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IOT BASED MOBILE ROBOT FOR SMOKE DETECTION

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Abstract: *The reason for this paper is to make a robot utilizing raspberry pi which is controlled by web. This robot is intended to guarantee wellbeing at work regions, for example, nuclear power plants and different businesses where there is chance that fire may happen. Our robot comprises of temperature and smoke sensors that give temperature and mugginess esteems alongside identifying the smoke.one can work the robot by giving charges on the website page, additionally screen the surroundings in which the robot exists with a webcam that is connected with the sensors. Each one of the sensors and the webcam are controlled remotely and can be worked at anyplace with less human connection staying away from hazard. The information observing which is recovered from every one of the sources will be put away in the database planned with server. The information can later be gotten by the client whenever. The client need not go the workfare to check the conditions rather the client can screen everything in the close-by environment. This is particularly helpful for the general population who work in perilous spots with unsafe substances.*

Keywords: raspberry pi, temperature sensors, humidity sensor, webcam.

I. INTRODUCTION

A. Theoretical Background

A mobile robot is a programmed framework that is fit for motion. Versatile robots have the ability to move around in their condition and are not settled to one physical area. Portable robots are controlled by programming and utilize sensors and other apparatus to recognize their environment. Portable robots are advanced in computerized reasoning with physical mechanical technology, which enables them to explore their environment.

B. Motivation

Without showing up in the working region the client can readily comprehend the state of condition while working with hazardous flammable substances.

C. Aim of the Proposed Work

The main concern of this paper is to create a real time robot which can provide live streaming of the surroundings and also give information regarding the temperature and humidity of any particular area.

II. LITERATURE SURVEY

A Hypothetical Background of remote controlled robot utilizes RF circuits, which have a restricted working reach. Use of a wireless network for computerized control and utilization of a cell phone for automated control can beat these constraints. It gives the vigorous control and enhances working extent. In spite of the fact that the appearance and capacities of robots change immeasurably, all robots share the highlights of a mechanical, mobile structure under some type of control.

Work that has been done in the past is identified with display work has been illustrated beneath:

Gyula Mesterin his paper manages the remote sensor-based remote control of versatile robots movement in an obscure situation with obstructions utilizing the Bluetooth remote transmission and Sun SPOT innovation. The Sun SPOT is intended to be an adaptable improvement stage, equipped for facilitating broadly varying application modules. the object of the remote control is the Boe-Bot mobile robot from Parallax.

Abdul Ishaq T.K, Joseph Sebastian, Muhammad Sameer P.A, Mohammed Irfan K.A were proposed a mobile robotic arm which is controlled by human gestures. This wireless gesture controlled robotic arm uses zigbee technology to connect and receive signals. Zigbee transceiver is connected here for the transmission of signals wirelessly.

III. PROBLEM STATEMENT:

There are numerous reviews talking about the point of controlling robot remotely. A considerable number of them are limited to little working extent. This is on account of utilizing the method of correspondences like Bluetooth, radio recurrence, Zigbee and so on between UI and robot. In our system the mobile robot is remotely controlled at low

cost. It has a webcam mounted on it for surveillance purpose. The sensors measure values like temperature from the environment and record them later are stored in the database. This recorded sensor values can be viewed thorough webpage provided. This is done with low latency and accuracy.

V.OVERVIEW OF THE PROPOSED SYSTEM:

To make a totally controlled IoT based Raspberry Pi Robot in which the requests are created in python content and controlled through web page. The progressing is done remotely. Checking has been an imperative segment that can be used as a piece of the endeavor. As a modification in the status of the contraption, the customer can be taught continuously.

The client orders are exchanged to a web server (i.e, raspberry pi in this paper)which is typically done from a web interface through a web program. The server forms the client summons utilizing contents written in python and sends them to the significant units like engine of robot. This can likewise help control the bell, sensor movements and so on.

The web interface is produced utilizing HTML and JavaScript. The raspberry pi has 3 modules running – the web server, database and principle control program.

