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Controlling Led by Voice Command, Timer and Human Presence Detection

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***Abstract:** This paper focuses on the concept of home automation using arduino kit via mobile app. This paper describes and gives the direction for Arduino controlled light-weight bulb through PIR motion detector, voice commands as well as using buttons. We tend to use the PIR motion detector to get the presence of somebody's body to ON the bulb keep with the output of the motion detector. This can be used in very little areas like storerooms. We are in a position to place the motion detector at the door of house and once someone can enter the room, the motion detector will discover it and light-weight will get ON. The PIR motion detector can discover the shape up to seven meters so it's sensible for little rooms. This project additionally permits light automation by sensing the human presence inside the required varies.*

I. INTRODUCTION

For home automation there is numerous IOT kit obtainable for doing the task. Some of the robot kits alongside the feature are listed below:

A. Raspberry Pi

The Raspberry Pi may be a low value, credit-card sized pc that plugs into a pc monitor or TV, and uses a customary keyboard and mouse. it's a capable very little device that allows individuals of all ages to explore computing and to find out a way to program in languages like Scratch and Python. It's capable of doing everything you'd expect a personal computer to try to to, from browsing the web and enjoying high-definition video, to creating spreadsheets, word-processing, and enjoying games.

B. Arduino

Arduino may be a epitome platform (open-source) supported easy-to-use hardware and software system. Arduino provides a customary kind issue that breaks the functions of the micro-controller into a additional accessible package. Arduino is Associate in Nursing ASCII text file physical science platform supported easy-to-use hardware and software system. Arduino boards square measure able to scan inputs - lightweight on a device, a finger on a button, or a Twitter message - and switch it into Associate in Nursing output - activating a motor, turning on Associate in Nursing crystal rectifier, business enterprise one thing on-line.

II. WHY ARDUINO?

The given task is consummated with Arduino at an occasional price. it's straightforward and accessible user expertise, Arduino has been utilized in thousands of various comes and applications. The Arduino code is easy-to-use for beginners, however versatile enough for advanced users. It runs on mack, Windows, and Linux. academics and students use it to make low price scientific instruments, to prove chemistry and physics principles, or to urge started with programming and AI.

Arduino conjointly simplifies the method of operating with microcontrollers, however it offers some advantage for academics, students, and interested amateurs over different systems:



Fig.1. Features of Arduino

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A. Features

1) *Inexpensive:* Arduino boards square measure comparatively cheap compared to alternative microcontroller platforms.
2) *Cross-platform:* The Arduino computer code (IDE) runs on Windows, Macintosh OSX, and operational systems. Most microcontroller systems square measure restricted to Windows.
3) *Simple, Clear Programming Environment:* It is very easy to use the Arduino software package (IDE) for beginners as well as for advanced users also. It's handily supported the process programming setting; therefore learning to program therein setting are going to be conversant in however the Arduino IDE works.
4) *Open Source and Extensible Software:* The Arduino computer code is printed as open supply tools, accessible for extension by full-fledged programmers. The language is dilated through C++ libraries, and other people needing to perceive the technical details will create the leap from Arduino to the AVR C artificial language on that it's primarily based. Similarly, In our Arduino for advanced projects, we can add AVR-C programming code too.
5) *Open Source and Extensible Hardware:* The plans of the Arduino boards square measure printed below clever Commons license, thus skilled circuit designers will create their own version of the module, extending it and up it. Even comparatively inexperienced users will build the board version of the module so as to grasp however it works and save cash.

III. LITERATURE REVIEW

In paper 1 [Leo Louis],They explore the working principle and applications of an Arduino board. This also explores how it can be used as a tool for study and research works. Arduino board will offer a fast tool in development of VLSI check bench particularly of sensors. In this they mentioned the needs for Arduino like Active User Community, Growth of Arduino, Inexpensive Hardware, Arduino Board as a Programmer and Multi-platform Environment

They have also studied the Types of Arduino Boards such as Arduino BT accompanies an inherent Bluetooth module, for wireless communication. These modules are known as Shield. Some of the mentioned are Arduino Ethernet shield, Arduino Wireless shield and Arduino Motor Driver Shield.

They use the elements of Arduino which are Hardware and Software. In Hardware they mentioned some of those main component blocks that help in its functioning like Microcontroller, External Power Supply, USB plug ,Internal Programmer, Reset button, Analogue Pins, Digital I/O Pins,Powerand GND PinsThey used code for developing such sketches for AN Arduino is often referred to as the ArduinoIDE.This IDE contains the Text editor, Message area,Text,Console Toolbar.

