IOT ROBOT: WITH BOMB DIFFUSING APPLICATION

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ABSTRACT: *our paper is for presenting two technology which when combine together can form and tremendous useful devices for defense system and ultimately society because robot is an unique technology to serve society in different application and in different field so we all knows important of robot now days in society and developing technology the number of robots Used worldwide is constantly increasing. They are more and more present in different workplaces such as, dangerous areas, processing operations,, medical environments, military, manufacturing inaccessible areas etc…….again we have one unique communication technology now that is IOT this paper will explain mostly IOT technology because IOT is not only just an technology it is an is phenomenal …Now the Internet is being used to connect various objects such as cars, sensors, controllers, TVs, machinery, transport containers and electrical appliances, creating the Internet of Things (IOT). The networked and user interfaced robots, such as rescue robots, human assisting robots, health care robots and robots for military applications The evolution and growth of the Internet because a technology we can control robot with high distance, high speed and high accuracy. , solution on all communication and controlling over internet which is totally wireless and we can optimistically look forward to an IOT-assisted world that is connected, smarter – and better.*

Disposing of any explosive materials is an extremely dangerous and risky job .bomb disposal is also an extremely delicate job, The project has been designed keeping in view the current law and order situation in throughout the world, Everyday hundreds of trained solders are either injured or lose their lives while defusing bombs and for that we can use robot for disposing bomb and can save lives of our people.

1) INTRODUCTION:

Now a days IOT technology taking granted for most of the controlling applications like medical, defense, automobile, industrial project, smart cities and many more. It has been considered as another technological revolution. The Internet of Things (IOT), also called Industrial Internet, has been defined as a global infrastructure for the information society, enabling advanced services by interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication technologies. High number of applications and controller can get connected to the IOT network.

So with the help of IOT technology DEFENSE system also can get an advance defense device in the form of BOMB deposing ROBOT. As we know disposing of bomb is a big task for human being there is always fear of loss or life in case any mistake's done by human that's why robotics technology can give solution this problem and with the help of robot we can dispose bomb. Now the question arise here how we can control robot? there are lots of technology to control robot these are wireless or wired again they get divided into some technology in wireless like 1) GSM control 2) Bluetooth 3) Wi-Fi 4) RF control and much more but all this technology have some and advantages and some limitations too ……so rather than use of this all we can go with IOT (internet of things) a new trend of communication and controlling This has an lots advantages during controlling.

2) Application of IOT as a bomb disposing robot:

2.1) Mechanical part of robot:

A simple definition of a robot is: 'any machine programmed to do work'. However, basic machine automation is now so commonplace that this classic definition is being replaced with a more apt phrase – 'a machine with intelligence'. But even this fails to really capture the full essence of what a robot has the potential to be, particularly since the modes of interaction

Between robots and their physical or virtual environments can be so diverse. robot may have a direct physical manifestation that allows it to mechanically act and react in the real world ,but it may operated in an virtual world using virtual technology's as a conduit for eventual real-world interaction (e.g. communicate contextual information to remote observers). A robot can also have perception; i.e. it has an ability to assimilate real-world inputs, make 'contextual sense' of them and act according to its programming and what it has learned.

BOMB DISPOSING (IOT APPLICATION) BASIC DESCIPTION:

