International Journal of Advanced Research

in Electrical, Electronics and Instrumentation Engineering

INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.122

Virtual Touch Screen Implementing Virtual Touch Buttons and Virtual Sliders Using a Projector and Camera

Dr.Sathiyapriya.S[1], Rohini.M[2], Nandini.E[3], Sindhukavi.S[4]

Associate Professor, Department of Electronics and Communication Engineering, Panimalar Institute of Technology,

Chennai, Tamilnadu, India[1]

Student, Department of Electronics and Communication Engineering, Panimalar Institute of Technology, Chennai,

Tamilnadu, India[2]

Student, Department of Electronics and Communication Engineering, Panimalar Institute of Technology, Chennai,

Tamilnadu, India[3]

Student, Department of Electronics and Communication Engineering, Panimalar Institute of Technology, Chennai,

Tamilnadu, India[4]

ABSTRACT: This extend presents a huge intelligently show with virtual touch buttons and sliders on a pale-colored level divider. Our easy-to-install framework comprises of a front projector and a single product camera. A button touch is recognized based on the area of the shadow cast by the laser beam; this shadow gets to be exceptionally little when the button is touched. The shadow zone is portioned by a brief alter of the button to a distinctive color when expansive closer view (i.e., the laser beam and its area covered) covers the button locale. In this manner, no time expending operations, such as morphing or shape examination, are required. Foundation subtraction is utilized to extract therefore ground locale. The reference picture for the foundation is continuously adjusted to coordinate the surrounding light. Our virtual slider is based on this touch-button mechanism. When tried, our plot demonstrated vigorous to contrasts in illumination. Our virtual slider features a speedy reaction and demonstrated appropriate as a controller for a Breakout-style diversion.

KEYWORDS: Projector-camera Systems, Projector-based Display, Touch Detection, Virtual TouchScreen.

I. INTRODUCTION

As the world is intrigued with the Virtual Reality and its applications numerous VR applications has been proposed as of late. In specific progression in automation has been the drift in later times and mechanization has been the mechanical for many issues and it too makes a difference in speedy effective exact working of the particular framework. Virtual Reality diminishes human exertion. It ordinarily employments monitor, projector screen and a VR headset for interaction. Here we propose framework which automates all the electronic component of a specific put based on the bandwidth of the Zigbee.

All the electronic component such as Discuss Conditioners, Fans, Bulbs etc can be controlled from any put and any time. This has been the essential advantage of this system. Based on the investigate done, the past computerization framework didn't stressed around the separate from which the electronic components can be activated and deactivated. The prior framework employments progress and complex components where both costs and complexity in association and repairs are more. Most of the previous systems works as it were on one sort of electronic disobedient (like specific system controls as it were bulbs and a few as it were fans etc).In addition all the components utilized in this framework are effortlessly accessible in showcase, hence one can effortlessly alter the components in As we utilize Arduino Microcontroller, little cameras and projectors the expenditure for the framework can be decreased quickly. This system also makes a difference in diminishing power consumption because it can be worked from any put and any time. This

framework also increases human consolation.

Within the past work, the framework did not work when there's a variances in the power, the specified result was not gotten when tested. When profundity sensor is used for recognizing the touch, it becomes expensive. Within the proposed framework, it produces the requiredresult indeed when there's a control change. Camera utilized in the proposed framework captures the touch made, utilizing foundation subtraction methodology[2] and the gadgets arefueled up. The setup of the system becomes straightforward. Consequently we go for Domestic Robotization Utilizing Virtual Reality.

II. EXISTING SYSTEM

- Much more time consuming operation of this system
- This system utilizes simple technology
- It is low power consumption of this application

III. PROPOSED SYSTEM

- Within the proposed framework a unused innovation called virtual reality detecting framework is utilized.

- We propose a huge intelligently show with virtual touch buttons and sliders on a pale-colored level wall.

- Within the other conclusion the given command will be gotten and concurring to that the gadget will be controlled.

- No time expending operation of this system.

