



TUTBOT: A SPY ROBOT

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ABSTRACT

The security model proposed in this article serves armed forces to identify and detect any sort of malicious activities and people around certain radius of perimeter. Tutbot is one such of an IOT model which functions similarly to a living tortoise and provides its services to the authorized personnel. The security framework that is included in the working model is developed using python and other machine learning techniques.

KEYWORDS- *security model, identify, detect, malicious, IOT model, python, machine learning.*

I.INTRODUCTION

The Internet of things abbreviated as "IoT", is a system of connected computing devices, objects that are provided with unique identifiers also known as UIDs and the capability to transfer data over a network without demanding human-to-human or human-to-computer interaction/communication. The classification of the Internet of things has advanced due to the merging of multiple technologies, real-time analytics, sensors, and embedded systems. Wireless sensor networks, control systems, automation (including home and building automation), etc., all contribute to facilitate the Internet of things. In the user market, IoT technology is most identical to the products pertaining to the concept of the "smart home", covering devices and appliances that support one or more common environments, and can be controlled via devices associated with that environment, such as smartphones and smart speakers, etc.

A rover is a land exploration device intended to move across the solid surface on a planet or other planetary mass celestial bodies. Some rovers have been designed as land automobiles to transport

members of a human spaceflight crew; others have been partially or fully autonomous robots. IOT based rovers are those which can be minimal in footprint and are capable enough to function efficiently. Rovers basically move in different directions and avoid obstacles and sometimes penetrates certain obstacles based on the algorithms that they are being programmed for. Tutbot is an IOT based rover that is programmed to capture images around specific boundary areas and send those details to authorized personnel via cloud. The main motto of this model is to identify the presence if any arsonist is present in that particular region. If we follow traditional method of assassin identification there are chances of losing lives which is not endurable. These impediments can be beaten utilizing innovation. Since Tutbot is a replica of living tortoise, the people around it ignores the existence of the model considering it to be a tortoise. Considering the worst-case scenario of someone identifying the model, no data would be stored in it as all the data that it captures and records will be stored in cloud, which helps in avoiding unauthorized access of the rover.



II. WHAT IS TUTBOT?

Tutbot is a robot especially designed for military purpose. There are many different kinds of military robots. They are Intelligence Surveillance and Reconnaissance (ISR), search and rescue robots, combat support, mine clearance, explosive ordnance disposal (EOD) and firefighting robots. Tutbot is an

Intelligence Surveillance and Reconnaissance (ISR) robot which is used to monitor and help to gather data on the field. There are totally 3 versions based on the size of the tutbots. They are Burger, Waffle and Waffle Pi.

Differences between 3 versions of Tutbots:

a. Burger

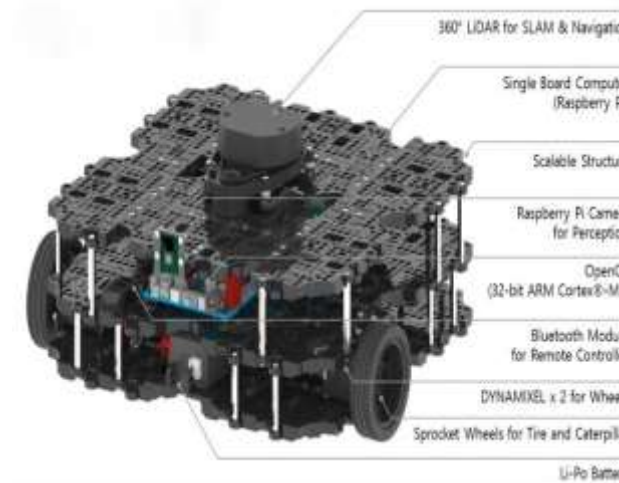


b. Waffle





c.Waffle Pie



History of tutbots

TurtleBot1 consists of a base, a battery, a power board, a Kinect sensor, a laptop with a dual core processor, and a hardware kit attaching everything together and adding future sensors. The first and the oldest TurtleBot was created at Willow Garage by Melonee Wise and Tully Foote in November 2010.

TurtleBot2 consists of a Kobuki base, a battery pack, a Kinect sensor, a laptop with a dual core processor, fast charger, charging dock, and a hardware mounting kit attaching everything together. Turtlebot2 was released on Oct 2012.

TurtleBot3 is made up of sectional plates that users can modify the shape according to their preference. Its available in three sizes: small size Burger and medium size Waffle, Waffle Pi. TurtleBot3 consists of a base, two Dynamixel motors, a 1800mAh battery pack, a 360 degree LIDAR, acamera), an SBC(single board computer: Raspberry PI 3 and Intel Joule 570x) and a hardware mounting kit attaching everything together and adding forthcoming sensors. Turtlebot3 was released on May 2017.

