St.Joseph's Degree College

Sunkesula Road , Kurnool

Affiliated to Ralayaseema University

Ministry of Education's INNOVATION CELL (GOVERNMENT OF INDIA)

Time:10:00 AM to 4:00PM
Date:30/01/2024

Dinnedevarapadu,
Kurnool

ELECTRA 2024

ELECTRONIC WORKSHOP

Andhra Pradesh social welfare
Residential school & Junior College
(DR.B.R.AMBEDKAR GURUKULAM)

ORGANISED BY
DEPARTMENT OF ELECTRONICS

INSTITUTION'S INNOVATION COUNCIL IN COLLABORATION WITH ENTREPRENUERSHIP DEVELOPMENT CELL

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St. JOSEPH'S DEGREE COLLEGE

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MHRD'S INNOVATION CELL (GOVERNMENT OF INDIA)

INSTITUTION'S INNOVATION COUNCIL (Ministry of HRD Initiative)

A I day Workshop
ELECTRA 2024
At ATAL TINKER LAB
Dr B.R.Ambedkar Gurukulam School
Dinnedevarapadu, Kurnool

Program Report:

Institution's Innovation Council & Entrepreneurship Development Cell in collaboration with Department of Electronics has organized A I day Workshop ELECTRA 2024 at ATAL TINKER LAB Dr B.R.Ambedkar Gurukulam School, Dinnedevarapadu, Kurnool on 30th January 2024.The practical demonstration session was imparted to the pupils of by IIC faculty Mr. Subhash & students of Electronics Department. Live projects of Home security system using IoT and Drone were assembled; the pupil listened with rapt attention and did projects with the help of students.

Time: 10:00am to 3:00 pm
Date: 30-01-2024
Venue: Atal Tinker lab, Dr. B. R. Ambedkar Gurukulam school
Faculty in charge: Mr. Subhash & Mr Chandra Sekhar
Students participated: 05
Children engaged: 50

Student participants
- O.Praveen
- P.Teja vardhan Kishore
- Y.Rohith Reddy
- M.Hari haran Raju
- Shaik Sana Ahmed

Program Objectives:

- To make the rural students aware of low cost devices that interacts with their environment using sensors and actuators.
- The demonstration was intended to create awareness among rural children about latest electronic sensors which are in the Atal Tinker Labs of their school
- To inculcate innovative spirit and creative thinking in school children.

Program Outcomes:

- the student team displayed innovative live projects- automatic control of home appliances, by using arduino board and assembling & flying of drones
- Children got a chance to witness how real time electronic circuits and how project board connections actually work.
- Students taught to the children on how to write and upload code to an Arduino

Project I HOME AUTOMATION SYSTEM USING AURDINO

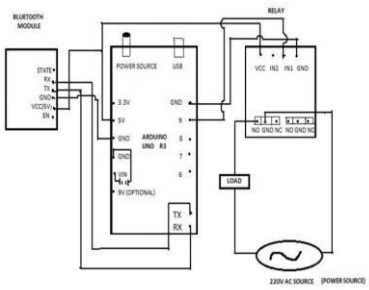
DESCRIPTION

The main objective of this project is to develop a home automation system using an Arduino board with Bluetooth being remotely controlled by any Android OS smart phone. Modern houses are gradually shifting from conventional switches to centralized control system, involving remote controlled switches. Presently, conventional wall switches located in different parts of the house makes it difficult for the user to go near them to operate especially to the elderly or physically handicapped people to do so. Remote controlled home automation system provides a most modern solution with smart phones. In order to achieve this, a Bluetooth module is interfaced to the Arduino board at the receiver end while on the transmitter end, a GUI application on the cell phone sends ON/OFF commands to the receiver where loads are connected. By touching the specified location on the GUI, the loads can be turned ON/OFF remotely through this technology. The loads are operated by Arduino board through opto-isolators and thyristors using triacs.

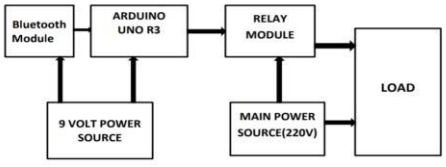
:ECTRONIC COMPONENTS NEEDED

ARDUINO UNO(1
CHANNEL RELAY(5v(2(2
BLUETOOTH MODULE HC05(3
POWER SUPPLY(4
LOAD(BULB 220V((5
CONNECTING WIRES(6
VERO BOARD(7
SMARTPHONE(BLUETOOTH ENABLED((8

