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IOT BASED SPY CONTROL ROBOT FOR MILITARY PURPOSE

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ABSTRACT: *In this project, we will deliberate how to control robot-controlled car using IOT technology through an android mobile phone. A new version of wireless controlled vehicle is proposed for spying purposes. This robot supposes a movable spy robot with wireless system. The spy robot is made up of an IP camera, DC motors, servo motors for camera rotation, solar cells instead of the regular lithium rechargeable ion batteries, and 3 movable wheels. Smart phone camera is used as an IP camera to capture live streaming video surrounding the robot and that information will be appeared in user's smart phone GUI window. In this vehicle, the signals transmitted from the user's smart phone are used for vehicle motion and then the camera mounted on robot will take the video live streaming. This live streaming information is sent back to the user's smart phone via Wi-Fi wireless system.*

Keywords: spy robot, IoT, IP camera, DC motors, GUI

I. INTRODUCTION

In today's world the monitoring of military areas is essential due to increased attacks of the enemies but the quality of that monitoring i.e., surveillance is not that much satisfactory, this results in the increasing ratio of lives of the soldier in danger. Because of that it is necessary to improve the quality of surveillance through effective surveillance. This is done more effectively by high quality video transmission. In this project the quality of video is improved using Closed Circuit Cameras. For all this there is a need of the ground Robot which is able to move on the hills, muddy areas. By using Closed Circuit Cameras various technical advancements are took placed in surveillance [1]. Lots of crime scenes have been solved by using this technology but still, the crime rate has not reduced because of immobility of the surveillance

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equipment's. In this project design and development of the robot is done which will move from one place to another, it has capability of capturing real-time images and videos required for the surveillance. The main constraint in surveillance is mobility of the robot. This robot is also capable of doing housekeeping. And also, the water sprinkler made under this project and we can operate a robot there is no need for human to go even near the area on fire. We have used the light dependent resistors for detection of fire. It is the highly sensitive device and is capable for detecting very small fires too. Further, the system proposed is interactive in nature, hence the user even while grooming up, can give voice commands, to get required and related information on screen, keeping his/her hand free. There are related products available in market, but the main difference lies in the usability of the product. The available products are mostly passive in nature with little interactivity. 2 The present Smart mirrors designed so far are almost passive in nature. These systems are capable of displaying the information on the screen. They have been designed mostly with ESP32, LED (Light Emitting Diodes) for information display. Few of them work on either voice-based commands or Touch Commands or Mobile device commands. Some of the systems are also designed for providing security using PIR sensors. But the systems thus designed have more false alarm rate and sensing range is also very low. The proposed system is an interactive system which displays the date, time on the screen. The display can be customized based on the requirement. The system accepts any of the commands namely voice, touch and mobile control commands and behaves interactively.

II. LITERATURE SURVEY

P. Raja, Swapnil Bagwari et al (2018) presented a MASS (military assistance and surveillance system) that uses different type of sensor to monitor the soldier such as their location, health conditions, surroundings, sending data to base station, etc. being a wearable device it monitors the pulse rate as well as send the respective data to the base station and by using GPS module the location can also be monitored by military base station. Since it is wearable installation will be cost effective and will add a heavy pack load for soldier. Minal S.Ghute, Kanchan P. Kamble, Mridula Korde et al (2018) described a military surveillance robot system consists

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of a single unit, which will monitor the environment in various hazardous conditions and provide live video feedback. Gyro sensor has been used to move robot in hilly areas, metal detection for landmines. It uses Bluetooth connectivity for wireless communication through mobile application which make it range limited. Aditya prakash, Rahee walambe et al (2018) described about a simple military surveillance robot with the commands for moving front, back, right, left and stop are being received from the remote controller and accordingly the input is fed to the Raspberry pi 3 which makes the robot setup respond as per the instructions given. The Kinect sensor works like a camera with an additional feature of depth measurement i.e., it depicts the distance of object from itself by representing the object in the form of grayscale values ranging from 0 to 255 where 0 amounts to black which implies the object is closer and 255 amounts to white which implies the object farther. 4 Siva karteek bolisetti, Mohammad patwary, Mohamed abdelmaguid et al (2017) proposed RF sensing based target detector which is expected to give an energy efficient solution to the problem of target detection under the sensing conditions. The sensor nodes are required to operate in harsh sensing environments in the presence of clutter and interfering signals. Using a simple low complexity target detector at the individual sensor nodes may be considered where the sensor nodes can make a preliminary decision before transmitting the data to the control center. This reduces the frequency of data exchange between the sensor nodes and the control center thereby increasing the lifetime of the IoT.70% reliability has been achieved. Ghanem Osman Elhaj Abdalla, T. Veeramani kandasamy et al (2017) implemented a Spy Robot for A Surveillance System using Internet Protocol of Raspberry Pi a Raspbian operating system-based spy robot platform with remote monitoring and control algorithm through Internet of Things (IoT). The information regarding the detection of living objects by PIR sensor is sent to the users through the web server and pi camera capture the moving object which is posted inside the web page simultaneously. Majd ghareeb, Ali bazzi, Mohamad raad, shamih abdulnabi et al (2017) presented Wireless robo pi for landmine detection as a low-cost automated mine detector that will replace the current human detectors in the mission of detecting and extracting

