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# ZIGBEE Controlled Industrial Robot for Controlling the Fire in a Sensitive Way

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***Abstract--*** In Smart industries, there are varieties of robots performing different tasks. They are controlled via a networked socket application or by its own teach pendant. However, to monitor the status or make minor changes to the programming of the robot, chord less sensor network is used. The node of the sensor consists of data processing, sensing and communication components. It connected with Wireless sensor network base on effort of a large no. of nodes. This paper introduces a Zigbee platform that communicates with robots over a Fast transmission. Wireless networks which has a capability of navigation enable mobile devices to both determine their current position and also for communication. The limitation of individual technologies can beat the multiplicity steering, especially when operating in harsh environments such as indoors. In human side a physical human robot interaction in the context of a human, physically guiding a robot through the desired set of motions. Both the robot and human starts the movement at the same (low response time). The results show that the system allows the intuitive way of control for an industrial robot.

***Keywords-*** Zigbee Transmitter, Wireless Sensor Networks, Service Robot**.**

## I. INTRODUCTION

The overview of the project is to identify the human inside the room with the help of temperature sensor and Sensing of gas with the density of methane presentation in the room by gas sensor**.** The detecting of gas in room will be identified and signalled by the service Robot. This paper examines the integration WSN with the service robots for a smart application.

The basic architecture for this project is the Bluetooth client/server architecture. An Android enabled device (client) will communicate with a Bluetooth (server) running on a computer that has a wired network connection with the robot. Each robot have its own Bluetooth server running on its own computer. The computer will not only run a Bluetooth server, but also a socket program that is able to send and receive data from the robots. Currently, most of the research dealing with the wireless communication of robots focuses on the navigation and interaction [1-3] of mobile robots across a busy environment or an implementation of a network infrastructure that allows for communication across a large network [4]. Since our research deals with stationary robotic systems, this project allows for greater flexibility of two-way communication between the mobile control-device and the robotic arm. Unlike other wirelessly controlling a robot [5-7], our approach presents a more generic model where any robot can be used instead of tailoring the implementation to the advantages of one robot. The remainder of this paper is organized as follows.

Sections II and III will discuss the problem identification and architecture of the system. Section IV will discuss about the system requirements, Section V will demonstrate two practical applications of this research, and section VI will discuss conclusions and present future research goals.

## II. PROBLEM RECOGNITION

1. Permit a malicious service provider which was successfully communicated with a legal user twice, to recover the user's credential and then to impersonate the user to access resources offered by other service providers.
2. Insecure against identity disclosure attacks both and impersonation attacks.
3. Scheme suffers from Deniable of Service (DOS) attacks and presented a new scheme.
4. One user has to maintain distinct pairs of identity and password for different service providers, since this could increase the workload of users and the service providers as well as the communication overhead of networks.
5. Using teach pendent can be control the system, more power required for the same.

## III. SYSTEM ARCHITECTURE

**The existing system consists of:**

- Previously Sensor values are updated in database manually.

 

- Already measured the separate area sensor values. So Lots of delay to be occurred.
- Requirement of power is more for operating system.
- It is unidirectional device.

**The proposed system consists of:**

- In order to monitor the status or make minor changes in the program of the robot, the user must obtain access to either teach pendant or terminal.
- With an effort to eliminate this need, this paper introduces Zigbee that communicate with robots over a Fast transmission.
- Easy to navigate to collect the data's and monitoring.
- Gas detectors are often battery operated devices used for safety purposes to prevent from toxic exposure and fire,.
- PIR sensors detect changes in infra-red radiation, which is in the form of heat emitted by a number of bodies.
- Power supply of 5V is given to the devices.
- It is Bidirectional device.

**a) Transmitter section**

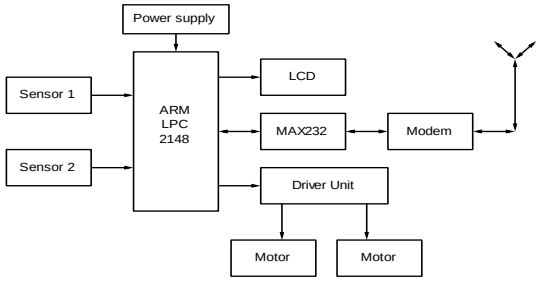


Fig-3.1 Transmitter section

Fig -3.1 shows the Transmitter section the transmitter signal is transmits by X-bee receiver module and it is converted into TTL logic MAX 232 converts then it is given to processor. The processer gives signal to driver unit to rotate the motor in order to move the robot to reach the given destination as transmitter signal. The gas sensor measures the presence of methane gas inside the room, based on the amount it gives signal to the processor at the meantime temperature sensor also measures the room temperature &gives signal to processor. If there is any human intervention then the sensor signals may vary & that also given to processor and makes alarm to rise in order to alert the main transmitter section .The sensor signal level is also displayed in LCD & the process continues for next input also.