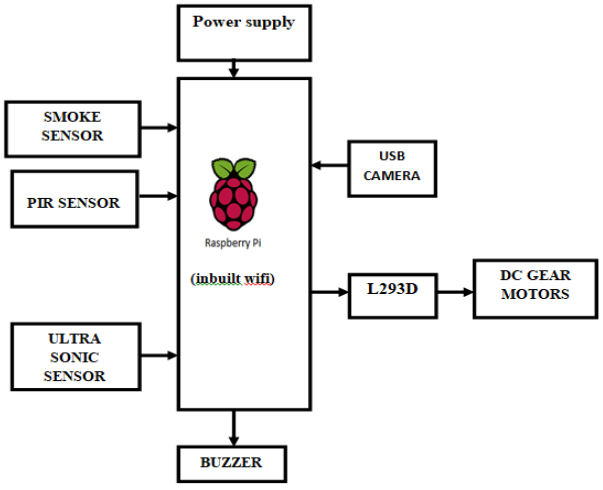

Fig.1. block diagram of the proposed system

VI. RESULTS AND DISCUSSION

We have built up the IoT based portable robot with a webcam with gives the user live visuals about the surroundings. The client can control the development of the portable robot like left, ideal, forward and so forth with the camera and the controls gave in website page. As the robot is attached with sensors the values of the temperature and humidity values constantly vary. The web program can collaborate with the raspberry pi through wlan in a comparable framework. Development is a program that screens the video movement from cameras. Using this development programming raspberry pi is made as webcam server with required setup.

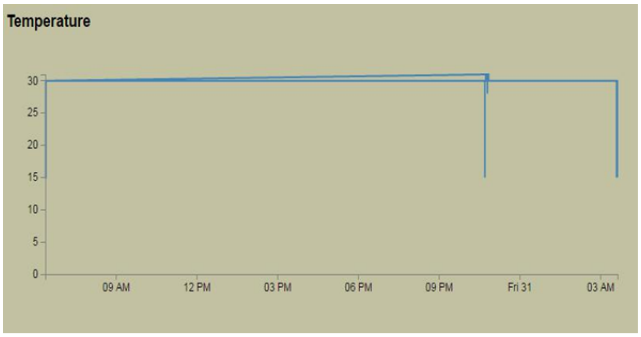

Fig.2. Graph of the temperatures recorded during a period of time.

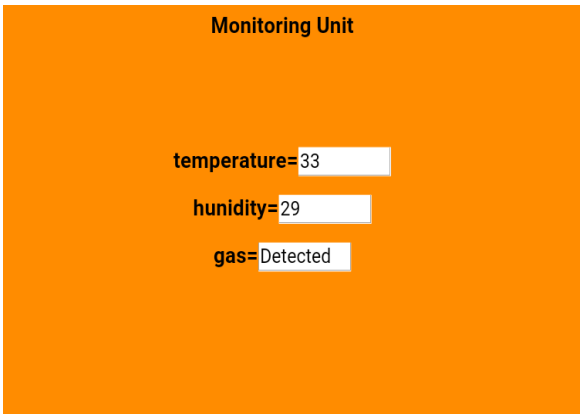

Fig.3. Screenshots of the webpage that displays temperature, humidity and gas.

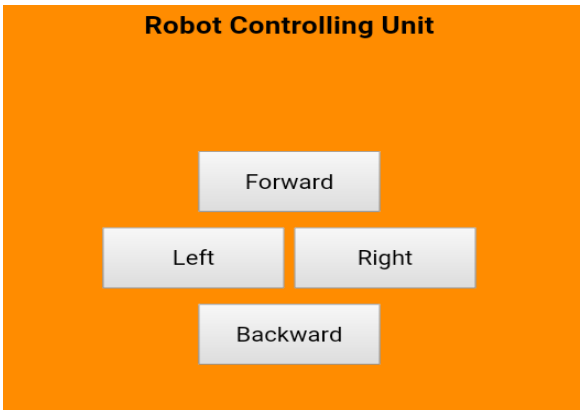

Fig.4. Webpage that is used to control the robot

TEST ID	TEST DATA	DESCRIPTION	ACTUAL OUTPUT	EXPECTED OUTPUT	TEST PASS/ FAIL
1	temperature	To calculate temperature of environment	30^0c	30^0c	Pass
2	Sample gas	Gas sample is tested	LPG	LPG	Pass
3	webcam	Webcam is tested for live streaming	Live video	Live video	Pass
4	Move forward	Robot is tested for forward movement	Move forward	Moved forward	Pass
5	Move back	Robot is tested for backward movement	Move backward	Moved backward	Pass
6	Move left	Robot is tested for forward movement	Move left	Moved left	Pass
7	Move right	Robot is tested for forward movement	Move right	Moved right	Pass

Fig.5. Above describes test case samples

VII. CONCLUSION AND FUTURE SCOPE:

Our system can be used in various places that cause threat or hazard due to fire. This system can further be progressed by enhancing the performance and by adding more features. Features like image processing and detection for improved security purpose and attaching robotic arms for picking and placing items. Further development of this system has many applications in fields like military, industries, household purpose etc.

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