IV. BLOCK DIAGRAM

TRANSMITTER
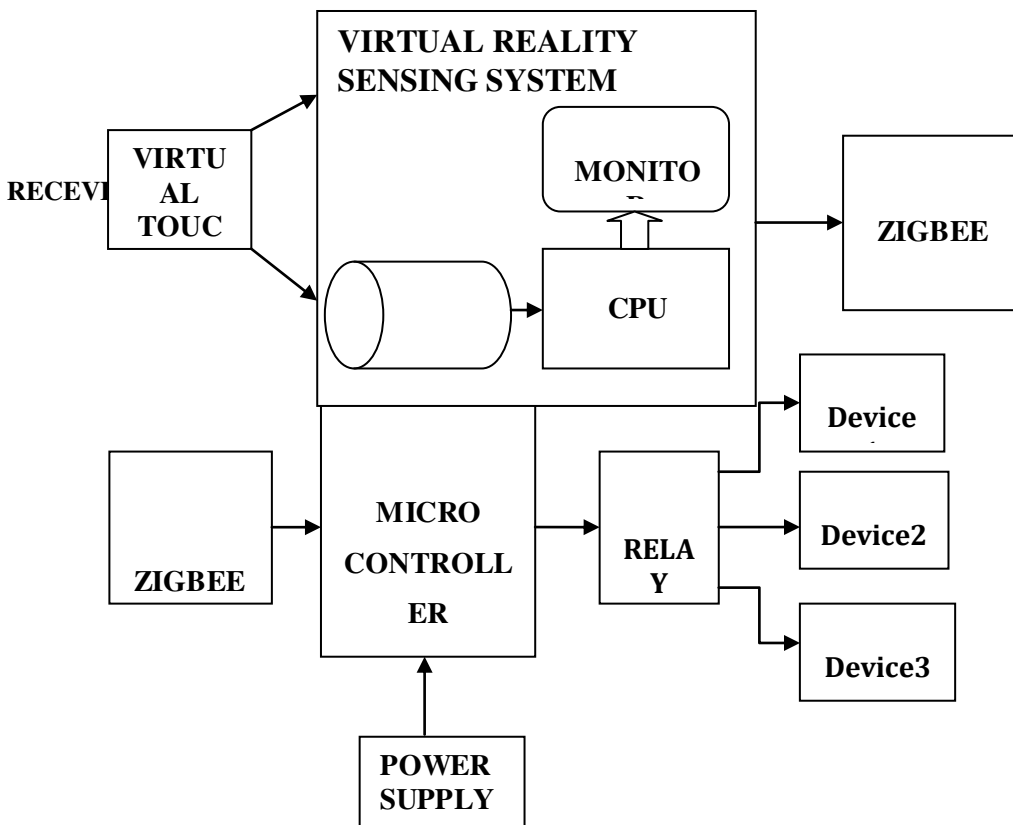
V. HARDWARE REQUIREMENTS

- ❖ VIRTUAL REALITY SENSING UNIT
- ❖ AT89S52
- ❖ PC
- ❖ WIRELESS TRANSMITTER AND RECEIVER
- ❖ RELAY
- ❖ CAMERA
- ❖ TOUCH SCREEN

VI. SOFTWARE REQUIREMENTS

- • KEIL IDE
- • EMBEDDED C
- • .NET

## VII. WORKING PRINCIPLE

Transformer
The potential transformer will step down the control supply voltage (0-230V) to (0-6V) level. At that point the auxiliary of the potential transformer will be associated to the accuracy rectifier, which is developed with the assistance of op–amp. The points of interest of using precision rectifier are it'll grant top voltage yield as DC, rest of the circuits will provide as it were RMS yield.

Bridge rectifier
When four diodes are associated as appeared in figure, the circuit is called as bridge rectifier. The input to the circuit is connected to the corner to corner inverse corners of the arrange, and the yield is taken from the remaining two corners. Let us expect that the transformer is working legitimately and there's a positive potential, at point A and a negative potential at point B. The positive potential at point A will forward predisposition D3 and switch predisposition D4. The negative potential at point B will forward inclination D1 and turn around D2. At this time D3 and D1 are forward one-sided and will permit current stream to pass through them; D4 and D2 are switch one-sided and will square current stream the way for current stream is from point B through D1, up through RL, through D3, through the auxiliary of the transformer back to point B. This way is demonstrated by the strong bolts. Waveforms (1) and (2) can be watched over D1 and D3. One-half cycle afterward the extremity over the auxiliary of the transformer

