixed positive voltage, a fixed negative voltage, or an adjustably set voltage. The regulators can be selected for operation with load currents from hundreds of milli amperes to tens of amperes, corresponding to power ratings from milli watts to tens of watts.

A fixed three-terminal voltage regulator has an unregulated dc input voltage, Vi, applied to one input terminal, a regulated

dc output voltage, Vo, from a second terminal, with the third terminal connected to ground.

RELAY:

A relay is an electrically operated switch. Current flowing through the coil of the relay creates a magnetic field which attracts a lever and changes the switch contacts. The coil current can be on or off so relays have two switch positions and they are double throw (changeover) switches. Relays allow one circuit to switch a second circuit which can be completely separate from the first. For example a low voltage battery circuit can use a relay to switch a 230V AC mains circuit. There is no electrical connection inside the relay between the two circuits; the link is magnetic and mechanical.

Relays are usually SPDT or DPDT but they can have many more sets of switch contacts, for example relays with 4 sets of changeover contacts are readily available. Most relays are designed for PCB mounting but you can solder wires directly to the pins providing you take care to avoid melting the plastic case of the relay. This lever moves the switch contacts. There is one set of contacts (SPDT) in the foreground and another behind them for DPDT. The relay's switch connections are usually labeled COM, NC and NO:

- **COM** = Common, always connect to this, it is the moving part of the switch.
- **NC** = Normally Closed, COM is connected to this when the relay coil is **off**.
- **NO** = Normally Open, COM is connected to this when the relay coil is **on**.

CHAPTER-5

ZIGBEE IEEE 802.15.4

802.15.4 – ZigBee Physical Layer

ZigBee is a wireless technology developed as an open global standard to address the unique needs of low-cost, low-power wireless M2M networks. The ZigBee standard operates on the IEEE 802.15.4 physical radio specification and operates in unlicensed bands including 2.4 GHz, 900 MHz and 868 MHz.

The 802.15.4 specification upon which the ZigBee stack operates gained ratification by the Institute of Electrical and Electronics Engineers (IEEE) in 2003. The specification is a packet-based radio protocol intended for low-cost, battery-operated devices. The protocol allows devices to communicate in a variety of network topologies and can have battery life lasting several years.

The ZigBee Protocol

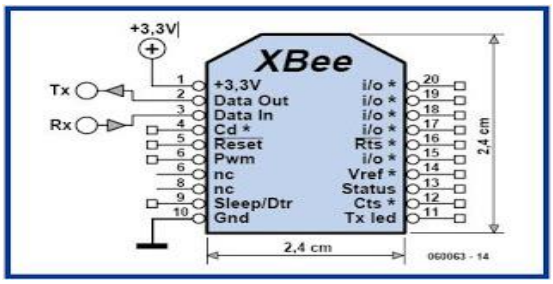
The ZigBee protocol has been created and ratified by member companies of the ZigBee Alliance . Over 300 leading semiconductor

manufacturers, technology firms, OEMs and service companies comprise the ZigBee Alliance membership. The ZigBee protocol was designed to provide an easy-to-use wireless data solution characterized by secure, reliable wireless network architectures.

The ZigBee Advantage:

The ZigBee protocol is designed to communicate data through hostile RF environments that are common in commercial and industrial applications.

Zigbee pin diagram:



ZigBee is a specification for a suite of high-level communication protocols used to create personal area networks built from small, low-power digital radios. ZigBee is based on an IEEE 802.15.4 standard. Though its low power consumption limits transmission distances to 10–100 meters line-of-sight, depending on power output and environmental characteristics,[1] ZigBee devices can transmit data over long distances by passing data through a mesh network of intermediate devices to reach more distant ones. ZigBee is typically used in low data rate applications that require long battery life and secure networking (ZigBee networks are secured by 128 bit symmetric encryptionkeys.) ZigBee has a defined rate of 250 kbit/s, best suited for intermittent data transmissions from a sensor or input device. Applications include wireless light switches, electrical meters with in-home-displays, traffic management systems, and other consumer and industrial equipment that requires short-range low-rate wireless data transfer.

