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APPLICATION OF VIRTUAL REALITY IN THE RESTAURANTSAREA IN SVR

Ganesh[1], Ashwanth Raj[2], Shyam[3], Nithin[4], Lalith Adithya[5]

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Abstract

The accessibility and clarity of the menu are the main aspects that simplify ordering food at a restaurant. A HOLOGRAM menu completely alters the customer's dining experience. The existing program provides an app that businesses may use to feed their menus onto CONTROLLER & HOLOGRAM-based tablets so that patrons can flip, slide, and touch through the menu more easily. We intend to provide restaurants with a tablet menu that makes meal recommendations based on a brand-new, never- before-used recommendation algorithm. Also, we run the program using a CONTROLLER & HOLOGRAM-based one. We employ a cloud-based server, which makes the database's storage affordable and safe.

Keywords: Virtual Reality, Hologram.

[1]*Department of ECE,* St. Joesph's Institute of Technology*Chennai, India*
gg6615154@gmail.com

[2]*Department of ECE* St. Joesph's Institute of Technology*Chennai, India*
ashwanth0443@gmail.com

[3] *Department of ECE,* St. Joesph's Institute of Technology*Chennai, India*
s8447599@gmail.com

[4] *Department of ECE,* St. Joesph's Institute of Technology*Chennai, India*
thinnith168@gmail.com

[5]*Department of ECE,* St. Joesph's Institute of Technology*Chennai, India*
bhuvanlalita93@gmail.com

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Introduction

A system is something that endures and functions as a whole through the interaction of its parts. Body, humanity, access control, etc. are few examples. A system is a region of the world that a person or group of people chooses to perceive as a whole over a certain period of time and with a particular objective in mind. It is composed by interconnected parts, each of which is distinguished by characteristics that have been picked becausethey are appropriate for the goal.

- An embedded system combines hardware and software to complete a single, focused task.

Embedded systems must adhere to timing and other environmental restrictions. Environment is connected to systems by sensors, actuators, and other I/O interfaces.

A microcontroller-based, software-driven, dependable, realtime control system that is sold into a market that is competitive and price-conscious, autonomous, or human- or networkinteractive, and that operates on a variety of physical variables and in a variety of situations is known as an embedded systemMobile phones and personal digital assistants are two examples.

EXISTING SYSTEM

Our menu card is manually operated. There is a facility for holograms.

Under the current system, labor is utilized.

PROPOSED SYSTEM

We are employing wireless technology in this hologram, and it is all automated.

- In holographic, which uses a multiplex Fresnel hologram to detect the wavelength dispersion of a light source.
- Normally, a spectrometer is used to measure the wavelength distribution of the light source, but in this instance, employing the light source makes it challenging todo so.

EMBEDDED SYSTEMS OVERVIEW OF EMBEDDED SYSTEMS

A special-purpose computer system called an embedded system is created to carry out one or a few specific functions, frequently under real-time processing limitations. It is typically integrated into a comprehensive gadget that also includes physical and mechanical components.

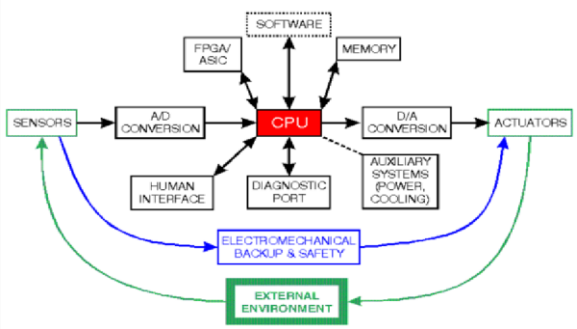
Although many systems have a programmable component, the term "embedded system" is generally not well defined. For instance, handheld computers, which include operating systems and microprocessors similar to embedded systems, are not genuinely embedded systems because they permit the loading of multiple applications and the connection of peripherals. Embedded systems perform a number of tasks.

- Keep an eye on the environment, reading data from input sensors via embedded systems. The processed data is subsequently presented to the user or users in some format.
- Manage the environment; embedded systems produce and distribute actuator commands.
- Communication tools like modems and cell phones
- Domestic appliances like a CD player, VCR, ormicrowave
- Control systems, such as satellite control, robotics, and anti-lock brake systems for cars

Block diagram of an embedded system:

Embedded processors are typically found in embedded systems. Microwaves, VCRs, and automobiles are just a few examples of devices that use embedded systems. An operating system is a component of some embedded systems. Others are very

specialised, culminating in the implementation of the complete logic in a single programme. These systems provide a specific purpose in addition to providing general purpose computing when they are embedded within a device. Fig. 1.1 displays an example of an embedded system.