IC voltage regulators
Voltage controllers contain a course of broadly utilized ICs. Controller IC units contain the circuitry for reference source, comparator intensifier, control gadget, and over-burden security all in a single IC. IC units give direction of either a settled positive voltage, a settled negative voltage, or an adjustably set voltage. The controllers can be chosen for operation with stack streams from hundreds of milli amperes to tens of amperes, comparing to control evaluations from milli watts to tens of watts.
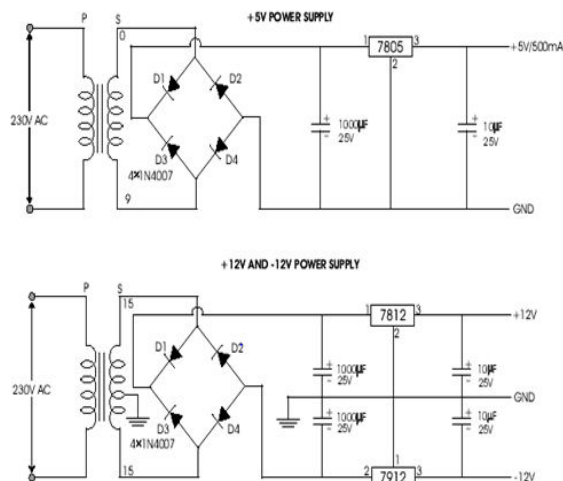

Circuit Diagram of Power Supply

VIII. HARDWARE DESCRIPTION

ARDUINO UNO

Arduino Uno may be a microcontroller board based on the ATmega328P. It has 14 advanced input/output pins (of which 6 can be utilized as PWM yields), 6 analog inputs, a 16 MHz quartz precious stone, a USB association, a control jack, an ICSP header and a reset button. It contains everything required to bolster the microcontroller; basically interface it to a computer with a USB cable or control it with a AC-to-DC connector. Arduino Uno features a number of offices for communicating with a computer, another Arduino board, or other microcontrollers.
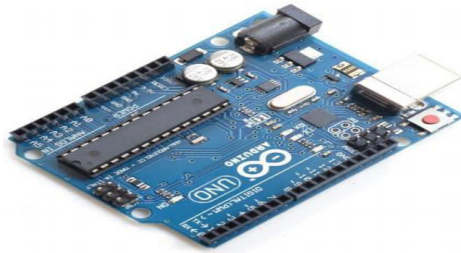
Arduino UNO

ZIGBEE

ZigBee gadgets are required to comply to the IEEE 802.15.4-2003 LowRate Remote Individual Range Arrange (LR-WPAN) standard. The standard indicates the lower convention layers are the physical layer (PHY), and the Media Get to Control parcel of the information connect layer (DLL). The innovation characterized by the ZigBee detail is planning to be easier and less costly than other remote individual region systems (WPANs), such as Bluetooth or Wi-Fi.


VIRTUAL TOUCH SCREEN

There are diverse strategies accessible to identify a touch of hand or a finger on the screen. We utilized virtual touch buttons to show ON/OFF states, since touch buttons are recognizable and essential widgets for touch interfacing. The virtual touch screen may be a plane divider or any other level surface. This screen gives a feel of touching the gadget control unit for controlling the gadgets. When the screen is touched the gadgets are controlled based upon the touch(either ON or OFF).

RELAY BOARD

A hand-off is an electromechanical switch which is actuated by an electric current. A four transfer board course of action contains driver circuit, control supply circuit and separation circuit. A hand-off is amassed with that circuit. The driver circuit contains transistors for exchanging operations. The transistor is utilize for exchanging the hand-off. An separation circuit avoids turn around voltage from the hand-off which secures the controller and transistor from harm. The input beat for exchanging the transistor is given from the microcontroller unit. It is utilized for exchanging of a four gadget.
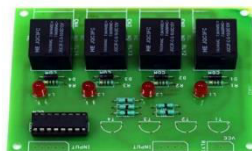
DC FAN

A DC fan could be a gadget utilized for cooling reason in numerous frameworks. when a supply is given to a gadget it begins pivoting. The course of the fan can be changed by switching the supply. DC or coordinate current fan works on the central, when a current carrying conductor is set in a magnetic field, it encounters a torque and incorporates a propensity to move. The fan contains a DC brushless engine, with an working voltage of 5V, and is appraised at 360mA. Keeping the temperature down in your venture can regularly be a need, and this fan can unquestionably offer assistance. When planning the gadgets that interface to a DC brushless cooling fan, it is basically imperative to be

mindful of this behavior.

