

BVRIT HYDERABAD
College of Engineering for Women
Department of Information Technology



INDUSTRY ORIENTED AUTOMATION ROBOT

Under the Guidance of

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AGENDA

- Introduction
- Existing System
- Problem Statement
- Literature Survey
- Proposed System
- Tools and Technologies
- Feasibility Study
- Societal Impact
- Architecture
- Modules
- UML Diagram
- Implementation
- Project TimeLine
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INTRODUCTION

- Industry oriented robot can be used to monitor the industry's environment using sensors and cloud to store the values detected by the sensors
- It is a self-guided autonomous robot, which can be maneuvered with the help of ultrasonic sensor
- Prevents hazardous conditions by detection abnormal gases, fire accidents etc.
- Precession control for smooth robot movement
- Movement of the robot mainly comprising of L293D a motor driver IC which drivers the motors in both the directions

EXISTING SYSTEM

- The existing system uses RF communication.
- RF based technology is used to operate the robot which requires human intervention and involves manual control.
- It works with in the range of the radio frequency and has limitation in control.
- Due to manual operation it has limited operations of control.

PROBLEM STATEMENT

Many accidents have been caused by human error in the past few years in various industrial fields. Due to this accidents there has been so much property damage and many people have lost their lives. Though it is in the nature of human beings to make an error, we can not take a risk and let these little errors take power and turn hazardous to either other living beings or the environment.

LITERATURE SURVEY

S.No	Title of the paper	Author(s) & Journal Details	Description/ Interpretation
1.	IoT Based Industrial Automation Control System Using Arduino	Veeraballi Prasanti, T. Venkataramana International Journal of Contemporary Research in Computer Science and Technology (IJCRCST) ISSN: 2395-5325 JETIR August 2021, Volume 8, Issue 8	DHT 11, Flame Sensor, Internet of Things, Arduino microcontroller

S.No	Title of the paper	Author(s) & Journal Details	Description/ Interpretation
2.	IoT Based automation system using embedded system	Apurva S Zope, Mayuri S Jambhale, Nimisha M Korde International Journal of Engineering Research & Technology (IJERT) ISSN: 2278-0181 Volume 3 (July 2020)	IoT, Sensors, embedded electronics, M2M Communications

S.No	Title of the paper	Author(s) & Journal Details	Description/ Interpretation
3.	Industrial Automation Using Various Applications for the Internet of Things	Shital P. Yende, Rahul D. Dekate, Ashish R. Polke, Shubham Khot IJARIE-ISSN(O)-2395-4396, Vol-8 Issue-3 2019	Internet, Metering Devices, Environmental Sensor.

PROPOSED SYSTEM

- No manual control – Automated
- No radio frequency
- In case of any abnormalities in the sensors, buzzer trigger and this values are uploaded to the ThingSpeak cloud
- Vacuum works for collecting the dust particles