CHARACTERISTICS OF EMBEDDED SYSTEMS

Embedded systems have a distinct set of traits that define them. Each of these traits imposed a particular set of design restrictions on designers of embedded systems. Designing embedded systems while adhering to the unique set of requirements for the application is difficult.

Application-Specific Systems:

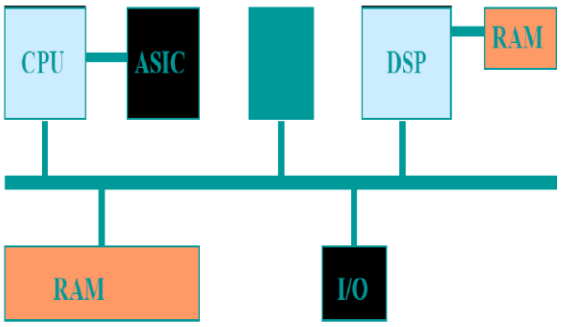
As a result, the designer is able to concentrate on the particular design limitations of a well-defined application. There is very little room for user reprogramming. Yet, some embedded systems need the adaptability of reprogram ability. For these kinds of applications, programmable DSPsare typical.

REACTIVE SYSTEMS

The majority of embedded systems contain a sizable reactive component. Developing a precise worst case design analysis for systems with statistical performance characteristics is one of the toughest challenges for embedded system designers (e.g., cache memory on a DSP or another embedded processor). Systems with this criterion frequently have to be designed for the worst-case scenario.

HETEROGENEOUS RCHITECTURES

Heterogeneous architectures are frequently used in embedded systems (Fig 1.2). They might include various processors in a single system solution. The systems might also use mixed signals. Embedded system design is absolutely unique due to the integration of I/O interfaces, local and remote memories, sensors, and actuators. Because of the strict design restrictions for embedded systems, heterogeneity offers more design options.



HARSH ENVIRONMENT

Several embedded systems don't function in a regulated environment. Overheating is frequently an issue, particularly in applications involving

combustion (e.g., many transportation applications). The requirement for protection from vibration, shock, lightning, power supply fluctuations, water, corrosion, fire, and general physical abuse might result in additional issues for embedded computers.

System safety and reliability

More and more of the overall system's safety-related functions are becoming to be controlled by embedded systems as their complexity and computing capability increase. Both software and hardware

controls may be used as these safety measures. When a computer system malfunctions, mechanical safety backups are typically triggered to shut down the system safely Software typically doesn't "break" in the same way as hardware. Software, however, might be so intricate that a series of unanticipated events could result in failures, putting users in danger.

CONTROL OF PHYSICAL SYSTEMS

The ability to interact with the surroundings is one of the key motivations for integrating a computer. It isnecessary to convert outputs back to analogue signal levels. System compromises between analogue parts, power, mechanical, network, and digital hardware with associated software must be carefully balanced by embedded system designers.

Small and low weight

Physically, many embedded computers are included into a larger system. Aesthetics may determine the embedded system's form factor. For instance, a missile's form factor might need to fit inside the missile's nose. For example, in order to save fuel, embedded automotive control systems must be lightweight. For portability, portable CD players must be lightweight.

CLASSIFICATION

Real-time systems (RTS) are required to react to events within a predetermined time frame.

Hard Real Time Systems and Soft Real Time Systems are classified by RTS.

HARD REAL TIME SYSTEMS

The reaction time of "hard" real-time systems is extremely constrained.

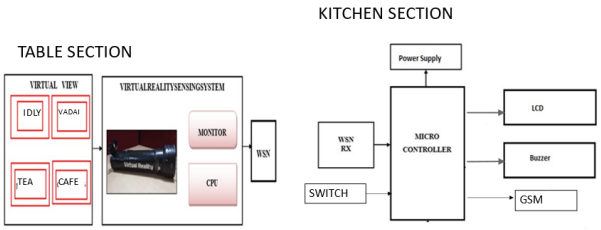
Examples include a cardiac pacemaker and a nuclear power plant.

SOFT REAL TIME SYSTEM

"Soft" real-time systems have less restrictions on"lateness," but they still need to function promptly and consistently.

Example: The reservation system for trains - although it takes a few extra seconds, the data is still accurate.

Block diagram:



ARDUINO (ATMega328) MICROCONTROLLERS

Arduino is a tool for building computers that are more capable than a desktop computer of sensing and controlling the physical world. It consists of a development environment for building software for the board's basic microcontroller and is an open-source physical computing platform.