In paper 2[Ajay Kapur],They presents a series of open-source firmwares for the latest iteration of the popular Arduino microcontroller platform. A portmanteau of Human Interface Device and Arduino, the HIDUINO project tackles a serious downside in coming up with NIMEs: simplyand dependably human action with a bunch pc mistreatment normal MIDI over USB show introductory-level human-computer and human-robot interaction inside.

In paper 3 [Alicia!M.!Gibb], they have described the semantics in which the Arduino is used by artists and designers points to its success and growth within its intended audience. Also they mentioned the response to the Arduino microcontroller among artists & designers.

In paper 4[M.K.D.Ulaganathan] they explored the Method using Arduino Microcontroller for a Standalone Photo Voltaic System .According to them , There has been tremendous advancements in the field of electronics recently. This had semiconductor diode to the belief of the hardware for the techniques like most wall socket following (MPPT).Low cost and simplicity are important factors. But also hardware implementation of MPPT techniques with Digital Signal Processors (DSP), Field Programmable Gate Arrays (FPGA) and dSPACE controllers are expensive.

In paper5 [K. D. Schultz] They mentioned there gaols are Use Arduino as a tool for teaching about phase-sensitive detection And To do so with only the Arduino, a computer for display purposes, and passive external components (resistors and capacitors). They describe details about the Phase Sensitive Detection (PSD) is the basis of many techniques in physics and engineering Homodyne detection Interferometry Lock-in amplifiers.

A. AMR_voice and DIY Smarthome App for Controlling light bulb using manual functions

Following list of hardwares are needed for connections

1) Arduino Board optional.
2) LED
3) 220 ohm resistance Circuit.

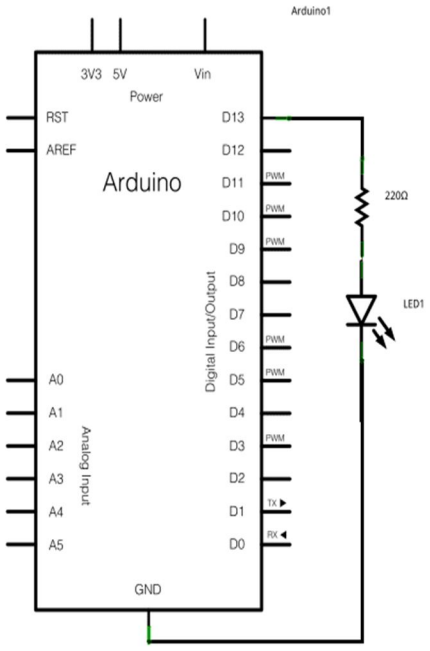
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This example uses the integral junction rectifier that the bulk Arduino boards have. This junction rectifier is connected to a digital pin and its selection would possibly vary from board kind to board kind. to create your life easier, we have a unbroken that is arranged come in every board descriptor file. This constant is semiconductor diode_BUILTIN and permits you to manage the integral light-emitting diode merely. Here is that the correspondence between the constant and conjointly the digital pin.

a) D13 - 101
b) D13 - Due
c) D1 - Gemma
d) D13 - Intel Edison
e) D13 - Intel Galileo Gen2
f) D13 - Leonardo and Micro
g) D13 - LilyPad
h) D13 - LilyPad USB
i) D13 - MEGA2560
j) D13 - Mini
k) D6 - MKR1000
l) D13 - Nano
m) D13 - Pro
n) D13 - Pro Mini
o) D13 - UNO
p) D13 - Yún
q) D13 - Zero

External junction rectifier with this sketch, you'd wish to create this circuit, where you connect one end of the device to the digital pin correspondent to the LED_BUILTIN constant. Connect the long leg of the junction rectifier (the positive leg, named because the anode) to the alternative end of the device. Connect the short leg of the junction rectifier (the negative leg, named because the cathode) to the GND. Among the diagram below we've a bent to indicate hypothetical degree UNO board that has D13 as a result of the LED_BUILTIN worth. The price of the device nonparallel with the junction rectifier collectively is additionally of a singular worth than 220 ohm; the light-emitting diode will lit up also with values up to 1K ohm.

