Voice Operated Intelligent Fire Extinguisher Vehicle with Water Jet Spray

Meena Kumari[1], Mrs. Shimi S.L[2]

M.E (Instrumentation and Control), NITTTR, Chandigarh[1]

Assistant Professor, Electrical Engineering Department, NITTTR, Chandigarh[2]

Abstract: This paper shows the investigation and use of voice operated fire extinguisher vehicle with water jet spray. The vehicle is controlled through related talk input. The vernacular information allows a customer to team up with the robot which is unmistakable to an extensive segment of the overall public. The upsides of voice operated robots are sans hands and fast data input operations. The voice affirmation structure is set up in a way that the robot is controlled in perspective of the rule through the Speech Commands. The whole structure contains three subsystems, the discourse acknowledgment framework, transmitter range besides, the authority fragment (on vehicle). The results exhibit that proposed robot is prepared for controlling fire, sidestepping obstacles in addition, perception the significance of speech requests.

Keywords: Speech controlled robot, speech controlled fire extinguisher.

I- INTRODUCTION

Putting out fires and save is perceived as a dangerous mission. Fire contenders confront hazardous circumstances when quenching fires and safeguarding casualties, it is an unavoidable part of being a fire warrior. Interestingly, a robot can work independent from anyone else or be controlled from a separation, which implies that putting out fires and protect exercises could be executed without putting fire warriors at hazard by utilizing robot innovation. At the end of the day, robots diminish the requirement for flame contenders to get into unsafe circumstances. Advance, if the robots supplant or bolster fire contender in missions, the heap for flame warriors lessened. Also, one can every say only there is the breaking point of flame division control. So it is difficult to quench fire and protect numerous casualties at once in an immense debacle. For this situation, the robot innovation make conceivable to safeguard considerably more casualties. To make human lives less demanding and to make greatest utilization of time accessible [1],[2],[3],[4]

II- AIM OF THE WORK

*The aim of this thesis is to implement a fire extinguisher vehicle which can cause a significant reduction in the number of accidents due to fire.
*To outline and build up a voice acknowledgment unit worked around a fast processor that guarantees different operations of the framework to be performed by voice summons.
*To build up a code for microcontroller which will empower the vehicle to identify deterrents through an info picture caught by a camera mounted on the highest point of the vehicle. On the off chance that any deterrent is recognized in the way then the controller will alarm the client through a bell and will alter the direction of the vehicle.
*To build up a microcontroller based financially savvy voice acknowledgment based fire quencher vehicle which comprise of three subsystems, the speech recognition system, transmitter section and the receiver section (on vehicle).

III- OBJECTIVES AND HARDWARE MODULE OF THE WORK

The main objectives of this work are as follows:
• Construction of speech based intelligent fire extinguisher vehicle system.
• Live images feedback through wireless video camera.
• Obstacle detection capability
• Night vision capability

The hardware used in the present work provides a technique which allows preventing fire accidents. This Project describes a new economical solution of robot control system. The proposed system is divided in to three different sections as shown in the Fig.1, Fig. 2 and Fig. 3 which is given below:[5],[6],[7]

(1) Part 1: Regulated power supply

5V Regulated power supply is used to drive the motor and also this is given to microcontroller for power supply. 7805 regulator IC is used to provide regulated power supply followed by filter circuit. It is shown in fig.1.
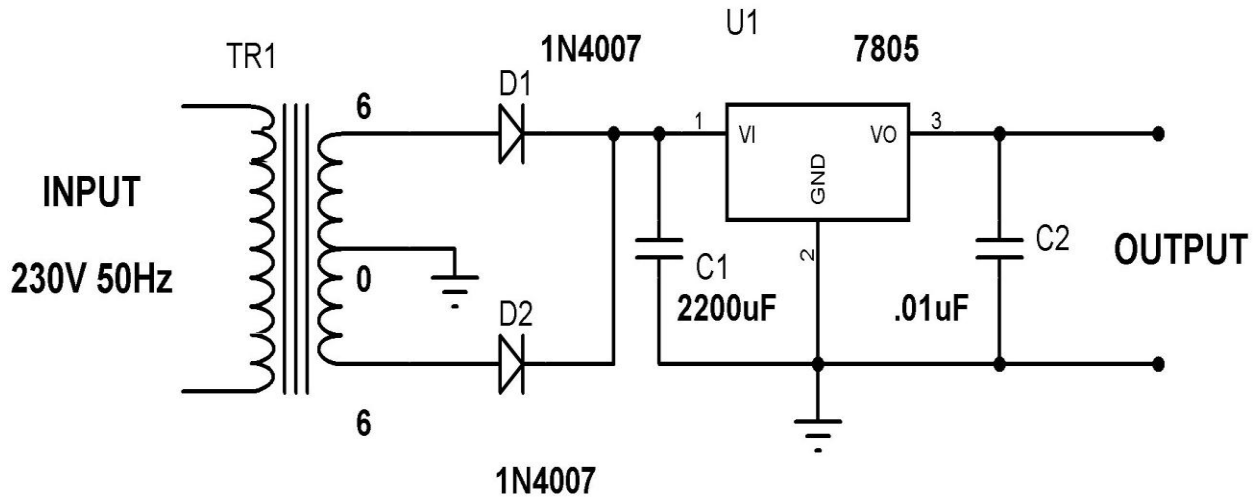

