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Zigbee Controlled Metal Detecting Robot To Assist Bomb Detection and Rescue Team.

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Abstract — In any Bomb rescue operation, time factor plays a vital role. As Bomb can explore at any moment, our task is to reduce the time consuming to detect the Bomb when compared to manual detection. Detecting Bomb manually is highly risky and much time consuming process. In this paper we propose a new technique using "Quad copter" nothing but UA V (Unmanned Aerial Vehicle). It is an air vehicle which has multiple rotors (in our paper it is 4) and is controlled by the RC transmitter (joysticks). An attempt has been made to detect the bomb by using Geiger counter module. Geiger module can detect any type of radioactive radiation emitted from the Bomb. Bomb location information is sent to the user by making use of GPS and GSM modules. We integrated Geiger module, GPS module, GSM module, Adriano-UNO as a payload to the quad copter. We need to pass the quad copter on the area in which the operator wants to examine and if any Bomb is present, then Geiger tube detects it Then immediately Bomb location is sent to the operator's mobile by GPS and GSM modules. The main objective of this paper is to ensure the safety of the operator and to reduce the detection process time when compared to manual detection.

Keywords- Microcode Applications Direct Data Manipulation, Micro Program Design Aids, Control Structure Performance Analysis and Design Aids Automatic Synthesis, Control Structures and Microprogramming, Control Design Styles Hardwired Control.

I. INTRODUCTION

Now a days a lot of attention is being paid to the development of methods and instrumentation for the detection of explosives. Began explosives ensure before now slayed thousands of persons and hurt quite a lot of tens of thousands. Infrastructural facilities, like railway stations, airports, undergrounded railways are preferred targets involving up to thousands of people. New procedures of explosive occurrences are additional cultured, other hazardous, expending isolated mechanism of Improvised Explosive Devices (IED). Initiation by mobile phones permits terrorists to initiate a bomb immediately.

Hence, discovery schemes through a consistent finding effectiveness castoff in comprehensive range of IEDs remain an significant delinquent. Traditional explosive detection systems are bulkier in size, expensive, and always require manual attention. Since communal reflectivity trespasser can effortlessly detour the organization by alternative course. A wireless sensor network consists of several types of autonomous sensors to co coordinately monitor a particular activity. The system consists of a processor, a sensor and wireless transceiver equipment Zigbee(Wireless module). The system collects the sensor data, perform local processing and transmit the required information to the security official's. The straightforward schedule overdue to scheme this structure to offer anticipation in contradiction of countless contemporary kinds of explosives. Such type of explosives includes explosives which are operated wirelessly from a far destination to place where they are placed for explosion. Essentially computer functioned expedients, signal, satellite, sensor worked policies.

II. LITRATURE REVIEW

1] Title: Distance Controlled Rescue and Security Mobile Robot
Author: Golap Kanti Dey, Raqibul Hossen, Md.Shafayet Noor, Kazi Tanvir Ahammed

The goal of planning a robot is to encourage the individuals through giving security and acting as some assistance through reprieving. The innovation utilized as a part of this save and security robot has various essential components, for example, mechanical auto control by PDA, naturally dodging deterrents in its way. It can detect gas, smoke and give an alarm through content informing. The robot can identify bombs, pick and place objects furthermore do separate estimations. An astounding remote camcorder furnished with a stepper engine for the Omni-directional view is utilized for the spying reason which is mounted on the robot auto to send genuine video pictures and sound designs.

2] Title :"Detecting and Spotting Bombs Using Wireless Sensors and Expert Systems"

Authors : Prof. Prabhakaran. S Department of IT Hindustan University Chennai, India

Bombs are detected by different machines and mediums but all works only under the presences of experts. They will analyze the presence and type of bombs. But this way of analyzing takes long time. In this paper, A combination of wireless sensor network supported by an expert system is the crux of the detection mechanism. Surveillance is taken care by 24X7 round the clock with effective alarming systems. Entering and creation of bomb will be observed initially. The wireless sensors are connected to expert systems, which are installed at different locations. Kalmann algorithm removes noise from the sensor data which is received. The expert system makes decision with ID3 algorithm and it automatically recognizes the type of bomb. GPS tracking system is used to position the exact place of bomb planted.

3] Title: Wireless Bomb Disposal Robot
Author: Shinde Pushpa.D., Davane Rahul D., Patil Poonam B.

This paper exhibits the remote bomb transfer robot which will enhance resistance of our country from psychological oppressor, suicide planes and other such air conditioning activities. The bomb finders and transfer framework works just with the nearness of specialists. Be that as it may, along these lines of investigating takes additional time and make hazard to life of specialists. The Wireless Explosive Dumping Robot consumes a regulator solicitation, at the consumer end to mechanism the automaton at all exploiting Wireless modernization.

