ISSN: 2278-4632
Vol-12 Issue-01 No.01: 2022

LIVE VIDEO STREAMING FOR BOARDER SECURITY

M. Samayaraj Murali Kishan lal[1], A.Anand [2] S.P.Manikanta [3]
[1]Associate Professor, Dept.of E.C.E., St.Joseph's Institute of Technology,Chennai
[2]Professor, Dept.of E.C.E., St.Martin's Engineering College, Dhulapally,
[3]Associate Professor, Dept.of E.C.E., St.Martin's Engineering College, Dhulapally, Secunderabad-500100,Telangana State.
samayarajphdfgon@gmail.com

Abstract-This project aims to identify harmful contents, intruders, and to provide live video capture and transmission to higher authorities. In this project, Node MCU is used as a main controller which can control all connected sensors. It's a vehicle type robot which can move in all directions and record the live video and send it to registered mobile App user so that he can view the conditions at boarder and he can take the decisions according the condition occurs. If any intruder is identified then that can be given as notification by activating the buzzer to alert the security force so that they will react to that situation. Proximity sensor is there to detect the bombs which will be kept by the enemies at boarder. Our vehicle will continuously moves around the boarder for monitoring the conditions. Ultrasonic sensor in our vehicle will detect the intruders or suspicious persons. Gas sensor will detect the dangerous gases released and if any person had alcohol, our vehicle will detect.

Keywords-Node MCU, Metal Sensor, cloud, Gas sensor

I. INTRODUCTION

Border patrol systems have recently achieved interest to handle the considerations concerning national security. the foremost downside in protective long stretches of borders is that they want for big human involvement in patrolling the premises. In our patrol system consists of security checkpoints and border troops. All vehicular traffic is got to stop in security checkpoints that are started on the international roads to sight and apprehend contraband aliens, drugs, and alternative criminality. The border troop watches and maintains management in a very specific section of the border. The troops patrol the border in step with planned route and quantity. Beneath the standard patrol system, even modest-sized areas need massive human resources if manual patrolling is taken into account alone. which counterpoint one another ar needed. to handle the challenges still facing by the prevailing police work techniques, we have a tendency to introduce Border security mechanism, a brand new patrol system framework supported hybrid wireless detector networks, which may accurately sight the border intrusion with minimum human involvements. The border security mechanism utilizes the PIR detector for human detection and a detector for explosive detection. Conjointly a wireless camera is employed to unceasingly monitor the border. Whereas the potential advantages of Border security are important, many analysis challenges got to be self-addressed before a sensible realization. During this project, a framework to deploy and operate Border Sense for patrol is represented. The wireless communication technologies are chop-chop spreading to several new areas, together with the automation, and therefore the importance of the utilization of wireless technologies within the information acquisition, building management, observation. Robots are helpful to try and do jobs in areas and in things that are risky for humans. they will go any wherever that's not accessible by humans and might move into gaps and move through tiny holes that are not possible for humans and even trained dogs

II. LITERATURE SURVEY

For naturally distinguishing trespassers in fringes, an independent clever Robot can be utilized. Our

ISSN: 2278-4632
Vol-12 Issue-01 No.01: 2022

outskirts expand a huge number of miles and in this way our officers won't have the option to give total security. Unlawful movement, pirating and dealing in medications and arms can be forestalled if the fringes are made sure about. Each administration gives greater need for outskirt security. As innovation increments new dangers and dangers emerge towards national security. To improve the fringe security, sensor innovation and PC preparing force can be utilized. In our venture an independent clever robot is utilized which is improved with a video observation camera for identifying the trespasser, illuminate close by control unit and to check whether a gatecrasher is recognized and fire if vital. PIR movement sensor is utilized for identifying the trespassers [1].

Trespassers cross our fringes unwittingly. It isn't workable for our troopers to watch the fringes at every single second. The key utilization of independent astute mechanical frameworks is to give remote reconnaissance utilizing a security robot. A fundamental prerequisite in security is the capacity to naturally distinguish trespasser in outskirts, to educate close by control unit and to engage security staff to follow the trespasser. In this paper we propose a self-sufficient savvy robot which distinguishes trespasser utilizing PIR movement sensor, alarms security staff by sms utilizing GSM and catches picture of trespasser utilizing camera in Android gadget and mail this picture to determined email id utilizing Android based application. This improvement empowers security staff to adequately distinguish the and requiring little to no effort to recognize an expected gatecrasher [2].

