HANDY COMRADE

[1] Ravi teja Yamsani, [1]Chiluveru Deepak, [1]Akinapalli Maniteja, [1]Badrinadh Madakala, [2]A. Robert Singh

[1]Student, Department of Computer Science and Engineering , Kalasalingam Academy of Research and Education.

[2]Assistant Professor, Department of Computer Science and Engineering , Kalasalingam Academy of Research and Education.

Abstract: Our project main aim is to create a modern remote surveillance rover based on IOT where it can be deployed and used for watching at the borders of our country. This will be monitored using the internet communication by the local host. We will be using the Wi fi protocols and Bluetooth protocols for controlling the robot to our wish. In this project we added 2 arduino's to avoid the conflicts between remote controlling and live streaming. In this work it uses 115200 upload speed and 40MHz frequency. For controlling the rover, we used C++ language as the medium. The proposed work is to make the surveillance easy job as of our country geographical like we have the toughest terrains to be watched and safe guarding like Siachen and hot deserts, so our idea here helps them in such conditions where a robot can easily have befitted instead of a human and perform their tasks Automation has only become possible because of automated robots and now theyare also able to implement the works in Industries. we do believe that our project going to make soldiers life even better and become an asset to them during any crisis. If we want to do some difficult things we need to choose a proper way where you, we can actually achieve it so we think that this is the proper way to help out the soldiers out their who constantly works and keep us safe everyday irrespective of any holidays.

Index Terms – **IoT, Surveillance, rover, Bluetooth, ZigBee.**

1.INTRODUCTION

The project are going to implement are related to interconnected networks which is commonly know as internet which are based on the usage of the sensors and other required technology or tools for our desired robot. we also know many technologies are being used these days in our day to day life like RFID, satellite communication, Wireless transmission, cloud computing and so on. These newly emerged technologies come in hand to implement the solutions for our problems.

IoT will be able to interact without the involvement of the human help. Many important innovations are being held in transport, communication, Vehicles and other embedded Systems, especially agriculture sector has a big scope in using IoT technologies [9], [10]. IoT technologies had already at their early stages. IoT can be identified or connected with the help of radio-frequency identification (RFID) technology. Till today we don't know perfect definition or explanation for Iot it is still developing and maturing in the current time. IoT is defined as dynamic global network infrastructure which can automatically configure based on the type of modules used in it. This mainly depends on a cloud-based technologies and Integration of parts with the sensors so it might help in further rely on technologies for making our works done at ease.

2. LITERATURE SURVEY

We chosen military and defend forces as our community target. we surveyed many expos and implementations and got an idea for proceeding to the project. we got through many experimental and implemented projects in US army where they are using AI and Deep learning techniques for improving the prototype for better working in the scenario.

We can see many countries already initiated many experiments to use AI in military department, our country is also in the race of making use of AI to aid the military forces. Major important factors used in the successful defense forces is logic observations. By adding the ML and the terrain patterns to the military communication we can sure improve the efficiency of the Rover module. **Until this year we can see there are many changes in the technology that we are using on the daily basis and as well as in the industrial applications. Similarly, we can see usage of many AI and NNT products in the military too. [4]** When we are asked to identify benefits and efficiency of IOT based solutions, the main important thing to be considered is to **increase the respective productivity,** with 78%. And this was prooved by benefits which occur during the **process of automation** 72% and **optimization regarding the value chain** 64% [1] **Actually in fact we are late in doing this many countries already had completed most of the research and came to the final phase where prototypes are creating and testing is under the process, India as a minimal cost based country we strive to meet the daily basis need a helping hand and motive force to invest in the development of the technology and equipment although we had also invested a lot of amount to our level to make the best out of from DRDO.**

These days we can see any serious contribution to the advace applications of IOT we must definitely know the result of synergetic activities which are results of conducted experiments in different filed of knowledge, such as telecommunications and Electronics. In this we can approach the discipline and contribute to the development [2][3].

3.PROPOSED WORK

In proposed system we want make a rover module with any long range transmissions network so that it can well communicated even from the long distances. The Esp-32 module shows what is present in front of it and live streams it to our local host. This robotic rover module can be operated by mobile and any other pc's which will be worked with Bluetooth module that gives the users how to drive like they will be having the controls like to move forward, backward and both left and right, If we use all 4 motors we can make them to drive in the desired directions.