4] Title: Wireless Multifunctional Robot for Military Applications
Author: Tarunpreet Kaur, Dilip Kumar

This paper displays an advanced approach for observation at remote and fringe territories utilizing multifunctional robot in light of current 3G innovation utilized as a part of de-fence and military applications. This mechanical vehicle has capacity to substitute the solider at fringe ranges to give observation. The mechanical vehicle works both as independent and physically controlled vehicle utilizing web as correspondence medium. This multisensory robot used to distinguish human, bombs, hurtful gasses and fire at remote and war field territories. Customarily, remote security robot obsoletes because of restricted recurrence range and constrained manual control. These confinements are surmounted by utilizing 3G innovation which has boundless range. This framework additionally upgrades the utilization of renewable asset of vitality by furnishing with sun oriented board. A self-governing operation is controlled by ultrasonic sensor and infrared sensors.

5] Title: Land Mine Detecting Robot Capable of Path Planning
Author: Muhammad Zubair, Mohammad Ahmad Choudhry

The Landmine identifying robots are intended to cover greatest possible range of landmine field for discovery of landmines. The distinguished landmines alongside checked and remaining region are spoken to on a visual guide with precision in millimeters. This paper displays a model of land mine distinguishing robot that is effective yet minimal effort and effortlessly controllable. A graphical UI is developed for plotting the landmines, filtered extra zone presentation, PID tuning and camera arrangement. Accentuation is set on the control of the differential drive.

6] Title: Wirelessly Controlled Mines Detection Robot
Author: Waqar Farooq,Nehal Butt, Sameed Shukat, Nouman Ali Baig,Sheikh Muhammad Ahmed

This paper exhibits the issue and impacts of landmines in safeguard fields. We are proposing a robot that has the inclination to identify the covered mines and gives client a chance to control it remotely to stay away from human causalities. The robot is outfitted with extraordinary wheels controlled by H-Bridge module, permitting it to move in all conceivable directions. In this paper, we concentrate on the wellbeing of people and the robot; the robot is furnished with unique range sensors that assistance in staying away from the obstructions in the field by particularly recognizing the position of obstacles. Fabrication of the project, a uncommon sort of model made of lightweight temperature safe metal is utilized to convey all item.

III. EXISTING SYSTEM

Violence is unique of the highest intimidations to countrywide safekeeping currently. Martial or forces militaries are not enough to avert these actions. The focal challenging overdue this annihilation remains the collection which is substitute late this who before now recognize the uselessness of our safekeeping arrangements. Straight nowadays we are subsequent outdated metallic uncovering doors and hand seized metal sensors. No self-governing coordination is existence recycled by several safety services in India till at the present. The main problem with the traditional systems is man Power Required.

IV. SYSTEM ARCHITECTURE

The project is for the bomb detection and diffuses. Here the transmitter part includes Zigbee transmitter and PC. In PC HyperTerminal or Putty software is installed and used for the accessing of the robot. Receiver includes the DC motor for the motion of robot interfaced to the microcontroller unit. Metal sensor is used for the bomb detection. Camera is used for the live video monitor on TV. A cutter is used for the diffusion of the bomb.

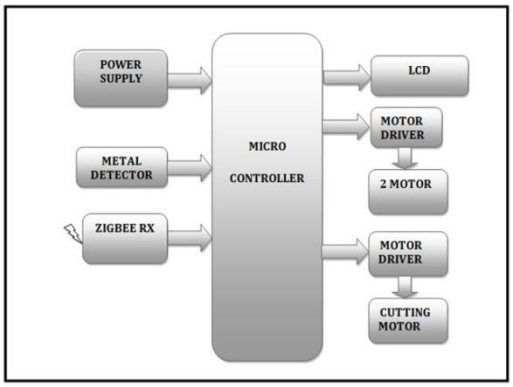

Figure 1: Zigbee Transceiver

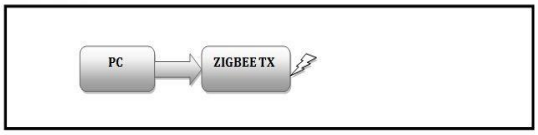

Figure 2: Zigbee Transmitter (PC)

The participation signal or regulatory signal is assumed starting a PC, which is interfaced with the microcontroller through a ZigBee element. The platform is so transcribed i.e., while accomplished it directs instructions to the motorized drivers as apiece its necessity for successively the motorized on behalf of the association of the automaton. An presentation named HyperTerminal now the PC is rummage-sale for delivery instructions for left, right, forward, backward, stop, up, down, open, close over zigbee organism. A 12V battery powers the circuit in series with a capacitor filter that nearly provides 5V through regulator IC LM 7805 for the microcontroller which has standard connections like crystal, reset arrangement indication LED etc.