III.LIMITATIONS OF THE EXISTING SYSTEM

Traditional method of identifying any malicious activity or recognizing arsonist is prone to disasters irrespective of preventive measures from being caught is taken into consideration. Even if technology is used for such things with improper security mechanisms it can lead to massive destruction, it can cause loss of lives, loss of sensitive data etc. Traditional methods require lot of time and effort to master the skills and gather information and spies can be identified by the behaviour of the person and their belongings. For example, if a spy has to send

evidence to his respective superior, he/she needs to acquire the evidence, that is, the hard copy or a photo of the evidence. Capturing pictures can be of high risk as it is easy to identify that a third person is capturing picture and can cause great threat to the life of the spy and to his/her organization. Storage is another drawback when it comes to preservation of evidence the traditional way/method. Considering the previous example given above, the pictures captured should be stored and secured in the right place which cannot be accessed by the opposite party

and must be preserved in such way that it shouldn't get damaged until it is sent to its respective destination.

IV.OBJECTIVES

To overcome the drawbacks/limitations of the problems that were faced while implying the traditional methods, rovers can be used with the help IoT. Using a rover, which is a replica of some living creature (in this case it is tortoise) adds more security to the equipment from being recognised by people in its surrounding. Tutbot has the ability to capture images around it. Utilisation of these kind of models reduces the impact on limitations that exists in the former approaches. Being a robot, it has no life and hence cannot feel any external senses such as pain, heat, cold, etc. With the help of technology, it has mini cameras fitted in it which helps in capturing not only pictures but also storing them on cloud which helps it take numerous pictures. It has an inbuilt microphone, which records the surrounding noises and voices, and all this is stored in the cloud with the help of IOT.

V.LITERATURE SURVEY

The author in this article developed an IOT based rover model that is capable of moving around

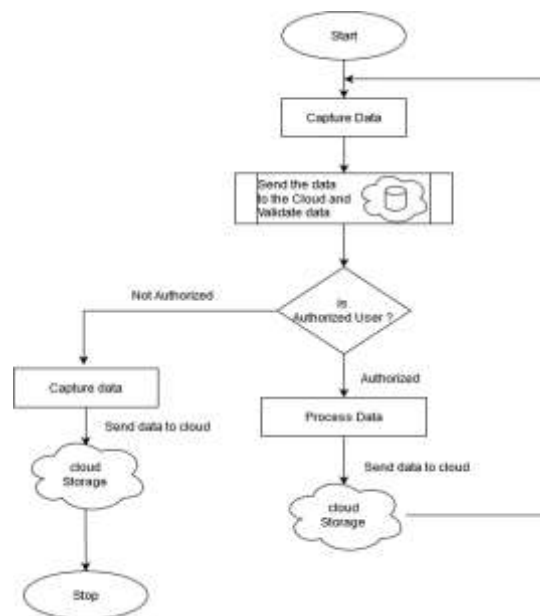


different directions and provides Vision as a service. An interesting thing that he involved in the functionality is the inclusion of MQTT protocol for video transmission, one of the key advantages of utilising this protocol is that it encrypts the data.

The field of gadgets and mechanical autonomy is loaded up with huge open doors for additional improvement of the present work. There is a different scope of sensors and hardware accessible in the market, for example, warm cameras, heat sensors and

weight sensors that can be mounted on the stage, helping in further improvement of the present abilities of the meandered. The fundamental goal is to give the concerned specialists with the device to assist them with get-together information by observation utilizing the meandered and help them to shape the technique for the salvage activity that is savvy, productive, and quick just as secure for the salvage labourers too.

VI. WORK FLOW



VII. PROTOTYPE

Tutbot works on a raspberry Pi 3 processor. It also consists of motion sensors to detect any kind of movements in the surroundings. It has an raspberry pi camera which captures images of its respective surroundings. It consists of a server motor which helps in the movement of the tutbot. It also includes face recognition.

VIII. FUTURE ENHANCEMENTS

Thermal sensors, audio capturing can be implemented. Encryption methods should be used to secure the data. Connectivity issues can be rectified.

IX. CONCLUSION

The rover model about which this article is presented about, describes it as an intelligent system that aids armed forces in difficult situations and time. This helps in the reduction of human spies trying to gather information and saves a lot of time and effort. Being small and camouflaged, it makes it hard for the rivals to recognize it as a robot and gets the job done.

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