For physical computing, there are numerous additional microcontrollers and microcontroller platforms available. Cross-platform – The Arduino software is compatible with Windows, Macintosh OSX, and Linux. The majority of microcontroller systems are Windows-only.

Programming environment that is easy to use for novices while yet being flexible enough for more experienced users to benefit from is the Arduino programming environment. It's conveniently based on the Processing programming environment for educators, so students learning to programme in that environment will be accustomed to Arduino's appearance and feel.

The Italian word "Uno" (which means

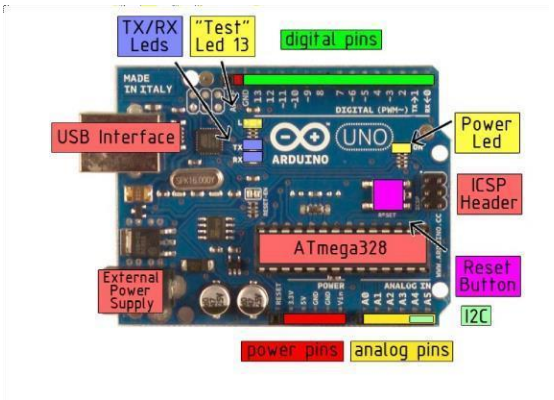
"one") was chosen to symbolise the forthcoming release of Arduino 1.0. Moving forward, the reference versions of Arduno will be the Uno and version 1.0ATmega328 microcontroll Operational Voltage: 5 V; Recommended Input Voltage: 7-12 V; Maximum Input Voltage: 6-20 V

Analog Input Pins 6 Digital I/O Pins 14 (of which 6 produce PWM output)

DC Current for 3.3V Pin: 50 mA; DC Current for I/OPin: 40 mA

Flash Memory 32 KB, of which the bootloader uses 0.5 KB; SRAM 2 KB; and EEPROM 1 KB

The pinMode(), digitalWrite(), and digitalRead() routinesallow you to use any one of the Uno's 14 digital pins as aninput or output. They use 5 volts to work. Each pin includes a 20–50 kOhm internal pull-up resistor that is unconnected by default and has a maximum current capacity of 40 mA. Moreover, several pins perform specific tasks:



0 (RX) and 1 in the serial (TX). used to transmit and receive TTL serial data (RX and TX). The ATmega8U2 USB-to- TTL Serial chip's relevant pins are connected to these pins.

2 and 3 external interruptions. These pins can be set up to initiate an interrupt in response to low values, rising or falling edges, or value changes. Details can be found in the attachInterrupt() function. In addition, some pins have specific functions, such as I2C pins 4 (SDA) and 5. (SCL). Use the Wire library to support I2C (TWI) communication.

SOFTWARE DESCRIPTION

ARDUINO

It consists of a development environment for building software for the board's basic microcontroller and is an open-source physical computing platform.

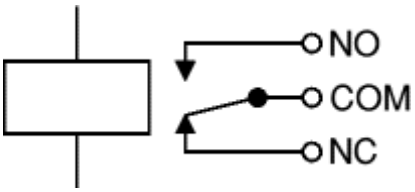
Using switches or sensors as inputs and a range of lights, motors, and other physical outputs as controls, Arduino projects can communicate with software running on your computer or work independently (e.g. Flash, Processing, MaxMSP.) The open-source IDE is available for free download, and the boards can be manually put together or purchased already put together.

RELAY

An electrically controlled switch is a relay. A magnetic field produced by current passing through the relay's coil draws a lever and modifies the switch contacts. Relays enable one circuit to switch another, potentially entirely independent, circuit. For instance, a relay can switch a 230V AC mains circuit in a low voltage battery circuit. The link between the two circuits in the relay is mechanical and magnetic; there is no electrical connection between them.

A relay's coil normally transfers a sizable amount of current—30mA for a 12V relay, but up to 100mA for relays made to work with lower voltages—through its circuitry. As most ICs (integrated circuits) (chips) are unable to supply this current, a transistor is typically employed to increase the modest IC current to the higher value needed for the relay coil. The ubiquitous 555 timer IC's 200mA maximum output current allows these gadgets to directly power relay coils without amplification.

Relays often feature SPDT or DPDT switch contacts, but they can also have many additional sets. For instance, relays with four sets of changeover contacts are widely available. The majority of relays are made to be mounted on a PCB, however if you take care to prevent melting the plastic relay animated image displays a relay in operation together with its switch contacts and coil. As the coil is turned on, you can see a lever to the left being drawn by magnetism. The switch contacts are shifted by this lever. The relay is DPDT because it has a set of contacts (SPDT) in the foreground and another set behind them.



