

Wireless Operating Robo A Smart Choice to Save Life at Risk

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Abstract: The existing robotic systems which can combat in war times also known as “Security Warrior” includes the features of vision and motion. This paper proposes a new approach for designing and constructing a robotic vehicle in which multiple features can be embedded into a single model using a low cost autonomous robot. The features like live human detection, bomb detection, fire detection and gas detection can be achieved using our smart robo. This smart robo is embedded with PIR sensor, metal(bomb) sensor, fire sensor and gas sensor respectively. Our main aim is focused on achieving multiple operations using a single prototype.

I. INTRODUCTION

In modern technology, autonomous robotic system is an excellent novelty. It helps mankind in performing laborious task and where human cannot perform or when it is difficult for humans to go in war fields. In such cases a robotic vehicle can be deployed, where rescue team or existing tools cannot be employed. As the peripheral equipment of the robots became more sophisticated, reliable and reduced, these robotic systems are increasingly being utilized in war fields and law enforcement purposes. With the availability on various sensors in the market buliding up of robos has become an easy task. The various sensors available are Para Infrared (PIR) sensor, IR sensor, metal (bomb) sensor, fire sensor etc. Based on the application and necessity of situation we can embed various sensors according to the need.

II. EXISTING SYSTEM

There is much progression in the field of engineering, robotics in particular. Many robotic systems have been advanced for various purposes. Some robotic systems are used for automatic motion of vehicles in road and wheel chairs, which can help disabled. There are also other robotic systems, which can be used for defense purposes. Along these innovations there are also robotic systems, which can combat in war times. One of the robots is named "Security Warrior", which consists of five features including vision, motion, robot arms and power estimation [2]. One more robot that autonomously detects and extinguish fire, which is know as a “Fire Fighter robot”. It uses thermal sensor for detection and the range of detection is up to 10m. This robot is loaded with water tank, which contain up to 2ltrs of water and pump motor which is controlled through motor driver circuit to spray

water [4]. Some robotic systems are designed and constructed particularly for bomb detection. They achieve this by sending the robot to the respective place. [5]. In case of disaster prone areas, detection by rescue workers becomes time consuming and due to the vast area that gets affected it becomes more difficult. So a robot is sent to the disastrous area for identifying the live people and rescue operations. There are various robotic systems invented with different applications, which are currently available and in use.

III. PROPOSED SYSTEM

This paper proposes a multi-purpose robot that has been designed in such a way that it can fulfill the needs of the military, police, spy teams and armed forces [1]. It has numerous applications and can be used in different environments and for different situations. In our proposal a new approach for detecting live human beings in devastating environments using a low cost autonomous robot. The robotic vehicle uses a specific set of sensors that gives information about the presence of live human body with the help of Wi-Fi camera, which is used to capture a live video of the environment. This video is then displayed on a PC or a laptop at control unit. The live human detection system proposed in this paper is highly reliable as it is using a set of sensors for detection [4]. Usually the robotic systems are designed in such a way that they can perform only one specific operation at a time with high cost but where as our proposed robotic system can perform multiple operations which is achieved by embedding different features into a single prototype.

IV. SYSTEM ARCHITECTURE

The block diagram of multipurpose robot mainly consists of 8051 microcontroller to which multiple sensors are connected like the PIR (Para-infrared) sensor which is used for the detection of live human being, metal (bomb) sensor that is used for bomb detection, fire sensor which is used for detecting fire explosion and gas sensor which detects harmful gases in the war field. It also includes a Bluetooth module, which is designed for transparent wireless serial connection setup. Two DC motors are used for the movement of robot like forward, left, right and reverse, as these movements occur an LED blinks. A Wi-Fi camera is used to capture live video and send to the control unit. The buzzer sound indicates that there is a problem and checks further in PC to find whether it is fire explosion or bomb is detected etc., then further intimation is sent to respective teams to rescue.