We actually want to do with the help of drones so that irrespective of terrain our project can work without any glitch. In our local host we will have many other resolutions and as well as filters to caught the stream effectively. The other thing to be concern is about the power consumption and battery backup as it is one of the main criterial to be observed while choosing the wireless working module.
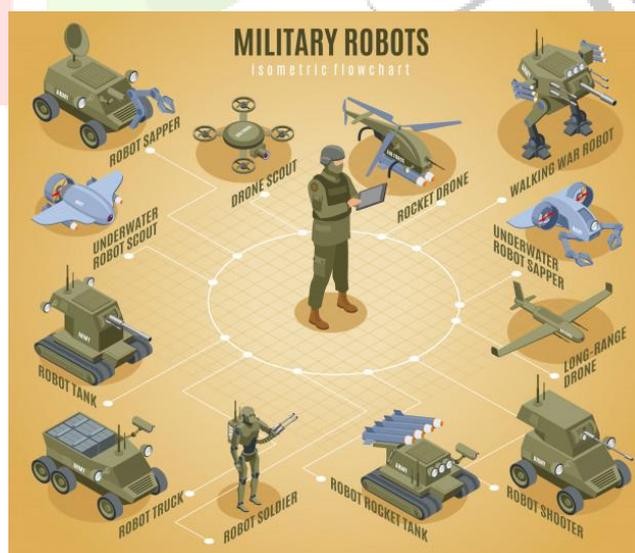
Figure 1: future of our military robots

For example, we can see in above figure how our future after a decade can be displayed as. As their will be no one to mourn for their dear ones instead only the human made machines and vehicles get destroyed. In above figure we can observe so many projects which are already under development and yet to dated to launch nearly in a decade so In my personal view I think it is the best opportunity to increase the research and development costs of the soldiers who keep

their lives in line of control for the sake of the citizens like us and its worth time to help the community which is useful to everyone.
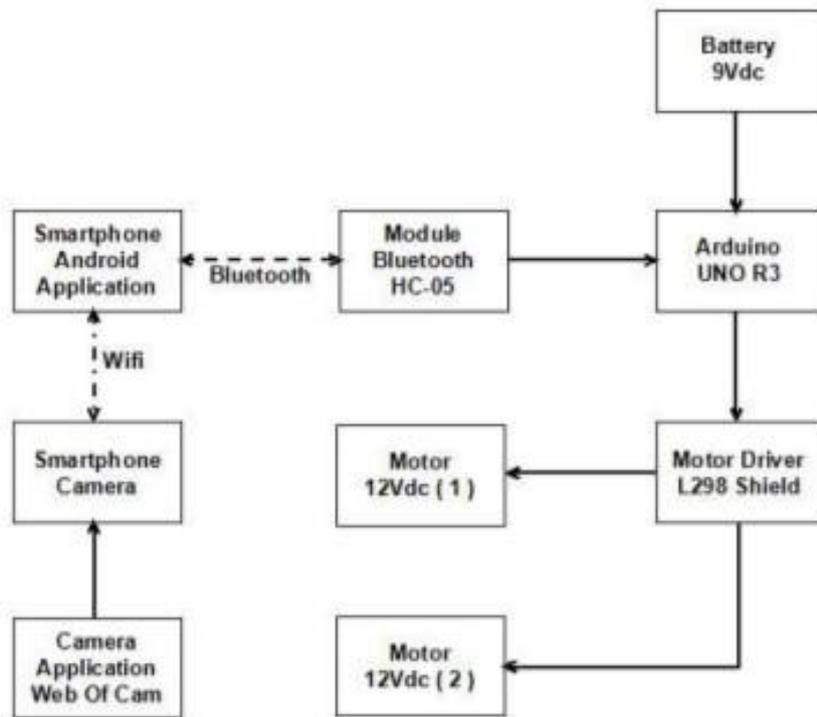
Figure 2: flow chart of working principle

The designing and implementation of this Remote control rover for surveillance and transport purposes during the crisis. This algorithm helps in operating the rover from a distance by using the appropriate technology as we can actually use up to 100 meters by using the Zigbee technology. These days most of the works are done in automation mode which is possible by usage of robots in the industrial applications.

Robots are programmed to do repeated tasks, but they can also be operated manually to do some tasks like deploying the medical kits to the unusual places. Now with the help of Artificial intelligence and IOT, Even robots and self driven cars which are made by neural networks are able to make decisions for themselves without any external factors help. we do believe that our project going to make soldiers life even better and become an asset to them during any crisis.

4. METHODOLOGY

For this project to make a rover in which we are going to have a camera assembled to it and as well as some of the sensors which help in sensing the danger engaged while moving incase of any bad weather conditions our robot will be helpful in bay watching and do help in transporting the medical kits and helpful things. we are going to connect the Arduino uno r2 with ESP 32 and camera will be attached to it we are going to write a program where it can be watched or viewed by a local host. They can control the rover seeing through around the vehicle with the help of camera and ultra sonic sensors are better to add to the benefits of identifying the obstacles around the rover. whenever they want they can deactivate the camera and activate the camera for battery reasons.

we tried to create a room for carrying any essential things to the surveillance corps in any bad climatic condition. We are also thinking forward to add the face recognition feature for our camera which we are going to assemble to our rover but them comes another hurdle we need to face the weather and distance so we are also on it to tackle with any possible solutions from our pocket. If we want to run our rover on the Rocky Mountains and snows places, we can place the belt between the wheels of the rover where it can be driven easily due to the grip of the belt provided to the wheels' alignment while it is moving on uneven surface. During the crisis we can even make the drone with the similar features and help the comrades whenever the help they needed we can also try to make the drone if we have good amount of money spent to just reach them in bad weather condition to less on by implementing our drone idea but to implement the drone we need to take the weather conditions into the account compared to the ground transport rover because as it moves in the air weather must have the upmost importance while analyse the risks and errors.