: CIRCUIT DIAGRAM



BLOCK DIAGRAM



:ARDUINO UNO PROGRAMMING CODE

```
String inputs;
#define relay1 2 //Connect relay1 to pin 9
#define relay2 3 //Connect relay2 to pin 8
#define relay3 4 //Connect relay3 to pin 7
#define relay4 5 //Connect relay4 to pin 6
#define relay5 6 //Connect relay5 to pin 5
#define relay6 7 //Connect relay6 to pin 4
#define relay7 8 //Connect relay7 to pin 3
#define relay8 9 //Connect relay8 to pin 2
void setup(){
Serial.begin(9600); //Set rate for communicating with phone
pinMode(relay1, OUTPUT); //Set relay1 as an output
pinMode(relay2, OUTPUT); //Set relay2 as an output
pinMode(relay3, OUTPUT); //Set relay1 as an output
pinMode(relay4, OUTPUT); //Set relay2 as an output
pinMode(relay5, OUTPUT); //Set relay1 as an output
pinMode(relay6, OUTPUT); //Set relay2 as an output
pinMode(relay7, OUTPUT); //Set relay1 as an output
pinMode(relay8, OUTPUT); //Set relay2 as an output
digitalWrite(relay1, LOW); //Switch relay1 off
digitalWrite(relay2, LOW); //Swtich relay2 off
digitalWrite(relay3, LOW); //Switch relay1 off
digitalWrite(relay4, LOW); //Swtich relay2 off
digitalWrite(relay5, LOW); //Switch relay1 off
digitalWrite(relay6, LOW); //Swtich relay2 off
digitalWrite(relay7, LOW); //Switch relay1 off
digitalWrite(relay8, LOW); //Swtich relay2 off
}
```

```
void loop()
{
while(Serial.available()) //Check if there are available bytes to read
delay(10); //Delay to make it stable
char c = Serial.read(); //Conduct a serial read
if (c == '#'){
break; //Stop the loop once # is detected after a word
}
inputs += c; //Means inputs = inputs + c
}
if (inputs.length() >0)
{
Serial.println(inputs);
if(inputs == ,A')
{
digitalWrite(relay1, LOW);
}
else if(inputs == ,a')
{
digitalWrite(relay1, HIGH);
}
else if(inputs == ,B')
{
digitalWrite(relay2, LOW);
}
else if(inputs == ,b')
{
digitalWrite(relay2, HIGH);
}
else if(inputs == ,C')
{
digitalWrite(relay3, LOW);
}
else if(inputs == ,c')
{
digitalWrite(relay3, HIGH);
}
else if(inputs == ,D')
{
digitalWrite(relay4, LOW);
}
else if(inputs == ,d')
{
digitalWrite(relay4, HIGH);
}
else if(inputs == ,E')
{
digitalWrite(relay5, LOW);
```

```
}
else if(inputs == ,e')
{
digitalWrite(relay5, HIGH);
}
else if(inputs == ,F')
{
digitalWrite(relay6, LOW);
}
else if(inputs == ,f')
{
digitalWrite(relay6, HIGH);
}
else if(inputs == ,G')
{
digitalWrite(relay7, LOW);
}
else if(inputs == ,g')
{
digitalWrite(relay7, HIGH);
}
else if(inputs == ,H')
{
digitalWrite(relay8, LOW);
}
else if(inputs == ,h')
{
digitalWrite(relay8, HIGH);
}
inputs='';
}
}
```

:IDE

Arduino Integrated Development Environment (IDE) is an open source IDE that allows users to write code and upload it to any Arduino board. Arduino IDE is written in Java and is compatible with Windows, .macOS and Linux operating systems

:HOW TO USE IT

After installation of electronic components by using input/output pins on arduino board. We connect .arduino board with computer by usb cable, then we open arduino software

1. First thing: in the menu we click on “Tools”, then we click on “Board” and we select arduino board .which you are using
2. Second: in the menu we click on “Tools” again, we click on “Port” and we select Serial port that we .connected arduino board with
3. Third: in “Code editor” we write the programming code, then we click on “Verify” to verify it .correctness
4. .Fourth: we click on “Upload” to upload the code on the arduino board

.Thus, we have programmed the Arduino board using the Arduino program

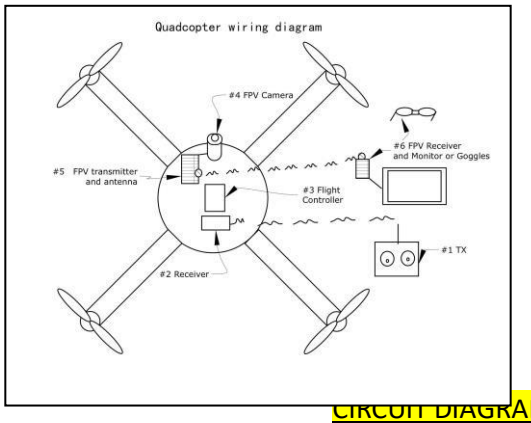
Project II Assembling of DRONE

DESCRIPTION:

Drones, also known as unmanned aerial vehicles (UAVs), have become increasingly popular for various applications, including aerial photography, surveillance, agriculture, and even package delivery. Assembling a drone requires careful attention to detail and adherence to safety protocols. This report outlines the step-by-step process for assembling a drone.

ELECTRONIC COMPONENTS NEEDED

Frame
Motors
Propellers
Electronic Speed Controllers (ESCs)
Flight Controller
Radio Transmitter and Receiver
Battery
Power Distribution Board
Wiring and connectors
Optional accessories (camera, gimbal, GPS module, etc.)



CIRCUIT DIAGRAM :

DRONE PROGRAMMIN:

```
class DroneAssembler:
    def __init__(self):
        self.components = []
    def gather_components(self):
        # Code to gather all necessary components
        self.components = ["frame", "motors", "propellers", "ESCs", "flight controller", "radio transmitter",
"battery", "power distribution board", "wiring", "connectors"]
    def assemble_drone(self):
        print("Assembling drone...")
        for component in self.components:
            print(f"Attaching {component}")
            # Code to attach each component
    def test_drone(self):
        print("Testing drone...")
        # Code to perform pre-flight tests
if __name__ == "__main__":
    assembler = DroneAssembler()
    assembler.gather_components()
    assembler.assemble_drone()
    assembler.test_drone()
```

ABOUT DRONE SOFTWARE:

Drone control software enables safe precision operation of unmanned aerial vehicles (UAVs, UAS, RPAS). A wide range of features and control interfaces enables flight control software to be used for drone navigation and ground control as well as payload and autopilot management.

HOW TO USE IT:

There are four main drone controls:

1.Roll: Done by pushing the right stick to the left or right. ...

2.Pitch: Done by pushing the right stick forwards or backward. ...

3.Yaw: Done by pushing the left stick to the left or to the right. ...

4.Throttle: To increase, push the left stick forwards....

https://youtube.com/shorts/kXeo-PJLXdQ?feature=shared