IV. SCHEMATIC



https://www.arduino.cc/en/Tutorial/LibraryExamples/Sweep

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A. Code

After you build the circuit plug your Arduino board into your portable computer, begin the Arduino software (IDE) and enter the code below. you will in addition load it from the menu File/Examples/01.Basics/Blink.

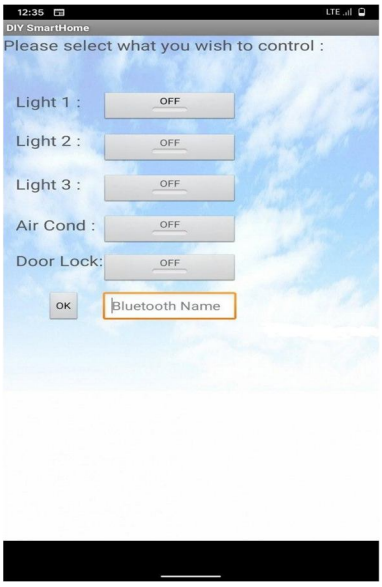
The first issue you're doing is to initialize LED_BUILTIN pin as associate output pin with the road In the main loop, you turn the diode on with the line:

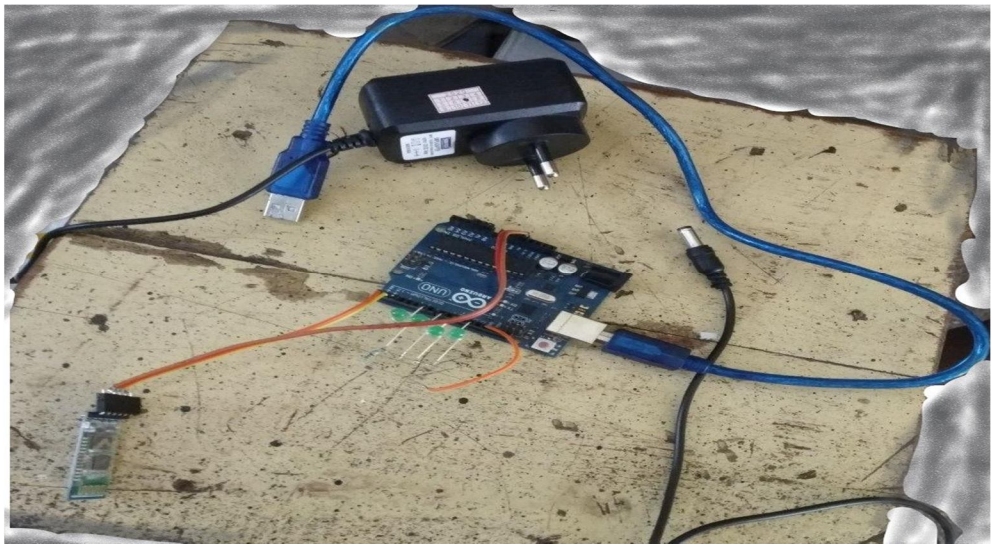
This provides 5 volts to the diode anode, that produces a voltage distinction across the pins of the diode, and lights it up. That takes the LED_BUILTIN pin back to zero volts, and turns the diode off. In between the ON and conjointly the OFF, you'd like enough time for a private to ascertain the modification, thus the delay() commands tell the board to do and do nothing for one thousand milliseconds, or one second. Once you employ the delay() command, nothing else happens for that amount of it slow.

B. Voice Activated Arduino (Bluetooth +Android)

Control your Arduino with voice commands pattern associate automaton smartphone! Before we've an inclination to form a voice activated home automation system, we've an inclination to ought to at the start learn the elemental principles of the experiment. This guide will enable you to command the Arduino pattern your automaton smartphone and a HC-05 Bluetooth module.

The designer of the app didn't embody a sample code. I looked for alternatives in Google's PlayStore but none was nearly pretty much as good as a result of the app that I've found. Luckily, i accustomed be able to figure it out tho' it took Pine Tree State a moment to program it. Sorry IOS users, this app isn't accessible in Apple's app store.