A zigbee unit interfaced towards the microcontroller that later existence matching through some device interconnects through this zigbee element aimed at captivating suitable arrangements by means of each the advices completed happening on the computer. The effort uses communicates for the support up and down / open and close duty interfaced to the microcontroller. The program is so transcribed that for commands commencing the smart phone outcomes in appreciation existence directed concluded the ZigBee unit, on O=open, C=close, U=up and D=down quantity upon microcontroller emerging suitable turning of the motor.

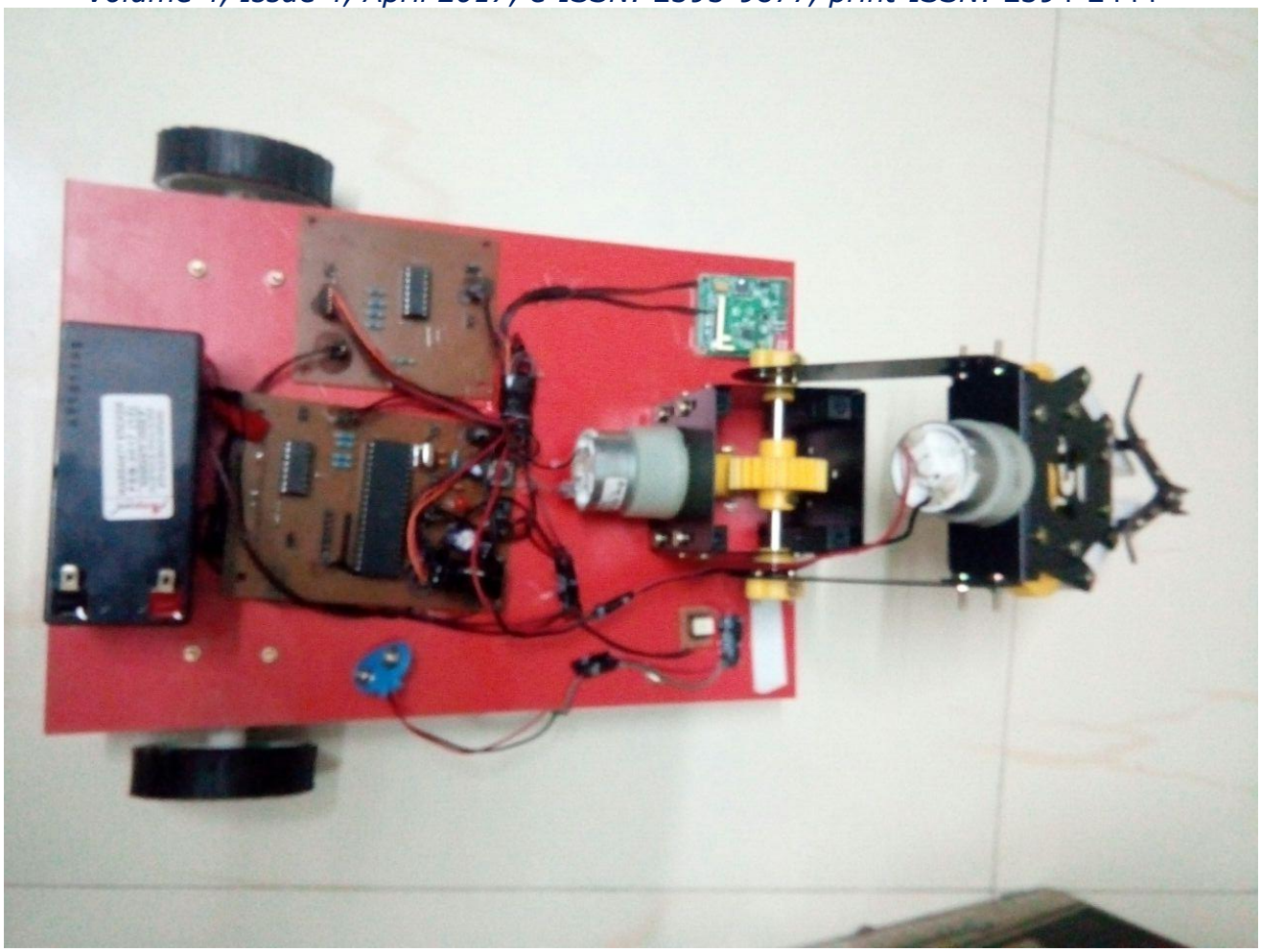

Fig: System Architecture

A metal sensor is positioned on the robotic dishonorable. When a metal is sensed, the PC operative must checked if this one is explosive. While C command is set in the PC mechanical arm slashes the cable of the explosive, wherever the PC is functioned via the bomb squadron. Thus, bomb is detected and diffused.