**b)Receiver section**

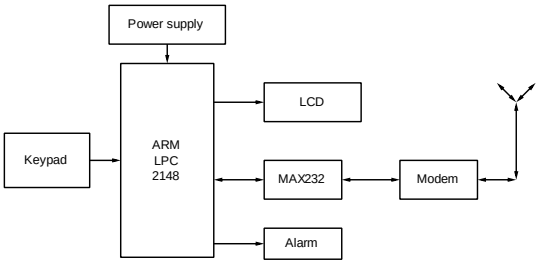


Fig-3.2 Receiver section

In Fig 3.2 shows the receiver section of the maneuver robot. ARM LPC2148 processor is used to control the robot, Input is given through Main section (system), Based on the input, the processer gives signal toMAX232 which converts TTL logic to RS232 signal which could be read by Xbee then the Xbee transmits the signal . The entire process & room number where the robot have to move is displayed on LCD by interfacing with processor , power supply section gives supply to all the modules.

## IV. SYSTEM REQUIREMENTS

**a) Hardware Description**

Power supply is 5V is given to the processor ,Gas sensor and temperature sensor are connected with ARM 7 TDMI processor and high speed flash memory within the range of 32 kB and 512 kB. ULN Driver has Seven darlingtons per package output current 500ma per driver , Output voltage 50V. A relay is an electrically operated switch. The brushed DC motor is one of the earliest motor designs.

**b) Software Description**

The project is designed and simulated using proteus software and program is written using MPLAB studio and output is shown by means of rotating motor as shown in simulation diagram.

## V. OUTPUT

When high voltage(13V) apply through power supply, the motor will not run for requirements.

The switch is in ON position, gas detection will be displayed in LCD.

| VOLTAGE(V) | RATE OF SPEED |
|---|---|
| 1 | NULL |
| 5 | LOW |
| 8 | NORMAL |

 

| | |
|---|---|
| **12** | **HIGH** |
| **13** | **NULL** |

**Robotic Movement of DC Motor**

The motor is rotating in order to the command of Zigbee transmitter. In this rotation the position of the relay can be varied.

The speed variation in the DC motor according to the voltage applied.

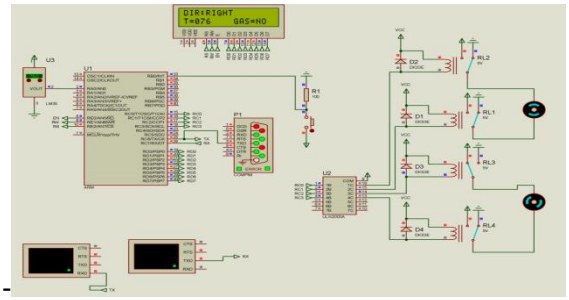


Fig 5.1 ROTATION OF DC MOTOR

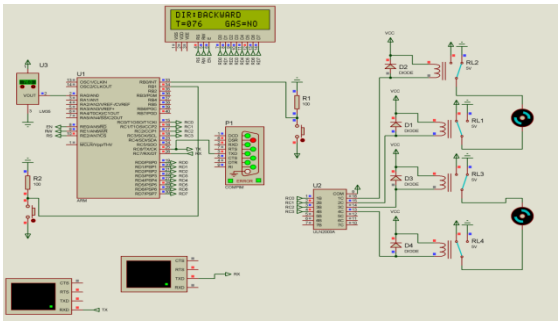


Fig 5.2 DIRECTION OF DC MOTOR

| RELAY POSITION (ACTIVATION) | DIRECTION OF ROTATION |
|---|---|
| **3** | **RIGHT** |
| **1** | **LEFT** |
| **2 & 4** | **BACKWARD** |
| **1&3** | **FORWARD** |

## VI. CONCLUSION AND FUTURE WORK

The entire module has to be implemented as hardware and it will sense the human inside the rooms available and will give attention to the main station.

The humans can be rescued by service Robot by controlling the fire with help of fire extinguisher.

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