Fig. 1: Regulated power supply

(2) Part 2 : Transmitter Section

This section has speech recognition module in the input side of the microcontroller and output of the microcontroller transmits the signal with the help of RS232 interfacing device and wireless transceiver. It is shown in fig.2.
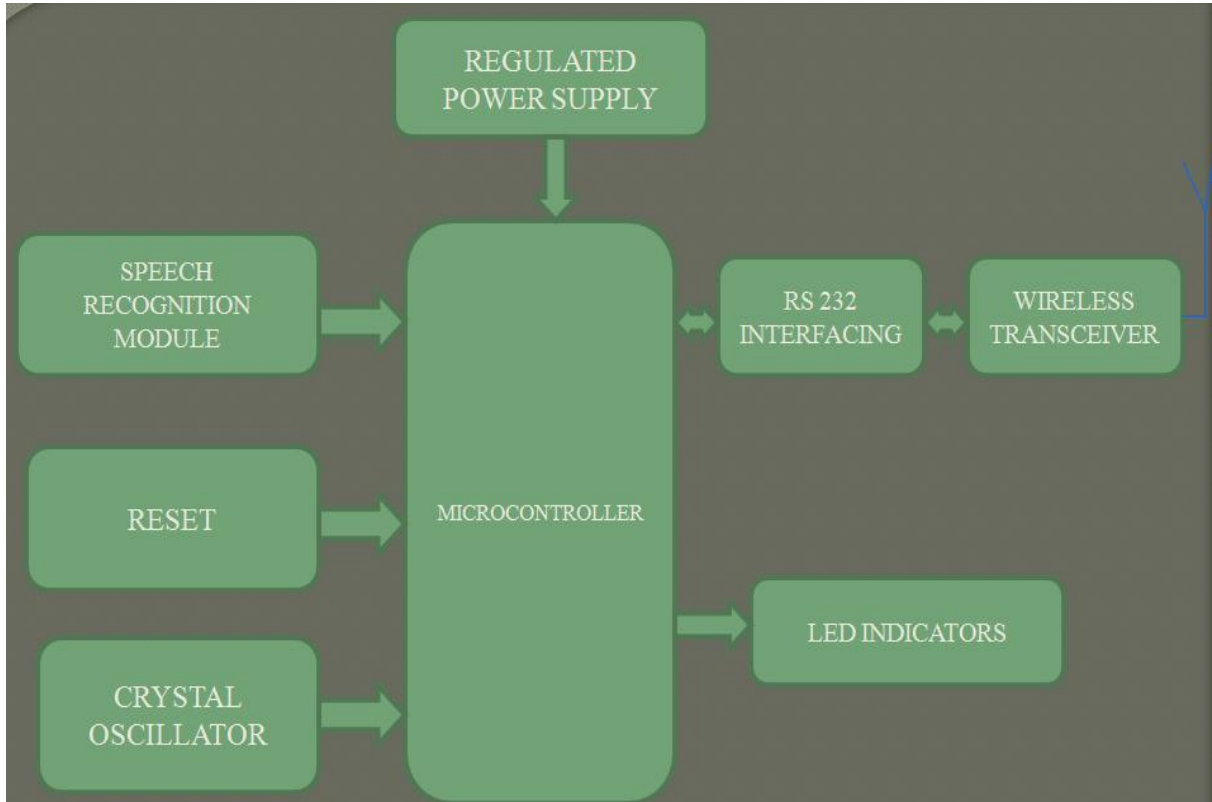