5. EXPERIMENTAL RESULTS AND DISCUSSION

The vulnerability of armed forces in a war zone is highlighted in our project. To provide them with effective surveillance and service we need ensure that our batteries withstand more time, wheels alignment and at last the wired connections. Since IoT is being used, data can be exchanged at both ends (soldier and control room), making military life more secure.
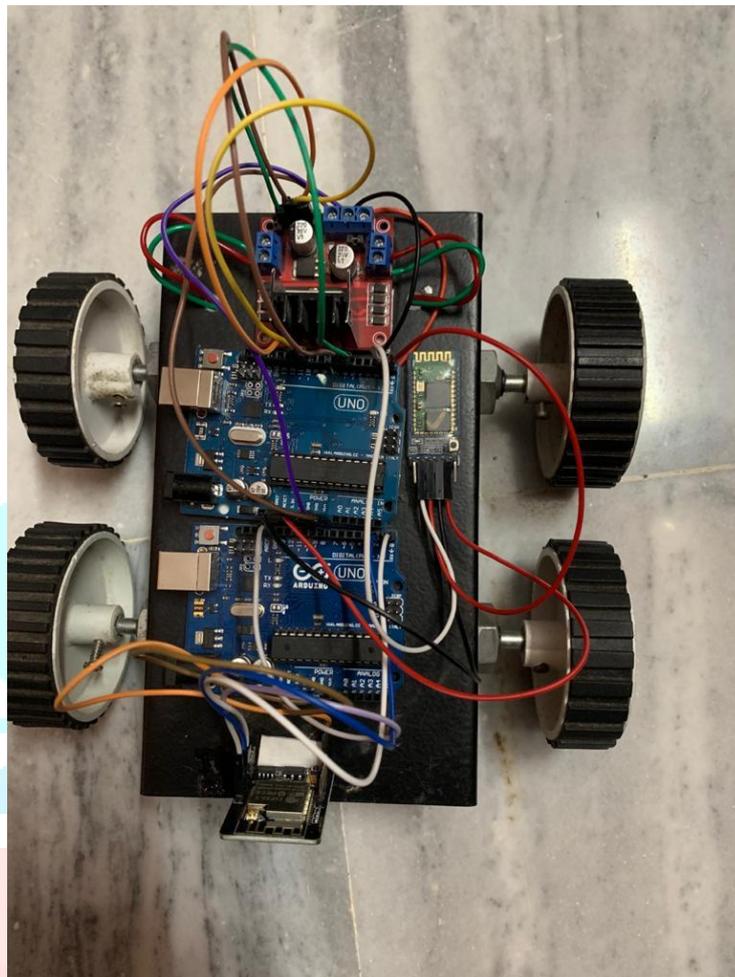

