ISSN: 2321-2152

IJMECE

International Journal of modern electronics and communication engineering

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editor.ijmece@gmail.com
editor@ijmece.com

www.ijmece.com

ISSN2321-2152
www.ijmece .com
Vol 12, Issue.2, 2024

LIVE VIDEO MONITORING ROBOT CONTROLLED BY WEB

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ABSTRACT:

Considering the current scenario of warfare between India and China, we got inspired by the thought of various ways technology can help our hardworking soldiers by reducing the human loss by using an application that can spy on the enemy, and also for security purpose. This project's main purpose is to deal with difficult situations like where humans cannot go through scenarios like darkness, entering narrow areas and detecting hidden bombs etc. The robot serves as a perfect machine for the defense sector in order to reduce the human life loss and will also help in prevention of illegal activities. The robot is self-powered, with a backtracking facility, in case a situation arises where there is connection loss from the base station. Wireless cameras sends back real-time video and audio inputs that can be seen on a monitor in the base station and action can be taken accordingly.

Keywords: GSM, GPS, MQ3, Vibration sensor.

1. INTRODUCTION

The advent of technology has brought a revolutionary change in the field of robotics and automation which ranges in all the sectors from household domestic works to the defence sector. Today in the global market, smart phones also have brought a revolution in changing people's lifestyle and providing

numerous applications on different operating systems. Android operating system is one of these systems build on open source which has made a huge impact providing many applications for robotics to help people in their day to day life. The main technology used here for serial communication with the robot is the Bluetooth technology. Bluetooth technology can be used to share data between two devices considering the range between two devices. The wifi module ESP8266 will be connected with the robot and the commands to the robot will be given through the android application. The war field robot consists of arduino uno board as a controller board. It has L293D motor driver IC's along with a ESP8266 wifi module. Two DC motors are also used for the motion of the robot. The night vision wireless camera is attached with the robot in order to monitor the situation and the camera can be rotated 360 degrees via the android application through motor. Mine detection sensor and fire detection sensor are used. Metal detector sensor is used to detect bigger size metallic objects.

2. RELATED STUDY

Beginning with the most basic and important term regarding the project, i.e., the word 'ROBOT'. Literally, this word originates from a salvic word ROBOTA that means labour. Simply saying, a robot is generally a machine that is able to perform certain tasks either automatically or manually or in both ways simultaneously. Generally, the robots that are used in those battlefields are machines that helps in removing mines and such obstacles in war fields all by itself and sometimes they are also used to spy on enemies. Nowadays, as the domain of technology is getting improvised, robots can be seen being used in military operations as well which are not completely automatic instead, they are controlled

remotely. Generally, [4] & [5] there are three kinds of machines used in military operations namely UGV(Unmanned Ground Vehicle), UAV(Unmanned Ground Vehicle), UUV(Unmanned Underwater Vehicle) UGV: These are used for land surface purposes and can carry heavy load , move on a rough surfaces and have various sensors and cameras attached to them. UAV: These are used to carry aerial weapons and flying machines. UUV: These are actually regarded as submarines or more specifically, machines that can survey underwater. Next another important machine to be discussed is TISON[1]. This is a heavy EOD(Explosive Ordnance Disposal) robot which is a north American military robot that is capable of lifting up to 100 pounds. Even though it has a strong gripping mechanism, it has one limitation which is that it cannot function properly at night time. And lastly, S.Naskar[3] tried to explore the field on how a RF controlled robot that can be used in defense and battlefield.

Objectives of the work

The main objective behind developing this robot is for the surveillance of human activities in the war field or border regions in order to reduce infiltrations from the enemy side. The robot consists of night vision wireless camera which can transmit videos of the war field in order to prevent any damage and loss to human life. Military people have a huge risk on their lives while entering an unknown territory. The robot will serve as an appropriate machine for the defence sector to reduce the loss of human life and will also prevent illegal activities. It will help all the military people and armed forces to know the condition of the territory before entering it. Mine detector sensor is used to detect metallic objects. Fire detector

ISSN2321-2152
www.ijmece .com
Vol 12, Issue.2, 2024

is used to detect exact direction of fire source.

3. AN OVERVIEW OF PROPOSED SYSTEM

Ardunio board is used for the robot. A WIFI module is connected to the board. The android application establishes a connection with the Bluetooth module on the board. Once connection is successfully established, the user can send controlling commands through the GUI of the android application. The command sent from the mobile application is received by the Bluetooth module which transmits it through serial communication to the controller.

Camera operation:

Human eyes cannot see in the dark light. Hence night vision cameras are used for many purposes specifically in the field of security and surveillance. These devices offer a bit more security than the normal standard cameras. They have the ability to capture objects that are invisible to human eyes either in an image format or recording a video.

The specific type used in this project is the night vision wireless camera. It being a wireless device would help us in allowing the device to travel a particular distance without any bound and complete the mission allotted. Below are the features of the night vision wireless camera used:-

- It can automatically detect a movement around that particular area.