Fig. 2 Transmitter section

(3) Part three: Receiver section

This section receives the transmitted signal through wireless transceiver, and then the microcontroller takes action according to the command received. It is shown in fig.3.
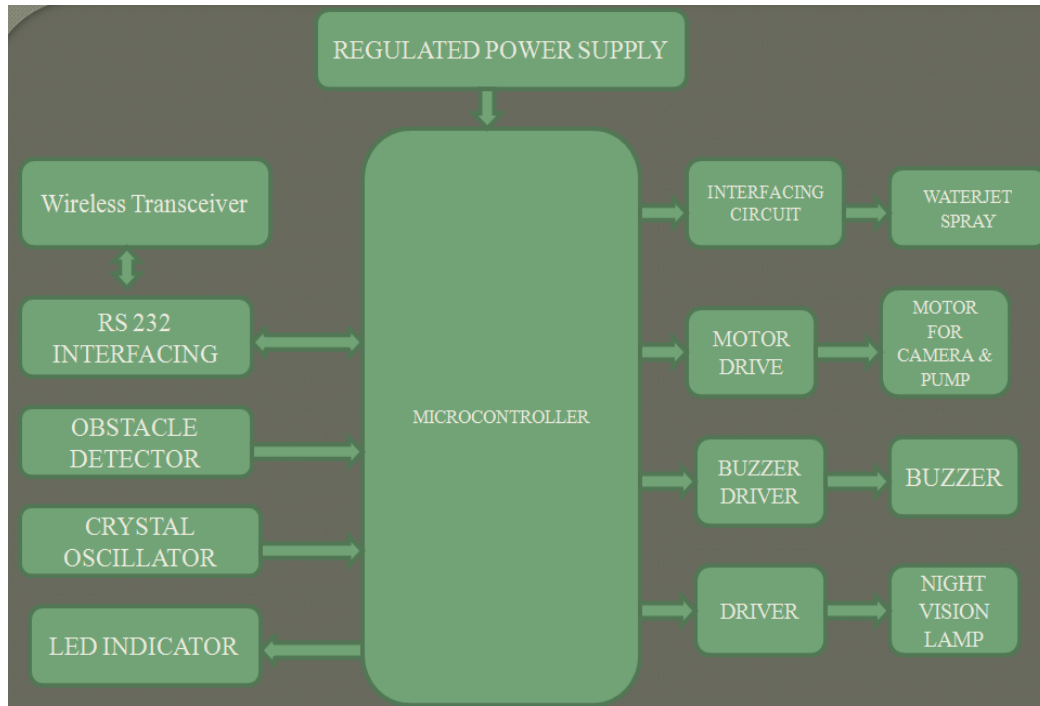
Fig. 3: Receiver section

IV- METHODOLOGY, CIRCUIT DIAGRAM AND HARDWARE

Methodology and circuit diagram are shown in fig. 4 and fig.5. The controlling contraptions of the whole structure are micro controllers. Discourse affirmation module, remote handset modules, obstruction locator, light, water stream sprinkle, dc motors and bell are interfaced to micro controller.
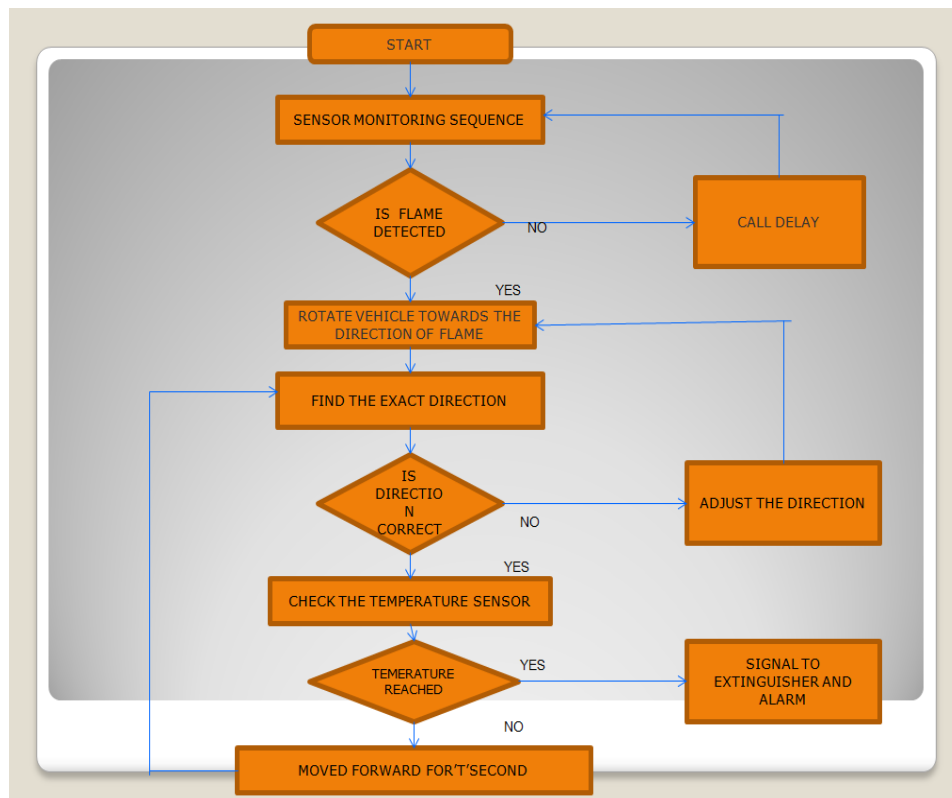