The switch connections on the relay are often markedCOM, NC, and NO:

- Always connect to COM (Common), the switch'smovable component.
- NC stands for "Normally Closed," and when therelay coil is off, COM is connected to this.
- While the relay coil is on, COM is linked to NO,which stands for Usually Open.

PIEZO BUZZER

Is a type of electronic sound-producing equipment. It can be used in a variety of applications, including computers, call bells, cars and trucks with reversing indicators, and basic, low-cost construction. The piezo buzzer is based on the inverse principle of piezo electricity, which Jacques and Pierre Curie discovered in 1880. When some materials are subjected to mechanical pressure, it is a phenomenon that causes electricity to be produced, and the opposite is also true.

A. Fig 1: Image of a Piezo Buzzer

The piezo buzzer, also known as a piezo transducer, can be seen functioning at DC voltage in the image above.

The buzzer can be seen in various angles in the photographs above. A DC voltage is provided by the two leads.

PCB

Fig. 2: Image Showing PCB and Electronic Components of Piezo Buzzer

The PCB with soldered-on electronic components is visible in the image above afterremoving the back plastic cover.

Working:

A resistor and transistor pair are used to create an oscillating signal when a tiny DC voltage isintroduced to the input pins. The

inductor coil amplifies these fluctuating signals. The piezo ceramic disc experiences radial mechanical expansion and contraction when high voltage alternating impulses are applied to it. The metal plate flexes in the opposite way as a result of this. Sound waves are generated in the air when a metal plate continuously bends and contracts in the opposite direction.

LCD Display

Materials used in liquid crystal displays (LCDs) contain characteristics of both liquids and crystals. They don't have a melting point; instead, they have a range of temperatures where the molecules are practically as mobile as they would be in a liquid yet are arranged in a manner like a crystal.

Outside of the two glass panels, one polarizer of each type is pasted.

The LCDs are thin and light, measuring only afew millimeters. Since LCDs use less energy, they may be driven for extended periods of time and are compatible with low-powerelectronic circuitry.

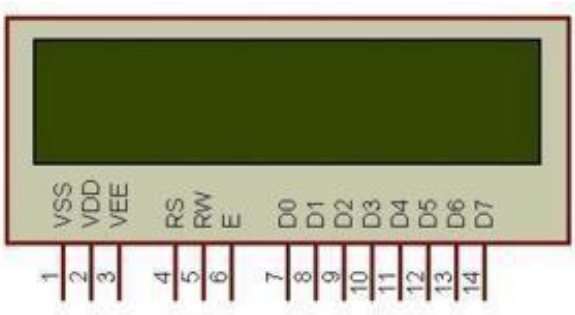
Dot-matrix (alphanumeric) liquid crystal displays from Crystalonics are offered in TN and STN configurations, with or without backlight. Lowpower consumption is achieved by using C-MOS LCD controller and driver ICs. A 4-bit or an 8-bit microprocessor or microcontroller can be interfaced with these devices.

The integrated controller IC's features include: Match the high-speed MPU interface (2MHz) 80 bytes of display Memory (80 Characters max) 240 character typefaces in a 9,920 bit character generator ROM. with 208 characters (5 x 8 dots) typefaces with 32 characters (5 x 10 dots)

Character generator with 64 x 8 bits RAM Generator for 8 characters RAM eighth-character typefaces (5 x 8 dots) fonts for 4 characters (5 x 10 dots) Adjustable duty cycles 1/8 is the cursor size for one line of 5 x 8 dots. 1/11 - for a single line of 5 x 10 cursor-driven dots For one line of 5 x 8 dots with a pointer, use 1/16.

CONTROLLER IC FUNCTIONAL

B. DESCRIPTION



Holography works

An object (or person) that you wish to record, a laser beam that will be shone upon the object and the recording medium, a recording medium with the right materials to help clarify the image, and a clear atmosphere that will allow the light beams to cross are all required to make a hologram.

With the addition of light-reactive grains, photographic film is one of the most popular materials used to make holograms. In comparison to using the silver halide material from the 1960s, this enables the resolution to be higher for the two beams, giving the image a considerably more realistic appearance. An object (or person) that you wish to record, a laser beam that will be shone upon the object and the recording medium, a recording medium with the right materials to help clarify the image, and a clear atmosphere

that will allow the light beams to cross are all required to make a hologram.