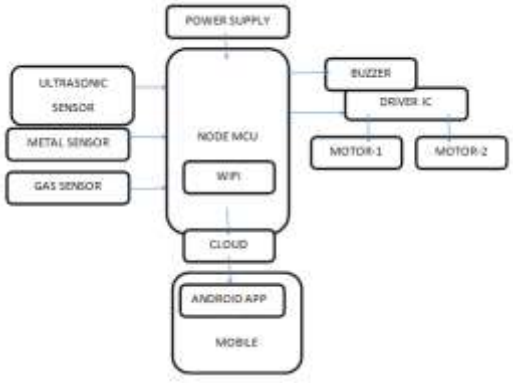
Android Operating System is created for advanced cells and tablets. It is an Open source Software. Android is the most broadly utilized versatile Operating System by the individuals these days. Android Software Stack contains four Layers: application layer, application structure layer, Libraries, Linux part. This Paper Describes about the Software Stack and forms of Android Operating framework [3].

A PDA is a cell phone with exceptionally propelled highlights. An advanced mobile phone has a High goals contact screen show, Wi-Fi network, web perusing capacities and the capacity to acknowledge the complex applications. Most of these gadgets run on any of these well known portable working frameworks, for example, Android, iOS, Blackberry working framework and Windows working framework. Today the advanced mobile phone world is sorted into three perspectives relies on the portable working framework which is utilized in a specific shrewd phone. These three significant versatile working frameworks are Android from Samsung, iOS from Apple and Windows from Microsoft. Innovation and highlights may fluctuate from one kind of versatile working framework to another sort of portable working framework. This paper delivers a near report on advanced mobile phone working frameworks Android, iOS, Windows [4].

The normal outskirt watch framework experiences concentrated human association. As of late unmanned fringe watch framework comprise of cutting edge gadgets, as unmanned aeronautical vehicles, unattended ground sensors, and observation towers outfitted with remote camera. Be that as it may, any single procedure experiences inseparable issues, for example, high bogus caution rate and view compels. There require a rational framework that co-ordinates different advances to improve the framework precision. In this task general thought of visitor security robot, remote sensor organize engineering for fringe watch framework, is presented. Outskirt security robot use a PIR sensor for human location, a metal finder to recognize the nearness of explosives and a remote camera for checking the situation constantly at the remote station. Mechanical control of automated vehicle alongside automated arm should be possible from the remote station [5].

III. PROPOSED DESIGN

The module consists of an Embedded System device which includes a central NODE MCU with a Carbon Monoxide sensor, metal detector and a Wireless Fidelity Wi-Fi interface. Two L293D driver ICs are used to drive the four motors. Drivers ensure the proper working voltage for DC motor and also protect the Arduino from being harmed.



r

ISSN: 2278-4632
Vol-12 Issue-01 No.01: 2022

Fig.1: Block Diagram

Out of four DC motors, two are for the mechanical control of robotic vehicle and two are for robot arm .We can control the robot by moving it to forward, backward, right and left and arm will goes up, down, expand and contract according to our requirement. The output of metal detector is Associated with the node MCU and MQ-7sensor is Associated with the interrupt pin of Node MCU. Whenever an intruder or explosive is detected, MQ-7 initiates the corresponding warning message transfer through Wi-Fi module.

Flow chart:

i. At Remote Station

At Remote Station, After initializing process, Vehicle parts will be activated then it starts monitoring, if intruder found then COMMAND ROB CNTRL will be activated. if not its keep on search. If Bomb detected then COMMAND FOR ARM will be activated as shown in Fig.2.

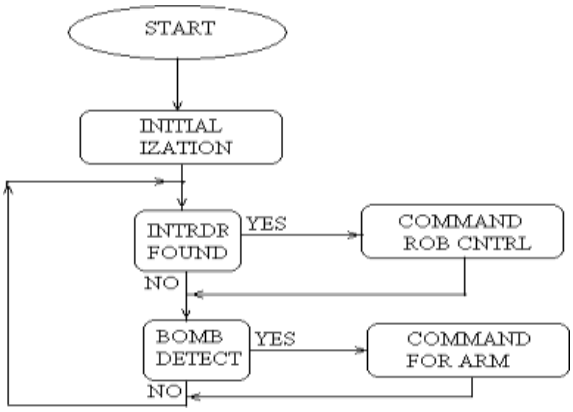


Fig.2: Flow chart –remote side

ii.At Robotic Side:

At Robotic Side, after initializing process, Vehicle parts will be activated then it starts monitoring. If PIR Sensor is activated then Message is sent to Remote station. If not it's keep on searching. If INTF Sensor is activated then Message is sent to Remote station. If not it's keep on searching. If RCIF Sensor is activated then Message is sent to Remote station. If not it's keep on searching as shown in fig.3

Node MCU is used as a main controller which can control all connected sensors. It's a vehicle type robot which can move in all directions and record the live video and send it to registered mobile App user so that he can view the conditions at boarder and he can take the decisions according the condition occurs. If any intruder is identified then that can be given as notification by activating the buzzer to alert the security force so that they will react to that situation.