For bomb disposing robot we can use an basic cutting and wire cutting arm with an forward ,reverse ,left ,right moving car so that it can move in dangerous area according to requirement ,again it have an video camera for shoving up real time image for further controlling.
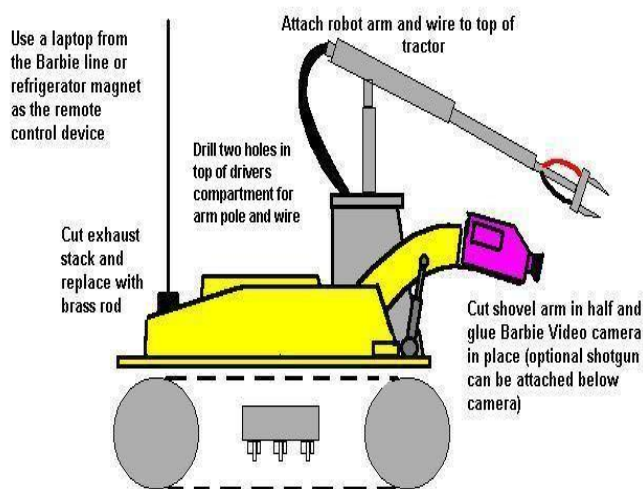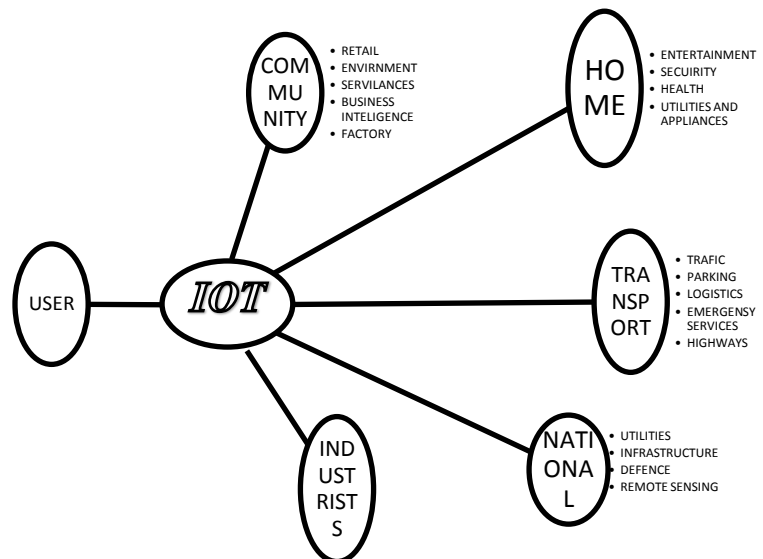

Fig: - Ideal Bomb Disposing Robot

2.2) IOT Technology:-

Internet has been part and parcel of the social animal's life. Nowadays 3G and 4G mobile internet Connections have led to faster internet access and deliver better quality in video calls. Wireless technologies and mobile computing have become cheap and have gained more Popularity.so IOT technology can lead all other communication and controlling applications. The term "IOT" was first used in 1999 by British technology pioneer Kevin Ashton to describe a system in which objects in the physical world could be connected to the Internet by sensors. Billions of sensors and controlling unit get connected over IOT which have a more capability not to access maximum application, sensors and communicate to this but also a total control we have through IOT. This way of connecting the physical world with cyberspace with the help of a smart device led to internet being called as "Internet of Things".

"Internet of Things" Is a new thing which has a power to not only communicate and control application but it is new era of communication business, technology and fast life style. It is the concept of computer network and controlling devices.The idea of connecting objects to each other and to the Internet is not new, it is reasonable to ask, "Why isThe Internet of Things a newly popular topic today?", it have many answer to accept IOT technology, its connectivity and controlling to an billion of applications and sensors make it vast and simple communication technics over large distance.

2.3) Connectivity And Interfacing:-

The proposed project of bomb disposing robot is operated using internet remotely. Using interfacing of gsm module to arguing board using this internet connection the robot can be operated through distant location where human beings cannot reach (Danger zones).

The robot consists of sensors such as IR sensor, metal detector, night vision camera. And wire cutter at its arm to cut the wires on bomb to dispose it.each ones applications described below:-

IR sensor:- Infrared (IR) sensors are used in this robot for distance measurement purpose the light reflected from front side object gives signal that there is something obstacle present in front of robot the response of distance measurement using IR sensor based on reflected amplitude from the objects is non-linear and depends on the reflectance characteristics of the object surface. As a result, the main use of IR sensors in robotics is for obstacle avoidance. Their inherently fast response is very attractive for enhancing the real-time operation of a wireless robot in distance measurement and obstacle avoidance. Low-cost IR sensors able to accurately measure distances with reduced response times. A new IR sensor based on the light intensity back-scattered from objects and able to measure distances of up to 1 m

Metal Detector:-

The metal detector sensor working is when the electromagnetic field is transmitted from the search coil into front side of robot Metals in the electromagnetic field will become strengthened & reflect an electromagnetic wave of their own. The metal detector comprises of a search coil which receives the retransmitted electromagnetic wave & sends signals to controller of presence of metal.