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mines in a suspected area of land. This detector will wirelessly connect with a server to send the location of detected mines or meta land captured image of land where it is found. Since the detector is raspberry pi based, we can make it as IoT based for further communication. 5 Experimental results with various distance show that the best distance for transmitting the comm. And snot more than 20 meters. The sensor system is ridiculously cheap because it only uses 1 distance sensor. The average speed raspberry pi to display a video streaming is 33 fps that sufficient for surveillance. The main weakness of type of ultrasonic sensor is the interference between different sensors and the limited ability to identify the obstacle. Andrea Claudi, Francesco Di Benedetto, Gianluca Dolcini, Luca Palazzo, Aldo France Dragoni et al (2012) proposes a mobile autonomous robot, called MARVIN, to be used in video surveillance applications. The main goal of the robot is to detect human faces in the monitored environment, and to autonomously move to keep a face in the exact center of the frame. The architecture of the robot is conceived to achieve a good trade-off between reactivity and accuracy. In terms of speed, the experiments showed that LBP is suitable as real-time facedetection algorithm, processing a single frame containing 6 faces in about 40ms. The performances of ORB are not sufficient to recommend its use under the conditions of the reference scenario. In terms of accuracy, LBP with a small search window can provide an accuracy of about 73%, with a considerable penalty in terms of timing performances. Change Zheng et al (2009) presented the mechanical design including a kind of miniature flexible driving mechanism, as Miniature autonomous surveillance robotBMS-1 for covert surveillance using set of sensors and the control system for tasks such as to secretly enter and hide in potentially dangerous region and feed information back. It uses spyro-electric sensors that are designed specifically for detection of human motion. The output voltage of this sensor can be sampled by the ADC module of the DSP controller inBMS-1. In our robot, the two facing upward photovoltaic sensors are outfitted on the two ends of BMS-1. This allows for detection of dark location of BMS-1.

III. PROPOSED SYSTEM

This Surveillance Robot is controlled through Android Application using IOT.

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This Robot is powered using a Solar Panel and a 12V Battery to provide continuous power to Robot. It is Equipped with PIR motion Detector, which detect any presence of person and give a High Audio Alert to the Monitoring Authorities. A ESP32 IOT Camera is used in the Front end of this Robot, to get clear view of nearby image and War field status a laser is used for shooting the person. 7 Advantages: ➢ In our proposed model, this system can be controlled from anywhere in the world. ➢ This system can detect the person and alert via notification. ➢ This system can shoot via laser. ➢ This system has the camera motion control via servo motor ➢ The robot can be controlled from anywhere via this Blynk app. The proposed system can be controlled by any of these commands. Whenever security systems and house hold appliances are embedded in to household devices like mirror, the usability of device will increase. It can be used for general use and also for specific use like providing security in home environment. Usually, intruders and thieves look for security cameras. If they find cameras, they may destroy them and come to know that they were under security monitoring system. But for proposed system, intruder or thief will never come to know that he is under security observations. Normal Cameras will be visible to intruder, but Smart mirror which just looks like an ordinary mirror will not catch an attention of the intruder. Thus, the camera fitted on top of the Smart Mirror will capture the photo of an intruder and be able to send an alert of the intrusion without knowledge to the intruded. The intruder will never come to know that he is under constant surveillances. Home automation are mainly created using intelligent IOT devices, IOT is an integrated system of communicating devices in which each device is capable of carrying out tasks by themselves. Smart mirror for home automation has great potential to enhance user experience for accessing and interacting with information. This system is very useful for physically challenged people, old people and children. Everyone can easily access this system easily even while doing their daily chorus. This is one of the major advantages of the system. The proposed system does human identification for detecting the intrusion detection. Once the intruder comes under the range of camera, the intrusion detection takes place. The range ofESP32-