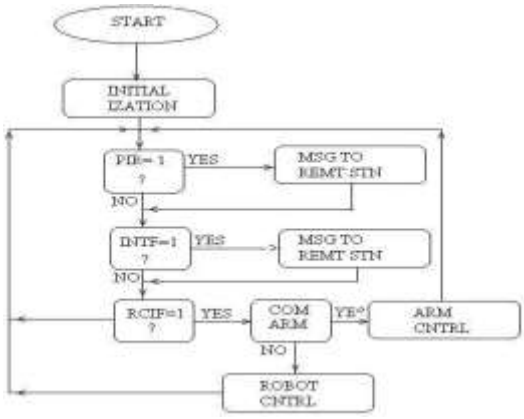


Fig.3: Flow chart –Robotic side

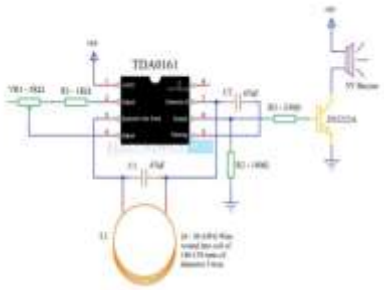


Fig.4: Metal Detector

Proximity sensor is there to detect the bombs which will be kept by the enemies at boarder. Our vehicle will continuously moves around the boarder for monitoring the conditions. Ultrasonic sensor in our

ISSN: 2278-4632
Vol-12 Issue-01 No.01: 2022

vehicle will detect the intruders or suspicious persons. Gas sensor will detect the dangerous gases released and if any person had alcohol, our vehicle will detect as shown in Fig.4.

IV. EXPERIMENT RESULTS

The entire system is connected with cloud and to the android app with internet with mobile (control unit).Our system has the sensor network that includes the metal detector, ultrasonic sensor, gas senor are use to detects the hazard things, all these sensor network are acts as a inputs for device (node MCU) when ever any one of the hazard thing is detected robot stop at that movement and send this information to the user using IOT technology. It is very simple to handle, very safe and easy to control. Here the control unit is our mobile and we can control the robot from any where by using IoT technology as shown in fig.5.

Fig.5: Application used for controlling robot

The Application which is used for controlling robot to move it to all four directions and to stretch the arm and to pick the object if necessary as shown in fig.6.

Fig.6: controls inside a application

The camera will capture the intruder if entered into our area and will send alert message to remote computer as shown in fig.7.

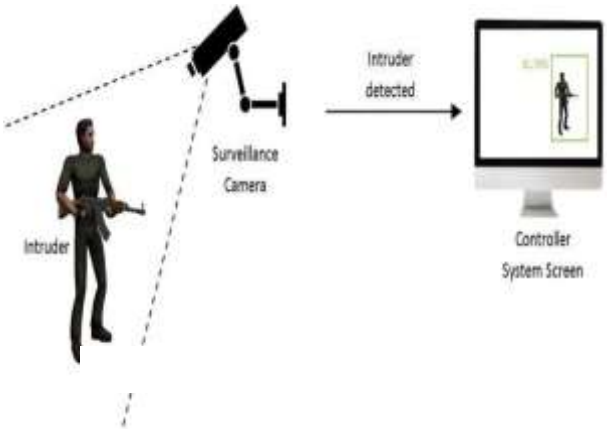


Fig.7: Intruder detection alert message at control room

The captured video will be shared to connected devices as shown in fig.8.

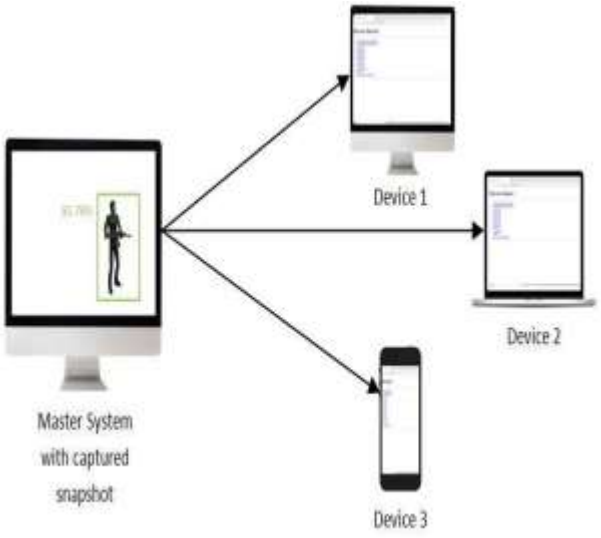


Fig.8: File sharing between master system and other devices

ISSN: 2278-4632
Vol-12 Issue-01 No.01: 2022

Our proposed prototype vehicle which contains all devices as stated in above contents is shown in fig.9.