ISSN2321-2152
www.ijmece .com
Vol 12, Issue.2, 2024

- It can allow the transmission of data over 100 meters of range without any obstacles in between.
- A CMOS imaging sensor of size 1/3 inch is installed that detects and converts the information that is used to make an image.
- Next are the video standards along with the resolutions namely PAL(Phase Alternate Line) 628*582/NTSC(National Television Standards Committee) 510*492.
- Illumination is needed to obtain images of a specified desired quality. It provides about min. illumination of 1.5 lux.
- View angle required is 62 Degree
- Camera head used is of 15 gm weightage.

4. CONCLUSION

In this project, the model of robot can be described to build a robot using night vision wireless camera run by android application and the people can learn about developing android application in order to control the robot through wireless application using the platform of MIT app inventor. Mine detector and fire detector senor are used in this system. The robot has reduced the human effort. The robot is designed with high accuracy in movement section. All the objectives of the project were accomplished with high accuracy, camera result was complimentary in that respect is always a way for betterment in any task. More features can be summed in the robot to make it useful. The robot can be made more enhanced by adding features like gas sensors and bomb defuse kit.

REFERENCES

[1] U. Bokade and V. R. Ratnaparkhe, "Video surveillance robot control using smartphone and Raspberry pi," 2016 International Conference on Communication and Signal Processing (ICCSP), Melmaruvathur, 2019, pp. 2094-2097 doi: 10.1109/ICCSP.2016.7754547

[2] H. R. and M. H. Safwat Hussain, "Surveillance Robot Using Raspberry Pi and IoT," 2018 International Conference on Design Innovations for 3Cs Compute Communicate Control (ICDI3C), Bangalore, 2018, pp. 46-51.doi: 10.1109/ICDI3C.2018.00018

[3] Nayyar A., Puri V., Nguyen N.G., Le D.N. (2018) Smart Surveillance Robot for Real-Time Monitoring and Control System in Environment and Industrial Applications In: Bhateja V., Nguyen B., Nguyen N., Satapathy S., Le DN. (eds) Information Systems Design and Intelligent Applications. Advances in Intelligent Systems and Computing, vol 672. Springer, Singapore

[4] G. O. E. Abdalla and T. Veeramanikandasamy, "Implementation of spy robot for a surveillance system using Internet protocol of Raspberry Pi," 2017 2nd IEEE International Conference on Recent Trends in Electronics, Information & Communication Technology (RTEICT), Bangalore, 2017, pp.86-89.

[5] Suryavamsi P.S.N., Arockia Selvakumar A. (2019) IoT Controlled Mobile Robot for Home Security and Surveillance. In: Hemanth J., Fernando X., Lafata P., Baig Z. (eds) International Conference on Intelligent Data Communication Technologies and Internet of Things (I11CICI) 2018. ICICI 2018. Lecture Notes on Data Engineering and Communications Technologies, vol 26. Springer,cham.

[6] Kyunghoon Kim, Soonil Bae and Kwanghak Huh, "Intelligent surveillance and security robot systems,"

[7] 2010 IEEE Workshop on Advanced Robotics and its Social Impacts, Seoul, 2010,pp-70-73

[8] G. Song, K. Yin, Y. Zhou and X. Cheng, "A surveillance robot with hopping capabilities for home security," in IEEE Transactions on Consumer Electronics, vol. 55, no. 4, pp. 2034-2039November,2019.

[9] Xinyu Wu, Haitao Gong, Pei Chen, Zhong Zhi and Yangsheng Xu, "Intelligent household surveillance robot,"2008 IEEE International Conference on Robotics andBiomimetics, Bangkok,2009, pp.1734-1739.

[10] Thair Ali Salh and Mustafa Zuhaer Nayef, “Intelligent Surveillance Robot”, IEEE, Mosul, Iraq, Electronic ISBN: 978-1-4799-5633-3, DVD ISBN: 978-1- 4799-5632-6, DOI 10.1109/ICECCPCE.2013.6998745, 17-18 December 2013.

[11] S. Rooban, C. Joshitha, Idupulapayi Venkata Sai Eshwar and Mary Swarna Latha Gade, “Surveillance and Obstacle Avoiding Autonomous Robot”, IEEE, Pune, India, Electronic ISBN: 978-1-7281-8402-9, DOI 10.1109/ASIANCON51346.2021.9544623 , 27-29 August 2021.

[12] Asha Rashmi Nayak, Saishree CS Ayyar, O Aishwarya, Mahitha CH and N. Mohankumar, “Security Surveillance Bot for Remote Observation During pandemics”, IEEE, Coimbatore, India, Electronic ISBN: 978-1-7281-5371-1, DOI 10.1109/ICCES48766.2020.9137935, 10 July 2020.

[13] H. M. Gross, H, J Boehme, T. Wilhelm, “Contribution to vision-based localization, tracking and navigation methods for an interactive mobile service robot”, IEEE, Tucson, AZ, USA, Print ISSN: 1062-922X, DOI 10.1109/ICSMC.2001.972991, 06 August 2002.