Where the lights converge on the recording medium, there are a variety of materials that can be used. With the addition of light- reactive grains, photographic film is one of the most popular materials used to

make holograms. In comparison to using the silver halide material from the 1960s, this enables the resolution to be higher for the two beams, giving the image a considerably more realistic appearance.

Experimental result for hologram:

LANGUAGE CHARACTERS

Proteus uses a fully functional procedural approach. Variables are untyped, do not need to be declared, can be local or public, and can be passed by value or by reference. All common control structures, such as if-then-else, for- next, while-loops, repeat-until loops, and switch-case loops, are also available.

Only three forms of data are supported by Proteus: strings, floating-point numbers, and integer numbers. With handles, or integer numbers returned by item creation operations, one can access complex data structures (such as files, arrays, queues, stacks, AVL trees, sets, and so forth).

Proteus has a large number of features for:

Calculating logical and mathematical equations; accessing the file system; sorting data; working with dates and texts; connecting with the user (console functions).

Associative arrays (also known as sets) and AVL trees, which are particularly effective and practical for fast sortingand looking up information, are supported by Proteus.

As Proteus is an interpreted language with a large number of built-in functions, execution performance is typically excellent and frequently on par with that of compiled programmes. Programs are loaded into memory, precompiled, and run. The ability to execute scripts as services or ISAPI scripts is one of Proteus' most intriguing capabilities.

A source code editor with syntax highlighting and a contextsensitive help system are features of the development environment. As the interpreter is a single executable (less than 400 Kb) and runs without additional DLLs on modern Windows computers, Proteus does not need to be installed.

LITREATURE SURVEY

1) By using automatically generated scratch patterns to create abrasive holographic animinations, Frode Eika Sandnes is a writer. 2019, Using abrasive holograms, users can experiment with spectacular quasi- holography and produce hologram artwork by using straightforward techniques to make reflecting scratches on

plastic sheets. The generation of three dimensions is covered in the majority of the recorded accounts of abrasive holography

2) Realistic indoor optical wireless system with angle diversity receivers with hologram selection Jafar

M. H. Elmirghan and Mohammed T. Alresheed I, 2020 In this research, we present a novel adaptive optical wireless system that makes use of a limited set of holograms that are stored. We suggest a divide and conquer (D&C)-based fast delay, angle, and power adaptive holograms (FDAPA-Holograms) strategy and test it with angle diversity receivers in a portable opticalworeless system.

3) Object image scene sampling and the hologramplane's error diffusion method are compared for creating binary holograms. 2021 JIAO Shuming, P.W.M. A three dimensional scene can be captured and reconstructed using holography. The digital image processing of holograms, such as grey level image binarization, can be considerably different from traditional image processing because they are a unique type of 2D image. It is possible to generate binary holograms from grey level holograms using techniques other than the usual dithering or error diffusion.

4) DWT-SVD-based forensic marking algorithms using holograms, Li De 2021 A new forensic watermarking algorithm was proposed in this research that creates a digital hplogram from a forensic mark and embeds it in the DWTSVD domain. In order to determine the high capacity's intended application, forensic watermarking is used. In order to eliminate single interference, of axis hologram is formed from forensic m and embedded into subband of the Dwt domain. Also, by employing SVD for the signal embed hologram, we increased the algorithm's safety and detection performance.

5) a machine that checks holograms for numerous patterns, Tae Hyoung Park and Hyuk Joong Kwon 2019, We suggest a hologram with numerous patterns inspection system that runs automatically. There are illuminations, a camera, and a vision processor in the system hardware. To capture each pattern image, various LED illuminations are positioned in various directions. The pre-processing, pattern-generation, and pattern-matching components of the system software. By using a created matching algorithm, the obtained images of the input hologram are compared with their reference patterns. to make up for the position.

Future project scope

In an emergency, this craft can be utilised as a first aidtool.

For example, our equipment is portable, simple to use, and can save a life if someone needs a ventilator at the scene of an accident or if they need to be brought immediately to the hospital after developing a lung infection.

Our project is easily accessible to both wealthy and underprivileged individuals due to its affordable price.

You'll need a working knowledge of medicine in order to function.

CONCLUSION

Hologram technology offers a lot of potential, to sum it up. Easy wireless consumer engagement is a goal of the development of smart restaurants. Orders can be easily placed using this method. People's eating habits and tastes will change as a result. Dining has changed thanks to holograms, which make it easier for customers to flip, swipe, and tap their way through the menus. Other payment options like Google Pay, Paytm, Phone Pe, etc. could be added in the future. In the future, a parking system and a quicker, easier, more responsive user interface might be developed.

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