V. PROPOSED SYSTEM

Now we be situated propositioning a extremely operative wireless sensor network clarification; intelligent Wireless Explosive Detection System (iWEDS) to confrontation this delinquent. The sensors are prearranged in such a way that it consumes remained entrenched with the street indicators; so that nobody even knows about the security system and no one can bypass it. Other key advantages are: these systems are fully wireless no human intervention require ,low powered, fully automated and can support real-time tracking. Though IWEDS can perform automated operation we are proposing it only for assisting the police an

VI. CONCLUSION

Everyday many prepared faculty are either harmed or0 lose their lives while defusing bombs. This can be evaluated by the incalculable number of news things appearing every day in daily papers far and wide. Despite the fact that the possibility of our venture is unique, various activities with comparative functionalities can be found. The principle thought of this robot is to give the bomb transfer squad with wellbeing and security from the dangers that they confront each day. The bomb transfer squads of Pune have metal finder and other hardware for bomb identification and transfer, yet they need to hazard their lives by moving toward the bomb or the

suspicious bundle with no security and precautions. Wireless control is a standout amongst the most vital fundamental requirements for every single living being. In any case, tragically because of a tremendous measure of information and correspondence overheads the innovation is not completely utilized. We can remotely control the robot because of that hazard turn out to be low. This robot will discover the worthlessly bomb. The robot that we are going to made is a summon and control robot. This robot takes summons from the client as control a sand plays out the required activity. The focal thought behind this robot is to give a line of resistance to a bomb transfer squad against the life debilitating danger, confronted by them in case of a blast. This shows the proposed framework can be utilized to upgrade the security of human life.

VII. ACKNOWLEDGMENT

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VIII. REFERENCES

1] Abhinav Kumar Singh., Ni-laya Mitash Shanker., Anand Prakash Yadav "RF Controlled Terrorist Fighting Robot", International Journal of Computer Science Communication, vol. 1, No.1, January-June 2010,Pp. 109-112.

2] L.Srinivasavaradhan, G. Chandramouli, Mr.A.G.Maniprashanna "7th Sense: A Multipurpose Robot For Military",MEMSTECH2009,22-24,April,2009,Polyana-Svalyava (Zakarpattya),Ukraine.

3] "Bottom-up approach for behaviour acquisition of agents equipped with multi-sensors", International Journal on Smart Sensing and Intelligent Systems ,Vol. 4, No. 4, pp. 583-606,December 2011.

4] "Design and development of smart gripper with vision sensor for industrial application", Proceeding of 3rd International Conference on Computational Intelligence, Modeling & Simulation, September 20-22, 2011, Langkawi, Malaysia, pp.175- 180.

5] Muhammad Zubair, Mohammad Ahmad Choudhry, "Land and Mine Detecting Robot Capable of Path Planning" Software Engineering (WCSE) , 10.1109/WCSE2010.34 Second World Congress , pp 19-20 Dec 2010.

6] Tarunpreet Kaur, Dilip Kumar, "Wireless Multifunctional Robot for Military Applications", International conference on Recent Advance in Engineering & computational Science(RAECS)2015,pp 15,10.1109/RAECS.2015.7453343

7] Shinde Pushpa.D., Davane Rahul D., Patil Poonam B,"Wireless Bomb Disposal Robot".

8] Prof. Prabhakaran. S Department of IT Hindustan University Chennai, India "Detecting and Spotting Bombs Using Wireless Sensors and Expert Systems". Communication control and Computing Technologies (ICCCCT),10.1109/ICCCCT.2010.5670579 ,pp 7-9 OCT. 2010

9] Golap Kanti Dey, Raqibul Hossen, Md.Shafayet Noor, Kazi Tanvir Ahammed , "Distance Controlled Rescue and Security Mobile Robot".

10] Waqar Farooq,Nehal Butt, Sameed Shukat, Nouman Ali Baig,Sheikh Muhammad Ahmed,"Wirelessly Controlled Mines Detection Robot".Internation Conference on Intelligent system Engineering (ICISE), PP 55-62 10.1109/INTELSE.2016.7475162 2016