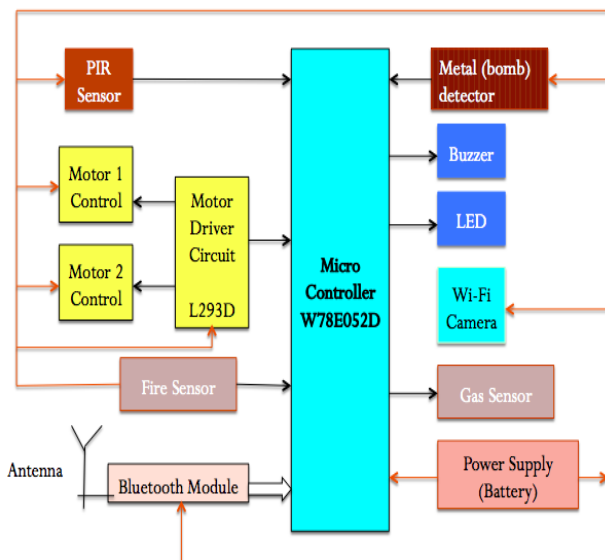


Figure: Block diagram of multipurpose robot

V. APPLICATIONS

- The robotic vehicle is used in various military applications.
- In rescue operations where human reach is impossible.
- In case of home application, our robotic vehicle can be used as gas leakage detector .
- The robot can also be used at mines, earthquake prone areas

VI. ADVANTAGES

- The robotic vehicle is used in the Remote Places.
- It is used as a bomb squared helping robot.
- The design of this robot is simpler to understand.
- It is a low cost autonomous robot.

VII. CONCLUSION

The purpose of the proposed system is to provide a robotic vehicle, which plays a vital role in military matters like live human detection, bomb detection, fire detection and harmful gases detection. This proposed system is superior to other existing robotic systems due to the use of different sensors that are inexpensive and easily reachable. The proposed robotic vehicle can perform multiple operations at a time in comparison with the existing robotics systems are designed to perform only one specific operation at a time.

Hence many lives can be saved by using this autonomous vehicle during a disaster in a short duration which can be done in a limited period of time, it can be done without affecting any humans and unaffected if done manually. The application of wireless sensor network will improve the saving of many lives by using mobile rescue robot in disaster prone area. In this paper we design an effective & safe system to ensure that there is no human left behind in rescue operation.

VIII. REFERENCES

- 1.E Amareswar, G Shiva Sai Kumar Goud, K R Maheshwari, E Akhil, S Aashraya, T Naveen "Multi Purpose Military Service Robot", MLR Institute of Technology Hyderabad, India. International Conference on Electronics, Communication and Aerospace Technology ICECA 2017
- 2.V. Prasanna Balaji & H. Goutham "A Multipurpose Robot for Military" -Tribute to the Defence Ministry, ISSN: 2319 – 3182, Volume-2, Issue-3, 2017
- 3.Jinu Sebastian, Lidiya KA , Martha George, Asst.Prof. Sija Gopinathan "Alive Human Detection System for Rescue Operations in Hazardous Areas " International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering (An ISO 3297: 2007 Certified Organization) Vol. 6, Issue 4, April 2017
- 4.Rajeev Joshi, Pratap Chandra Poude, Pankaj Bhandari "An Embedded Autonomous Robotic System for Alive Human Body Detection and Rescue Operation" International Journal of Scientific and Research Publications, Volume 4, Issue 5, May 2014 1 ISSN 2250-

3153

5.Sharavanan.S, Nithiya Devi.V, Venkat Raj.R, T. Venugopal “Automotive Fire Fighting Robot ” International Journal of Innovative Research in Science, Engineering and Technology An ISO 3297: 2007 Certified Organization Volume 6, Special Issue 7, April 2017

6.Tamilmani, Manikandan “Bomb Detection Robotics using Embedded Controller ” IRG- International Journal of Mechanical and Civil Engineering (IRG-IJMCE) - Volume 1 Issue 1, 2015

7.Madheswari B J, Sasipreetha D “Mobile Rescue Robot for Alive Human Detection in Disaster Zones” International Conference on Information Engineering, Management and Security 2016 (ICIEMS 2016)