Zigbee protocol features include;

- Support for multiple network topologies such as point-to-point, point-to-multipoint and mesh networks
- Direct Sequence Spread Spectrum (DSSS)
- Up to 65,000 nodes per network
- 128-bit AES encryption for secure data connections
- Collision avoidance, retries and acknowledgements

ZigBee Applications

ZigBee enables broad-based deployment of wireless networks with low-cost, low-power solutions. It provides the ability to run for years on inexpensive batteries for a host of monitoring and control applications. Smart energy/smart grid, AMR (Automatic Meter Reading), lighting controls, building automation systems, tank monitoring, HVAC control, medical devices and fleet applications are just some of the many spaces where ZigBee technology is making significant advancements.

Digi ZigBee Technology

Digi is a member of the ZigBee Alliance and has developed a wide range of networking solutions based on the ZigBee protocol. XBee and XBee-PRO modules and other XBee-enabled devices provide an easy-to-implement solution that provides functionality to connect to a wide variety of devices.

CHAPTER-6

CONCLUSION:

We implemented the model within a framework that can be used for redirect food distribution within different virtual and physical environments. It is useful for the evaluation of redirected of parameters under varying conditions. In this paper, we are using virtual reality due to light rays through the wall to display through the Buttons like FOOD, CLOTH, MEDICINE Etc.In future to be display long distance through the laser beam light.

REFERENCE PAPER:

[1] N. Yu, P. Genevet, M. A. Kats, F. Aieta, J.-P. Tetienne, F. Capasso, and Z. Gaburro, "Light propagation with phase discontinuities: Generalized laws of reflection and refraction," Science, vol. 334, no. 6054, pp. 333–337, 2011.

[2] F. Aieta, P. Genevet, N. F. Yu, M. A. Kats, Z. Gaburro, and F. Capasso, "Out-of-Plane Reflection and Refraction of Light by Anisotropic Optical Antenna Metasurfaces with Phase Discontinuities," Nano Lett., vol. 12, no. 3. pp. 1702-1706, Feb. 2012.

[3] C. Pfeiffer and A. Grbic, "Metamaterial Huygens' surfaces: Tailoring wave fronts with reflectionless sheets," Phys. Rev. Lett., vol. 110, no. 19, p. 197401, 2013.

[4] X. Ni, Z. J. Wong, M. Mrejen, Y. Wang, and X. Zhang, "An ultrathin invisibility skin cloak for visible light," Science, vol. 349, pp. 1310–1314, 2015. [6] A. Monti et al., "Anisotropic mantle cloaks for TM and TE scattering reduction," IEEE Trans. Antennas Propag., vol. 63, no. 4, pp. 1775–1788, Apr. 2015.

LITREATURE SURVEY

S.NO	TITLE	AUHTOR	YEAR	EXPLANATION
2)	Hologram Selection in Realistic Indoor Optical Wireless Systems With Angle Diversity Receivers	Mohammed T. Alresheedi and Jaafar M. H. Elmirghan	2015	In this paper, we introduce a new adaptive optical wireless system that employs a finite vocabulary of stored holograms. We propose a fast delay, angle, and power adaptive holograms (FDAPA-Holograms) approach based on a divide and conquer (D&C) methodology and evaluate it with angle diversity receivers in a mobile optical wireless system.

S.NO	TITLE	Author	YEAR	EXPLANATION
3)	Comparison of Binary Hologram Generation Methods: Sampling on the Object Image Scene and Error Diffusion Method on the Hologram Plane	JIAO Shuming, P.W.M. Tsang	2013`	Holography is a technique to record and reconstruct a three dimensional scene on a 2D plane, which is called a hologram. As a special kind of 2D image, the digital image processing of holograms such as gray level image binarization can be quite different from conventional images. The generation of binary holograms from gray level holograms can be implemented not only with conventional dithering or error diffusion methods but also sampling methods on the object image proposed recently