TOOLS AND TECHNOLOGIES

HARDWARE SPECIFICATIONS

- Sensors
- ESP32
- DC Motor
- Motor Driver IC

SOFTWARE SPECIFICATIONS

- Arduino IDE
- ThingSpeak

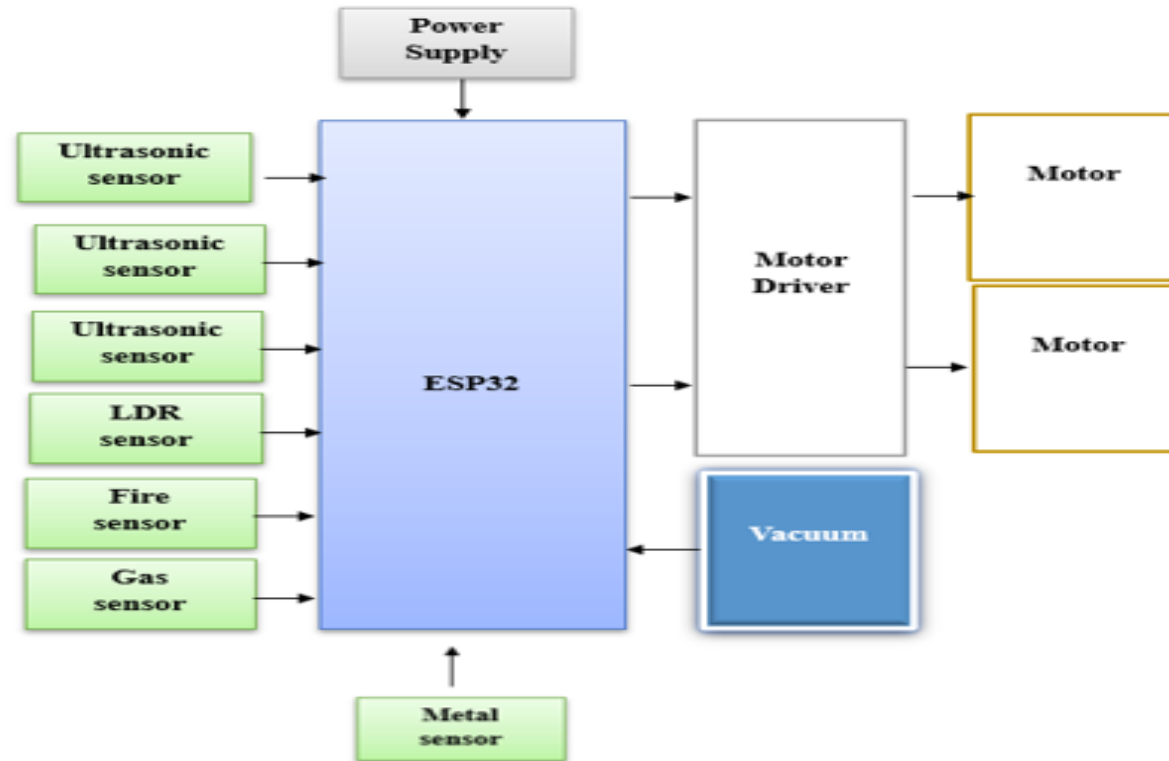
FEASIBILITY STUDY

- The robot's mechanism makes smart use of motors to achieve vehicle movement in forward/backward as well as turning left/right simultaneously.
- We'll be using ThingSpeak cloud for storing all the values detected by the sensors. These values are represented in the form of graphs rather than numerical values for better understanding.
- We also make use of the telegram app and create a bot which can be used to alert the admin in case of any abnormal values being discovered.

SOCIETAL IMPACT

- The System alerts the presence of toxic gases which can prevent the worker in the industry from breathing in these toxic gases
- The robot can also be used at night times which can prevent the over work load of the workers in the industry