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1) Step 1: Parts & Materials

Thing that you'll need :

- 5 LED Indicators
- Arduino UNO (a clone works fine)
- HC-05 Serial Bluetooth Module
- Solderless Breadboard
- Jumper Cables

2) Step 2: Assemble the Mini Bluetooth Shield

My JY-MCU (DX Bluetooth Module) remains place in on my robots, what I even have forthwith is that the vacant HC-05 module. As we've an inclination to all or any acknowledge, the HC-05 doesn't accompany a PCB. attachment wires, on to the metal conductors, isn't a good arrange since the conductors would possibly chip anytime. As a solution, you will be ready to cut a fraction of perf-board then mount the HC-05 thereon. I mistakenly connected my semiconductor device indicator on a blank (N/A) pin so mine doesn't work.

3) Step 3: Connect the Bluetooth Module

Get some jumper cables and power the Bluetooth module with 3.3 volts. Remember, the blank HC-05 run on 3.3v and not on 5v. On the other hand, the JY-MCU incorporates an intrinsic regulator; it'll run on a 5v line. Now connect the RX (pin #0) of the Arduino to the Lone-Star State pin of the Bluetooth module and conjointly the Lone-Star State (pin #1) of the Arduino to the RX pin of the Bluetooth module.

4) Step 4: Connect the LEDs

Connect the positive leads of each semiconductor on pins # 2, 3,4,5,6 of the Arduino. The negative lead of each semiconductor goes to the negative rail of the board. The negative rail of the board goes to the Arduino's ground.

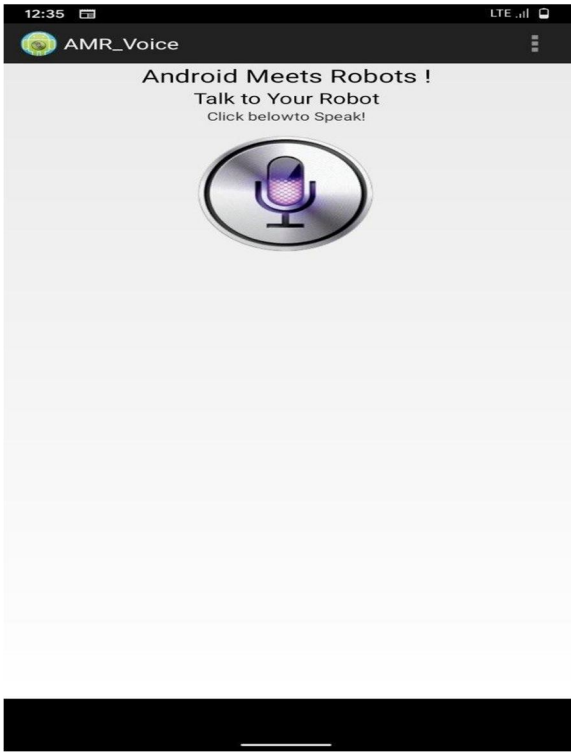
5) Step 5: Programming the Arduino

Before you program the arduino, you wish to first determine how the app works. The application recognizes our voice command and then it shows the words that we have spoken in the form of string and characters to the Arduino kit via Bluetooth. What's a string? A string is form of a word; you will build conditional statements out of it. The "voice" is your string, "==" is your condition (means equal to), "*computer on" is your command and thus the code among the curly-braces "" square measure the codes to be dead once your string matches the command condition.

What's the format of the string? but can it acknowledge once future command kicks in? but can it differentiate a gaggle of words from a fresh command? The app sends strings throughout this format *command#, the asterisk (*) indicates the start of a fresh command and thus the hash-tag (#) indicates the highest of a command. We accustomed be able to subtract the hash-tag (#) once each word among the conditional statement wasn't able to subtract the asterisk (*). You will have to start your command condition with associate asterisk otherwise the sketch will not work.

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V. CIRCUIT DIAGRAM

Firstly connect the PIR motion sensor with the Arduino kit. How to make connections with Arduino are given in Table 1.