DC MOTOR:

Adapted dc engines can be characterized as an expansion of dc engines. A adapted DC Engine features a adapt gathering joined to the engine. The speed of engine is numbered in terms of revolutions of the shaft per diminutive and is named as RPM .The equip get together makes a difference in increasing the torque and decreasing the speed. Utilizing the proper combination of gears in a adapt engine, its speed can be decreased to any alluring figure.

POWER SUPPLY

Block Diagram
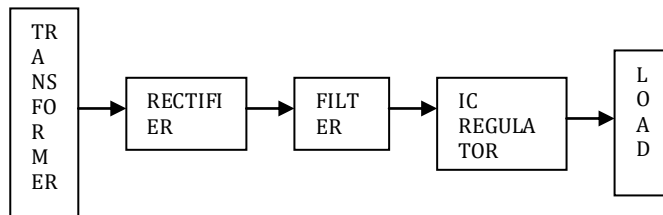
IX. SOFTWARE DESCRIPTION

EMBEDDED C

 Implanted C is planned to bridge the execution jumble between Standard C and the implanted equipment and application engineering. It expands the C dialect with the primitives that are required by signal-processing applications which are commonly given by DSP processors. The plan of the bolster for fixed-point information sorts and named address spaces in Implanted C is based on DSP-C. DSP-C [1] is an industry-designed expansion of C with which involvement was picked up since 1998 by different DSP producers in their compilers. For the improvement of DSP-C by Expert (the company three of us work for), participation was looked for with embedded-application creators and DSP producers.

X. CONCLUSION

- We proposed a Domestic Robotization Utilizing Virtual Reality which comprises of Virtual reality detecting unit, camera, Zigbee Microcontroller and transfers.
- The touch made is recognized utilizing virtual reality detecting framework and the gadgets are fueled on or off based on the user's activity.
- As Mechanization is getting to be the drift these days, computerizing the domestic machines utilizing farther controls has impediments with regard to separate. Domestic computerization utilizing virtual reality makes a difference in getting to the gadgets from anyplace around in case the recurrence of Zigbee is expanded.
- We assessed the exactness and reaction of our framework, these assessment appears that virtual reality is reasonable for viable applications.
- We still ought to make strides a few viewpoints of Domestic mechanization utilizing virtual reality detecting framework for illustration, assist decreasing the complications of superfluous shadow falling on to other buttons

and controlling of the gadgets.

- We are moreover arranging to create more applications and them in down to earth environment

XI. RESULT

In this project we've employed virtual reality technique in order to implement virtual touch buttons and virtual sliders for the purpose of operating different loads virtually.

XII. DISCUSSION

- We have proved the esteem and developing centrality members set on touch in virtual spaces.

- Collectively this molded how touch is talked around, conceptualised and actualized in VR, its improvement and plan, and subsequently the ways able to and will involve touch in VR.

REFERENCES

[1] Audet, S., Okutomi, M., and Tanaka, M. (2012). Augmenting Moving Planar Surfaces Interactively with Video Projection and a Color Camera. IEEE, Virtual Reality (VRW '12), pages 111-112.

[2] Borkowski, S., Letessier, J., and Crowley, J. L. (2004). Spatial Control of Interactive Surfaces in an Augmented Environment. EHCI/DS-VIS Lecture Notes in Computer Science, vol. 3425, pages228-244.

[3] Borkowski, S., Letessier, J., Bérard, F., and Crowley, J.L.(2006). User-Centric Design of a Vision System for Interactive Applications. IEEE Conf. on Computer Vision Systems (ICVS '06), pages 9.

[4] P.Rajasekar and Dr.M.Pushpalatha, "A Survey On Body Sensor Devices For Medical Services To Provide Miniature Design And Energy Harvesting Technique ," in International Journal of Pure and Applied Mathematics, Vol 117 No. 16 2017, pp.87-92.