ARCHITECTURE

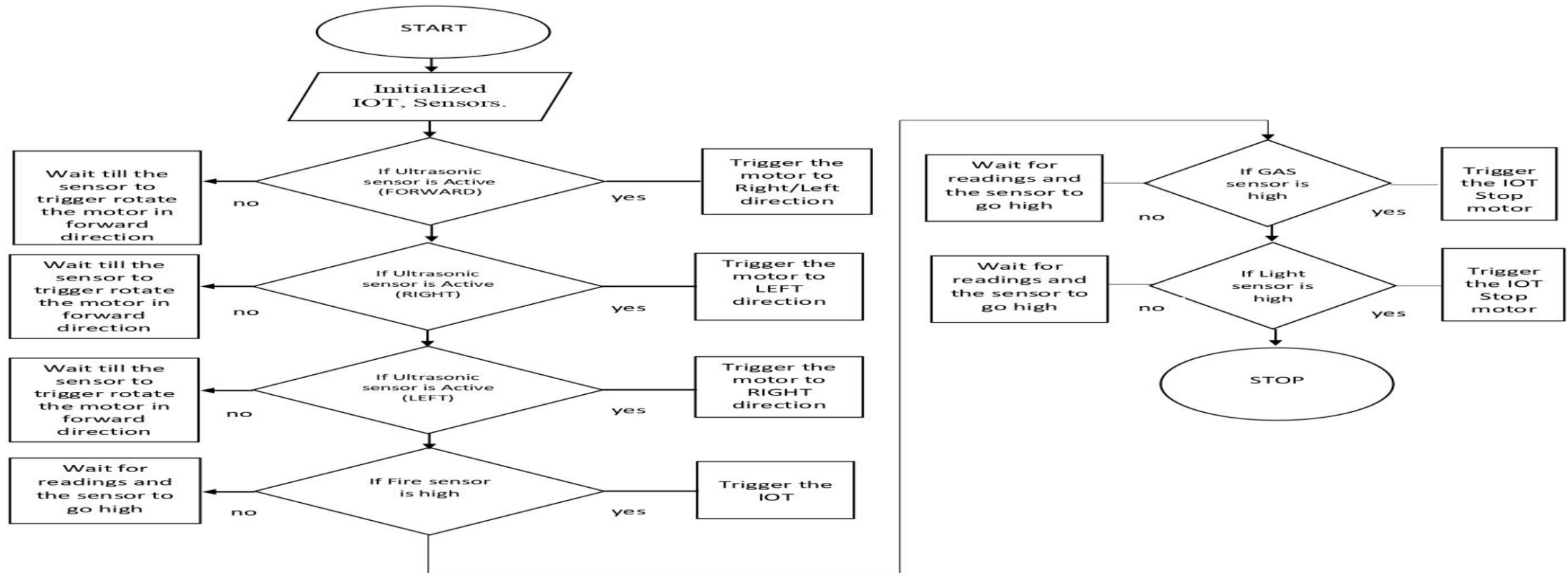




MODULES

- Microcontroller
- Sensors
- DC Motor
- Motor Driver IC
- Regulator

UML DIAGRAM



IMPLEMENTATION

```
code1
//ESP32PINS
#define A0 13
#define A1 12
#define A2 14
#define A3 27

// defining the pins
const int trigPin1 = 15;
const int echoPin1 = 2;
const int trigPin2 = 4;
const int echoPin2 = 5;
const int trigPin3 = 18;
const int echoPin3 = 19;

// defining variables
long duration1;
long duration2;
long duration3;

int distanceleft;
int distancefront;
int distanceright;
```

```
code1
void setup() {
  pinMode(trigPin1, OUTPUT);
  pinMode(trigPin2, OUTPUT);
  pinMode(trigPin3, OUTPUT); // Sets the trigPin as an Output
  pinMode(echoPin1, INPUT); // Sets the echoPin as an Input
  pinMode(echoPin2, INPUT);
  pinMode(echoPin3, INPUT);
  Serial.begin(9600); // Starts the serial communication

  //motors
  pinMode(A0, OUTPUT);
  pinMode(A1, OUTPUT);
  pinMode(A2, OUTPUT);
  pinMode(A3, OUTPUT);
}

void loop() {
  digitalWrite(trigPin1, LOW);
  delayMicroseconds(2);
  digitalWrite(trigPin1, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin1, LOW);
  duration1 = pulseIn(echoPin1, HIGH);
  distanceleft = duration1 * 0.034 / 2;
  Serial.print("Distance1: ");
  Serial.println(distanceleft);
```


IMPLEMENTATION

```
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code1
digitalWrite(trigPin2, LOW);
delayMicroseconds(2);
digitalWrite(trigPin2, HIGH);
delayMicroseconds(10);
digitalWrite(trigPin2, LOW);
duration2 = pulseIn(echoPin2, HIGH);
distancefront = duration2 * 0.034 / 2;
Serial.print("Distance2: ");
Serial.println(distancefront);

digitalWrite(trigPin3, LOW);
delayMicroseconds(2);
digitalWrite(trigPin3, HIGH);
delayMicroseconds(10);
digitalWrite(trigPin3, LOW);
duration3 = pulseIn(echoPin3, HIGH);
distanceright = duration3 * 0.034 / 2;
Serial.print("Distance3: ");
Serial.println(distanceright);

//stright
if ((distanceleft <= 15 && distancefront > 15 && distanceright <= 15) || (distanceleft > 15 && distancefront > 15 && distanceright > 15))
{
    digitalWrite(A0, HIGH);
    digitalWrite(A1, LOW);
}
```

IMPLEMENTATION

```
code1 $
digitalWrite(A0, HIGH);
digitalWrite(A1, LOW);
digitalWrite(A2, HIGH);
digitalWrite(A3, LOW);
Serial.write("Forward");
}
//FRONT
if ((distanceleft <= 15 && distancefront <= 15 && distanceright > 15) || (distanceleft <= 15 && distancefront > 15 && distanceright > 15))
{
    digitalWrite(A0, HIGH);
    digitalWrite(A1, LOW);
    digitalWrite(A2, LOW);
    digitalWrite(A3, HIGH);
    Serial.write("Reverse");
}

if ((distanceleft > 15 && distancefront <= 15 && distanceright <= 15) || (distanceleft > 15 && distancefront > 15 && distanceright <= 15) ||
(distanceleft > 15 && distancefront <= 15 && distanceright > 15))
{
    digitalWrite(A0, LOW);
    digitalWrite(A1, HIGH);
    digitalWrite(A2, HIGH);
    digitalWrite(A3, LOW);
    Serial.write("right");
}
}
```

PROJECT TIMELINE

DATE	DURATION	TASK
18/11/2022-25/11/2022	1 week	Project Requirements
26/11/2022-10/12/2022	2 weeks	code
11/11/2022-27/12/2022	3 weeks	Building the Model

REFERENCES



- Vikram. N, Harish, K. S, Nihaal. M. S, Raksha Umesh, Shetty Aashik Ashok Kumar“, A Low Cost Home Automation System Using Wi-Fi based Wireless Sensor Network Incorporating internet of Things”, in 2018 IEEE 7th International Advance Computing Conference.
- Tushar Churasia and Prashant Kumar Jain, “ Enhance Smart Home Automation System based on Internet of Things”, in Proceedings of the Third International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC 2019) IEEE Xplore Part Number:CFP19OSVART; ISBN:978-1-7281-4365-1
- Sharma Pasha, “ ThingSpeak Based Sensing and Monitoring System for IoT ”, International Journal of New Technology and Research (IJNTR) ISSN: 2454-4116, Volume-2, Issue-6, June 2020
- Pirah Peerzadaa, Wasi Hyder Larika , “ DC Motor Speed Control Through Arduino and L298N Motor Driver ”, Aiman Abbas Maharb Mehran University of Engineering and Technology Published on: 04/12/2021

THANK YOU!!