Table 1: connections with Arduino

HC-SR01	Arduino
VCC	5V
Out	Pin 8
GND	GND

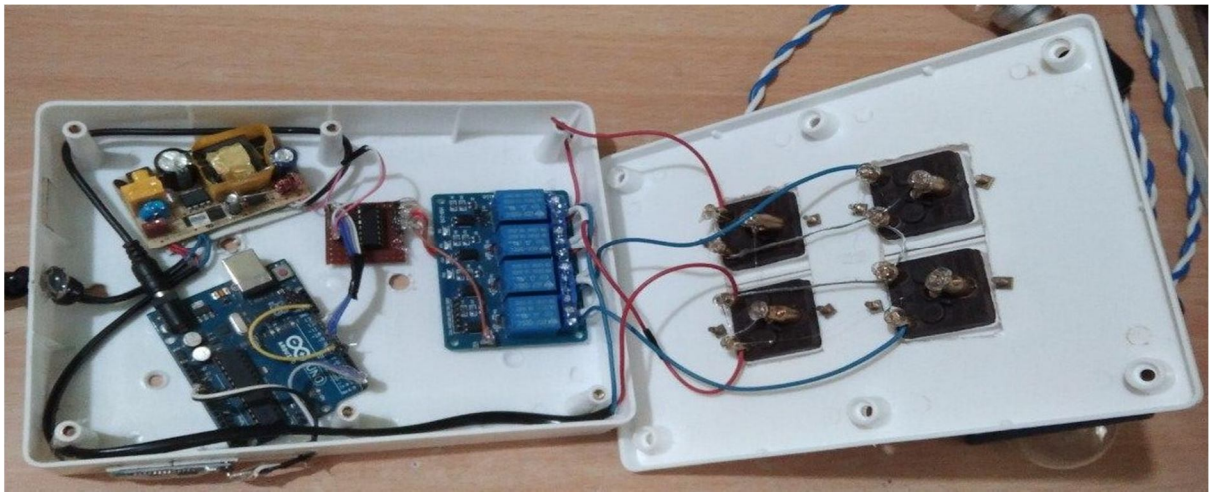
After connecting, we have to make connections for the input side of relay module with the Arduino. The connections are as shown in Table 2:

Table 2: connections for the input side of relay module

Relay Module	Arduino
VCC	3.3V
IN1	Pin 9
GND	GND

On the other facet of relay module, we wish to connect the sunshine bulb therefore we tend to square measure attending to ought to produce use of the AC power which can be dangerous.

A better due to connect the sunshine bulb is to initial connect associate influence plug with the sunshine bulb therefore connect this power plug to your extension and relay module (Make sure your extension is OFF whereas connecting it). So connect one wire from the power plug to the one facet of the bulb therefore connect the other facet of the power plug to the common (C) of relay module. Then connect a wire from the sometimes open (NO) to the other facet of the bulb.



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A. Working of the Project

The HC-SR01 very works by investigation the infrared rays. Whenever the build comes on the point of motion sensor so as a result of the build emits infrared rays, the motion sensor detects this infrared rays and it provides North yank nation a HIGH signal though the output pin. This HIGH signal is then browse by the Arduino. so if Arduino reads a HIGH signal, will it'll} provides a HIGH signal to the relay module that suggests that the relay can activate and as a result the sunshine bulb can glow. equally if the Arduino reads associate occasional signal, can it'll} build the relay pin LOW and as a result the sunshine bulb can keep low.

B. Code Clarification

First of all, we have a tendency to tend to initialized the pins where we've connected the motion sensor and relay pin. Then we have a tendency to tend to initialize a variable name "output" that is ready to store the output state of the motion sensor. In the setup perform, we have a tendency to tend to declared the motion sensor pin as input pin as a results of the Arduino will take the HC-SR01 output which we have a tendency to declared the relay pin as output pin as a results of Arduino can give the output to the relay module to manage it.



In the loop perform, we have a tendency to tend to browse the output of the motion sensor and checked that whether or not or not the output is HIGH or LOW. If the outputs are HIGH, then the relay will turned on and thus the bulb will begin to glow and if the output is LOW, then bulb will get off.