Fig.4 Methodology

Right when the customer reinforced the voice summons to the speech affirmation module, the microcontroller interfaced to it examines the charge and sends material data of that request remotely using handset module. This data is gotten by the handset module on the mechanical vehicle and feds it to microcontroller which acts in like way on motors, pump and light. The vehicle is mounted with a camera which helps in review the live pictures on TV.
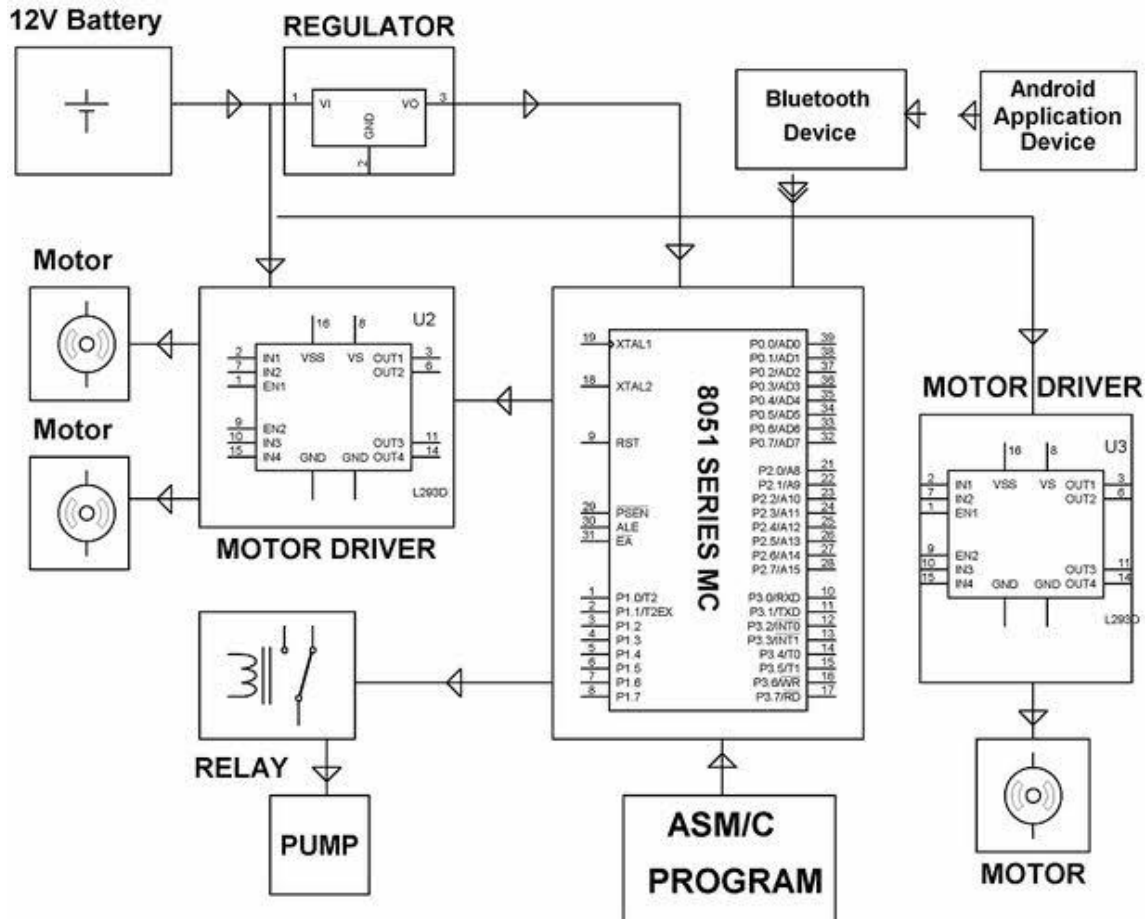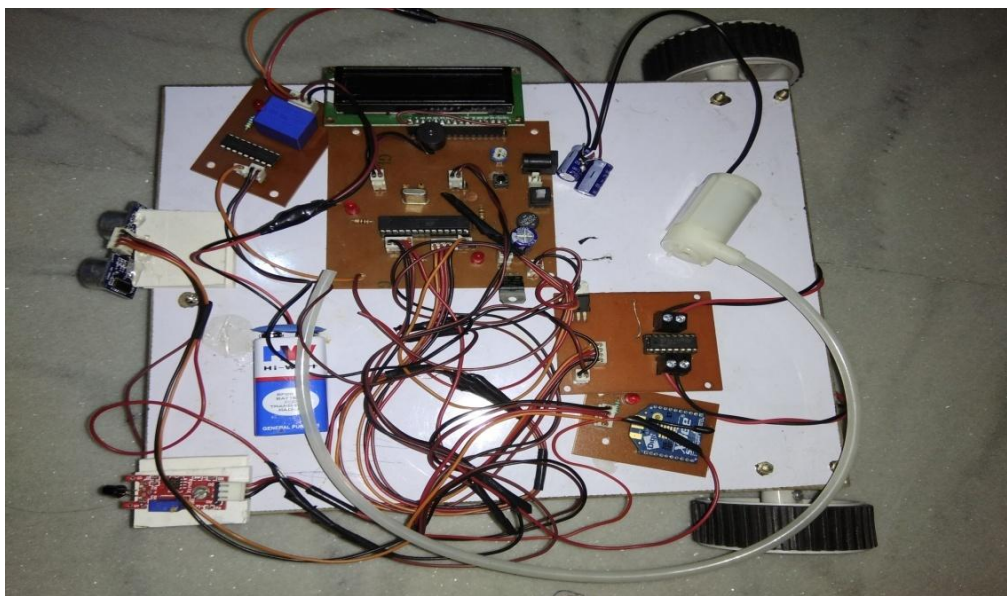