Night Vision Camera:-

The robot using wireless night vision camera would be operated by distant operator for monitoring as well as controlling applications. In the nights or where light intensity is poor, this robot is capable of taking pictures and videos, and then transmitting them to remotely operating master for further movements. This method of operation can be used in the time of wars and spying purpose to monitor enemies' movements.
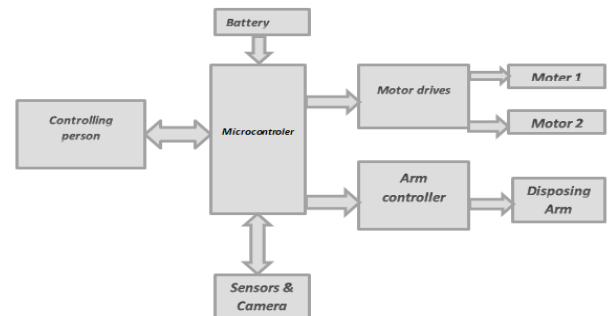
Block Diagram:-

Fig:-Block Diagram Of Proposed Bomb Disposing Robot

Interfacing Of Arduino And GSM Module:-

In this project we are using arduino board for controlling of bomb disposing arm and robot movements and direction using C language coding to it. As said earlier it is remotely operated through internet (IOT) using GSM module it will be provided internet and operated using commands to it. The special app provides easy controlling of robot movements and directions. The interfacing of arduino board and gsm module as shown below.
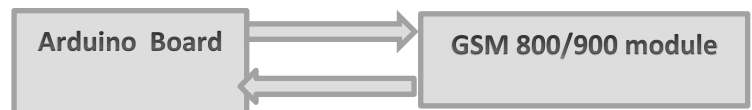

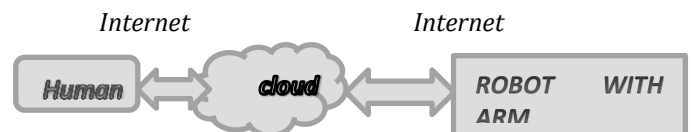Fig (1) Block Diagram Of Interfacing GSM Module And Arduino Board

Fig (2) Human & Robot Interaction

Conclusion:-

The proposed system of bomb disposing robot will be very useful in the area of security and spying of enemies as well as the areas where human beings cannot reach the robot will do that bomb disposing work .this robot is also remotely operated through internet so there is no harm to human lives. Hear is(2.1) basic mechanical robot ,(2.2) IOT technology and (2.3) Interfacing of arduino and GSM module and connectivity all together can form a best bomb disposing device which would be very helpful to save human life using internet.

References:-

[1] "A Multipurpose Robot for Military Tribute to Defense Ministry", V. Prasanna, Balaji & H. Goutham, International Journal on Theoretical And Applied Research in Mechanical Engineering (IJTARME), 2013

[2] "Bomb Detection and diffusion in Planes by Application of Robotics", Prashant Limje, Shailesh Khekale, Special Issue for National Conference on Recent Advances in Technology And Management for Integrated Growth, 2013.

[3]Robot mechanism and mechanical devices ----Paul E Sandin

[4] Lee GM (2012) The Internet of Things - Concept and Problem Statement, Institut TELECOM.

[5] Atzori L, Iera A, Morabito G (2010) The Internet of Things: A survey, Computer Networks, doi:10.1016/j.comnet.2010.05.010

[6] Botterman M (2009) Internet of Things: an early reality of the Future Internet, European Commission, Available at:http://ec.europa.eu/information_society/policy/rfid/documents/iotprague2009.pdf. Accessed 2011 Dec 17.

[7] Roberts CM (2006) Radio Frequency Identification (RFID). Computers and Security, 25 pp.18-26.

[8] ThingSpeak platform, https://www.thingspeak.com/

[9] (2009) Internet of Things Strategic Research Roadmap, European Commission, Available at: http://www.internet-of-things-research.eu/pdf/IoT_Cluster_Strategic_Research_Agenda_2009.pdf.

[10] Awab Fakih, Jovita Serrao, "Cell Phone Operated Robotic Car." International Journal of Scientific & Engineering Research, ISSN 2229-5518

[11] http://www.robotplatform.com/howto/L293/motor_driver_1.html

[12] Yun Chan Cho and Jae Wook Jeon "Remote Robot control System based on DTMF of Mobile Phone", IEEE International Conference INDIN 2008, July 2008.

[13] Karimi, Kaivan, and Gary Atkinson. "What the Internet of Things (IoT) needs to become a reality." White Paper, FreeScale and ARM (2013).

[14] Stankovic, John. "Research directions for the internet of things." Internet of Things Journal, IEEE 1.1 (2014): 3-9.

[15]"Understanding the Internet of Things (IoT) ", July 2014.

[16] Yashiro, Takeshi, et al. "An internet of things (IoT) architecture for embedded appliances." Humanitarian Technology Conference (R10-HTC), 2013 IEEE Region 10. IEEE, 2013

[17] www.internetsociety.org.

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