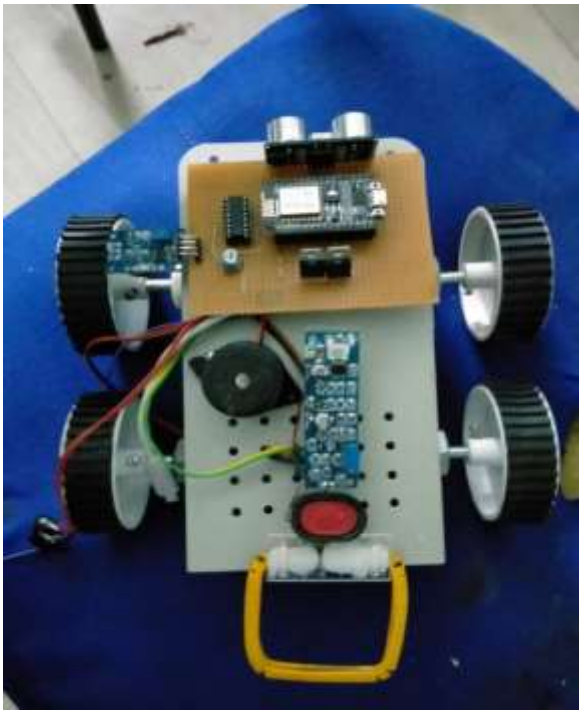


Fig.9: Project Image

V. CONCLUSION

There are no security at our borders so that we have developed this system.. If any intruder is identified then that can be given as notification by activating the buzzer to alert the security force so that they will react to that situation. Proximity sensor is there to detect the bombs which will be kept by the enemies at boarder. Our vehicle will continuously moves around the boarder for monitoring the conditions. Ultrasonic sensor in our vehicle will detect the intruders or suspicious persons.

REFERENCES

[1] Annu Maria Alex , Merin Elsa Jose, Rinsily K.S , Sinsee Bosco, Sony Shaji. ‘‘ANDROID BASED INTELLIGENT ROBOT FOR BORDER SECURITY” International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395 - 0056 Volume: 04 Issue: 04 Apr - p-ISSN: 2395-0072 [2016].

[2] C.M.Naveen Kumar1 , Dr.B.Ramesh2 , Prof. G. Shivakumar3 , J.R.Manjunath4, Android Based Autonomous Intelligent Robot for Border Security, IJISET - International Journal of Innovative Science, Engineering & Technology, Vol. 1 Issue 5, July IJISET 2014.

[3] M. Narmatha 1 , S. Venkata KrishnaKumar2 Study on Android Operating System And Its Versions International Journal of Scientific Engineering and Applied Science (IJSEAS) - Volume-2, Issue-2, February 2016 ISSN: 2395-3470.

[4] K. DivyaP 1 P, S. Venkata KrishnaKumar P 2 COMPARATIVE ANALYSIS OF SMART PHONE OPERATING SYSTEMS ANDROID, APPLE iOS AND WINDOWS International Journal of Scientific Engineering and Applied Science (IJSEAS) – Volume-2, Issue-2, February 2016 ISSN: 2395-3470

[5] Minni Mohan1And Siddharth Shelly2 BORDER SECURITY ROBOT International Journal on Cybernetics & Informatics (IJCI) Vol. 5, No. 2, April 2016.

[6] Zhi Sun, Pu Wang, Mehmet C,Vuran,Mznah A. Al-Rodhaan,Abdullah M.Al-Dhelaan,Ian F.Akyildiz , (2011),"BorderSense: Border patrol through advanced wireless sensor networks”, Ad Hoc Networks 9 pp. 468–477

[7] K. V. S. S. S. S. Sairam, N. Gunasekaran, S. Rama Reddy, (2002), "Bluetooth in Wireless Communication", IEEE Communications Magazine ,pp.90-96

[8] Francesco Balena ,"Programming Microsoft Visual Basic 6.0", Publisher: Microsoft Press,1999

[9] I.F. Akyildiz, T. Melodia, K. Chowdhury, (2008) “Wireless multimedia sensor Networks : applications and testbeds”, Proceedings of the IEEE 96 (10) pp. 1588-1605

[10] Ariponnammal S and Natarajan S (1994) “Control system for a mobile robot”, Pramana Journal of Physics Vol.42, No:1, pp.421-425