[5] Brutzer, S., Höferlin, B., and Heidemann, G. (2011). Evaluation of Background Subtraction Techniques for Video Surveillance.
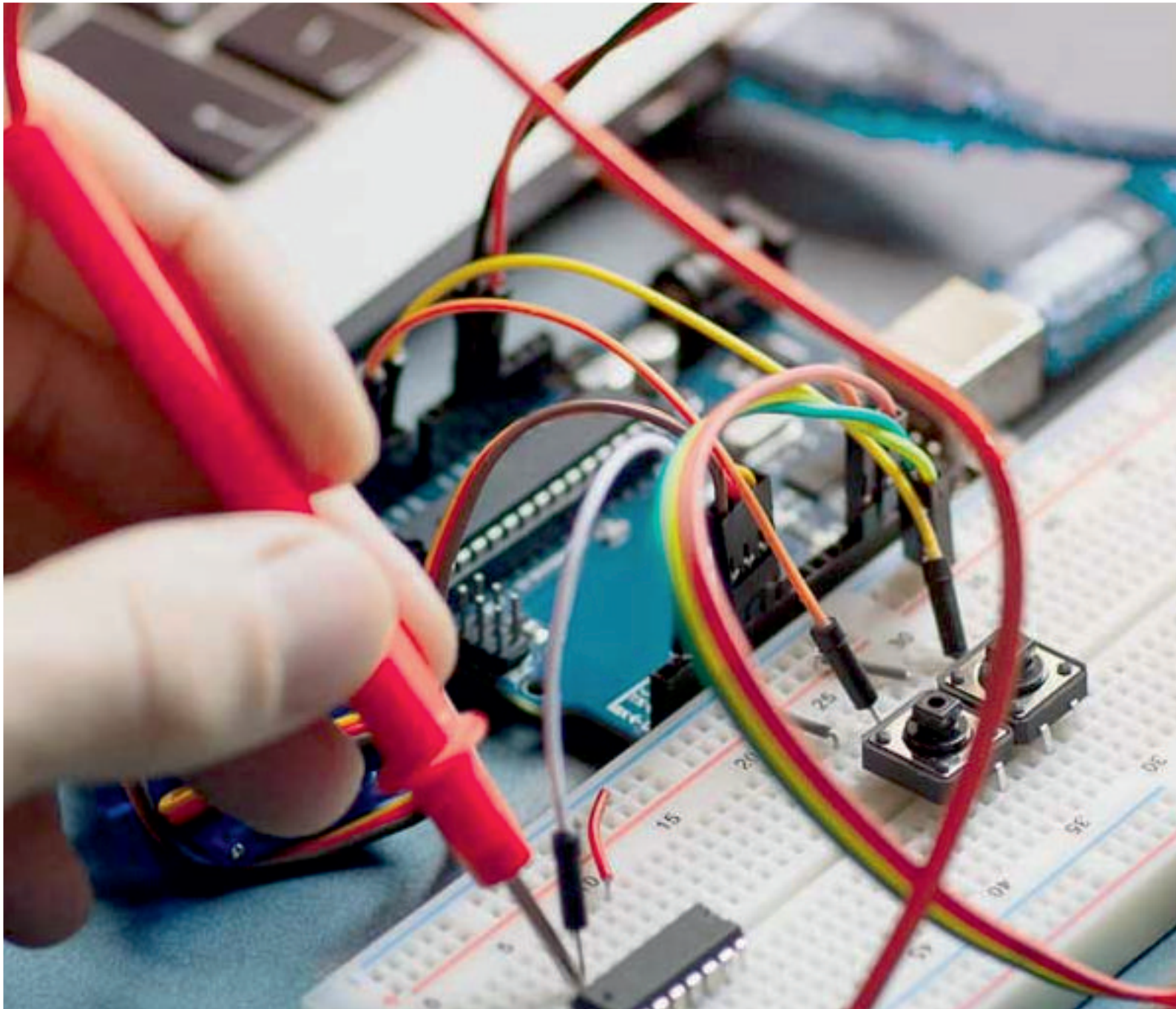
International Journal of Advanced Research

in Electrical, Electronics and Instrumentation Engineering

📱 9940 572 462 ⊘ 6381 907 438 ✉ ijareeie@gmail.com