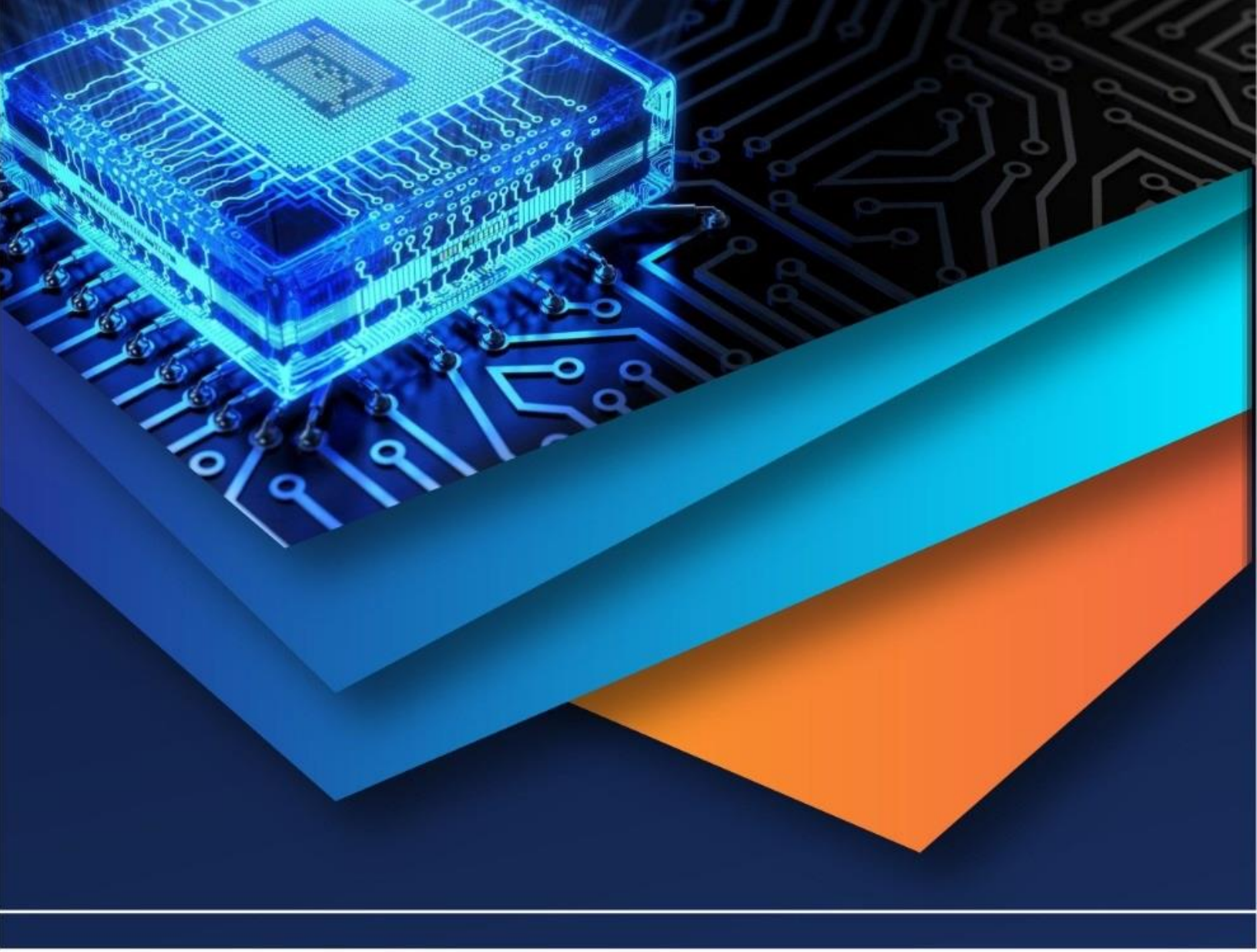
VI. CONCLUSION

The home automation system has through an experiment tested to figure satisfactorily by connecting sample applications thereto and also the applications were with success controlled from the wireless mobile device. The Bluetooth consumer was with success tested on a large number totally different of various mobile phones from different makers, therefore proving movableness and wide compatibility. Therefore an affordable home Automation system was with success designed, enforced, and tested.

REFERENCES

[1] Leo Louis, Working principal of Arduino nad using IT as a tool for study and research, (IJCACS), VOL 1,No 2, April 2016
[2] ArduPilot Mega, 'ArduPilot Mega', 2015. [Online]. Available: http://www.ardupilot.co.uk/.
[3] Wikipedia, 'ArduSat', 2015. [Online]. Available: http://en.wikipedia.org/wiki/ArduSat.
[4] M. K. D. Ulaganathan, C. Saravanan, Cost- effective perturb and observe MPPT method using Arduino microcontroller for a standalone photo voltaic system, (IJETT) volume 8, 1 Feb 2014
[5] K. D. Schultz, The trials and tribulation of building a phase - sensitive detector with an Arduino microcontroller, 16 publications, MAS-APS, October 2014
[6] Alicia Gibb, New media art, Design and Arduino microcontroller : A malleable tool, February 2010.
[7] Ajay Kumar, Dimitri Diakopoulos, A firmware for building driverless USB-MIDI devices using the Arduino microcontroller, P. O Box 2332

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