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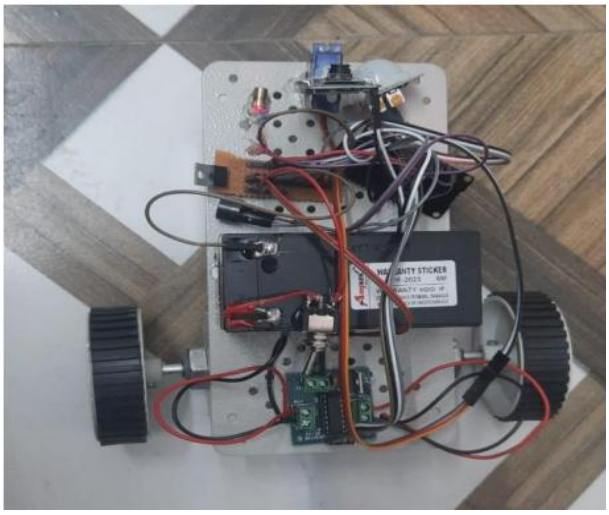
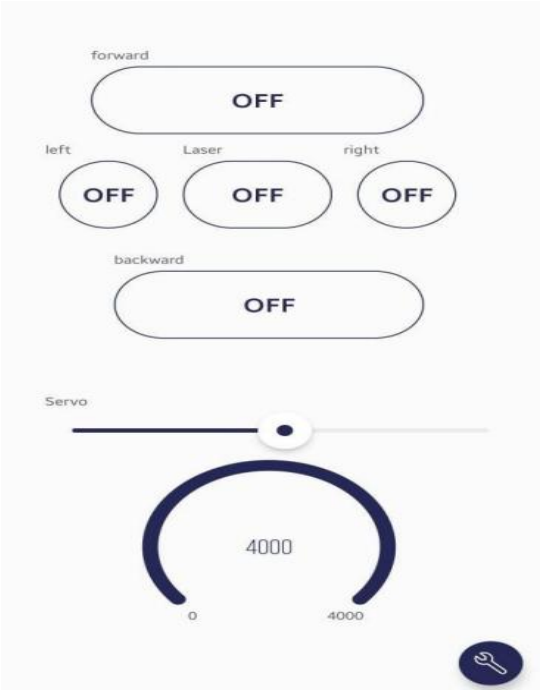
camera which is compatible with ESP32 is approximately 8m to 10m. Human detection is done. The Human presence thus detected is informed to owner of the Smart mirror through alert message. The alert message consists of photo of intruder along-with the time stamp of time. The ESP32 is to be connected to Wi-Fi and mobile device has to be connected to internet.

IV. RESULTS

SPY ROBOT



This is the spy robot which has 2 wheels at the back side which are connected to the DC motors, and one rotatable wheel at the front. The Camera, PIR sensor, Laser are connected at the front.



This is the page in the app when no suspicious one is detected. Through the app we can move the robot forward, backward, right and left. Also, we can move the camera around by using the blynk app.

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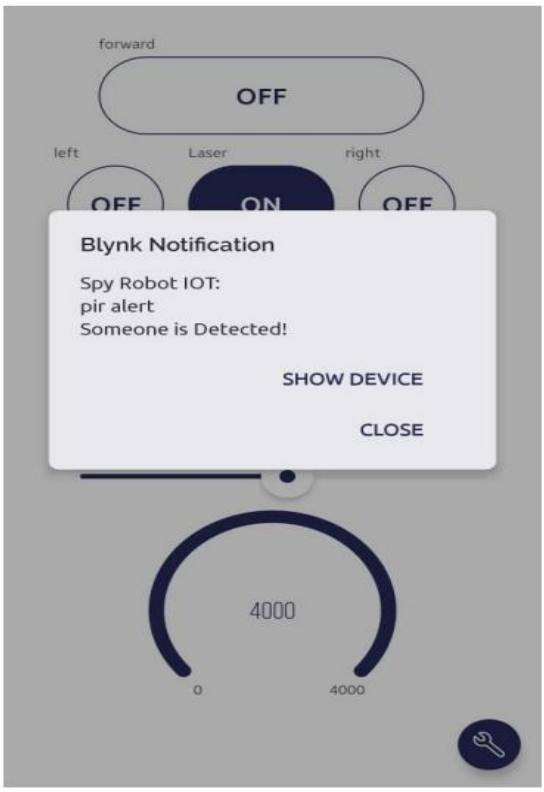

This is the page when human is detected. The user gets the notification through the app and mail so that user can see the camera who are suspicious and who are not.

V. CONCLUSION

The robot is controlled by Android APP which is used by most popular IOT Server Provider and available to any kind of people around the world. The robot is safely encoded with an authentication token which provides maximum security and hard for trafficking. The robot weighs less than a 2 kilogram; hence it is easily portable and can be deployed on all kinds of terrain. Integration of modern IoT technology has profoundly supplied bounteous information of the field area at anytime and anywhere in the world. Use of Cloud technology makes our robot a market demand product and a must for military operations.

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