Fig. 5 Circuit Diagram

Fig. 6 Hardware Developed

In fig. 6, the hardware developed is shown. The hardware is tested for accuracy and it is found that it's working properly.

VII. RESULT AND CONCLUSION

The mechanical vehicle, i.e. transmitter segment and the speech recognition module, i.e. collector area had been outlined. What's more, the projects were singed into both the 8051 microcontrollers at collector and transmitter area. The venture is effectively tried for all the voice commands and it additionally identified the fire with the assistance of a fire sensor. Once the fire is identified, a bell is enacted and an engine drives the fan. Directions can be given through the speech recognition module.

The project is highly useful and is working properly. This can be successfully used in buildings etc. In future, an intelligent voice operated fire extinguishing robotic vehicle which can be developed wirelessly through RF communication can be developed.

REFERENCES

[1] Guoling Hu and Zhong Li, "Design of Intelligent Fire Extinguishing System of Interior Large Space", International conference on Electrical and Control Engineering, pp.687-690, June 26, 2010.
[2] Sheng'an Duan, Kaitao Cheng,Quanbo Ge and Chenglin Wen ,"Wireless Intelligent Fire Fighting Systems Software Platform R & D", International Conferences on internet of things and cyber, physical and social computing,pp.94-99,2011.
[3] B.Swetha Sampath, " Automatic Fire Extinguisher Robot",8th International conference on Ubiquitous Robots and Ambient Intelligence [URAI],pp.215-218, November 2011.
[4] G.T.Park, Y.G.Kim, I.C.Kim and H.S.Kim, "A Positive Study on Effective Gas Safety Management Using Wireless Sensor Network", MIPRO, Vol. 1, pp.187-191, May 21-25, 2012.
[5] J I Hyeon Hong, Byung-Cheol Min,Julia M.Taylor,Victor Raskin and Eric T.Matson,"NL Based Communication With Fire Fighting Robots", International Conference on Systems, Man and Cybernatics,pp.1461-1466, October 14-17,2012.
[6] Deepak Sharma and Parag Jawarkar,"Hardware and Software Co-design for Wireless Fire Fighting System", International Journal of Engineering Research and Applications ISSN: 2248-9622, pp.6-9, April 2014.
[7] Pawel Kulakowski, Eusebicalle and Jose L.Marzo, "Performance Study of Wireless Sensor and Actuator Networks in Forest Fire Scenarios", International Journal of communication systems, pp.515-529, March 2012.