Figure 3: Top view of the rover

In figure 3 we can see that we have 4 wheels for the rover and can operature a distance of 10 meters as we are going to connect the vehicle with bluetooth module. It is all set for testing process so now we see how is our local host which we are going to stream the video is working
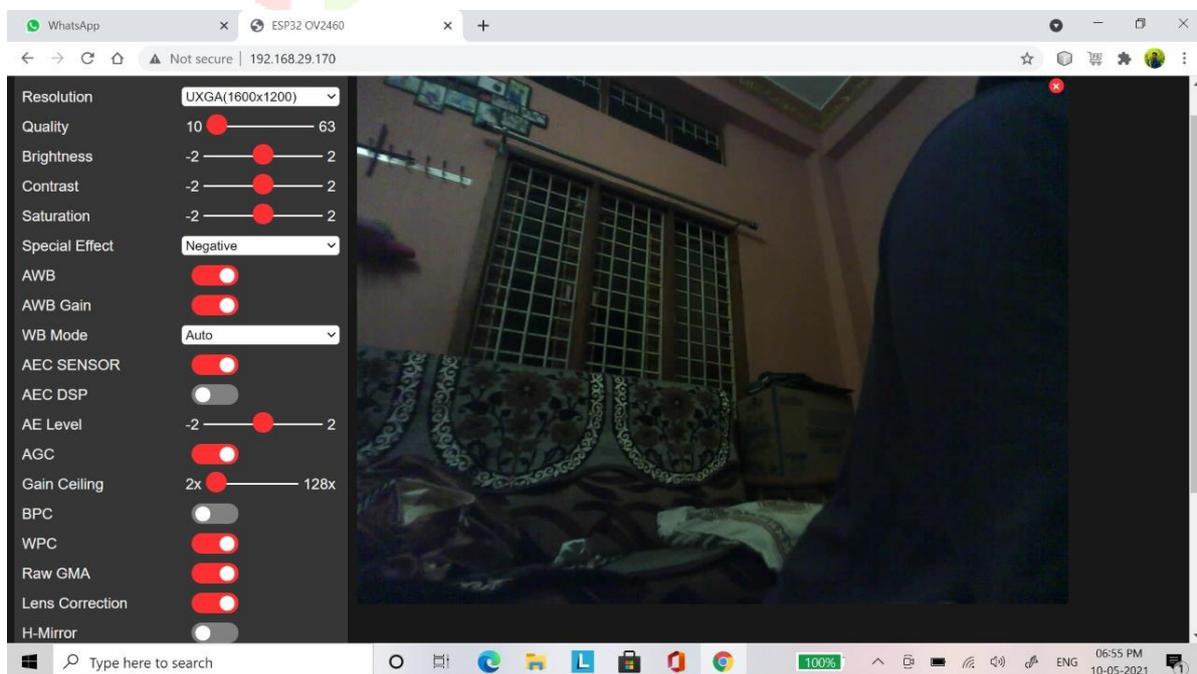

Figure 4: live streaming in the local host

In figure 4, we can see the working of our ESP-32 module with the help of wifi connectivity at our host. It easily trackable with the help of this remote rover and also can be operate very easily by just dumping the ip address of the host in the search bar to navigate to the streaming interface of our module.

6.CONCLUSION AND FUTURE WORK

Our project highlights the insecurity of armed forces in the war zone. To provide good vision and to track the borders very easily we can attach 2 sensory Cameras to form a cognitive robot system which we will be able to find the terrain mode by using the ML algorithm or the sensors we deploy through the rover, Even if possible we can add the weather sensor which can predict the weather by next few hours and can adjust our resolution and requirements to tackle the situation, In this we are using AI Thinker where it can be used to have a 2 way communication that is between the user and as well as the rover module . Since we are going to use the IOT we can retrieve the both sides (soldier and the control room center) such that making life reliable for military

In future we get the chance of working with this project, we try to increase the power consumption method and the communication medium, also we try to do with the help of airway transport so that irrespective of the terrain we can watch the borders but while doing in air transport medium we have to take the weather into the account so that their will be no other obstacles in the project

REFERENCES

1. R. Howells, "The Business Case for IoT", June 2015, [online] Available: http://scn.sap.com/community/business-trends/blog/2015/06/18/the-business-case-for-iot.
2. L. Atzori, A. Iera and G. Morabito, "The Internet of Things: A Survey", *Computer Networks*, vol. 54, no. 15, pp. 2787-2805, 2010, [online] Available: www.sciencedirect.com/science/article/pii/S1389128610001568.
3. D. Evans, "The Internet of Things: How the Next Evolution of the Internet Is Changing Everything", Apr. 2011, [online] Available: www.cisco.com/web/about/ac79/docs/innov/IoT_IBSG_0411FINAL.pdf. Show Context
4. Shancang Li & Li Da Xu & Shanshan Zhao, "The internet of things: a survey", Published online: 26 April 2014,Springer Science+Business Media New York 2014
5. Antonio J. Jara, Miguel A. Zamora and Antonio F. G. Skarmeta, "An architecture based on Internet of Things to support mobility and security in medical environments", University of Murcia, Computer Science Faculty, Murcia, Spain 2010.
6. "The "Only" Coke Machine on the Internet". Carnegie Mellon University. Retrieved 10 November 2014.
7. Kabita Agarwal; Arun Agarwal; Gourav Misra, "Review and Performance Analysis on Wireless Smart Home and Home Automation using IoT", Third International conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC), 2019, Publisher: IEEE
8. Roshmi Sarmah; Manasjyoti Bhuyan; Monowar H. Bhuyan, "SURE-H: A Secure IoT Enabled Smart Home System", IEEE 5th World Forum on Internet of Things (WF-IoT), 2019, Publisher: IEEE
9. Dhanujalakshmi R, Divya B, Divya C, Robertsingh A. Image Processing based fire detection system using Raspberry Pi system. SSRG International Journal of Computer science and Engineering (JCSE). 2017 Apr;4(4).
10. A.Robertsingh G. Sathana, S. Sathya Sheela, Remote Theft Identification using Raspberry Pi System Based On Motion Detection, SSRG International Journal of Computer Science and Engineering (SSRG-IJCSE),2017, 4(4).