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Automated Military Purpose Electric Vehicle With Image Recognition

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1. **Abstract** – Electric vehicles come in many different forms and have a variety of instruments installed to help the car move, depending on the motive for which they are created. The most challenging part of creating an electric vehicle is keeping the cost as low as possible, as in certain conditions, it does not need that much function. Our electric vehicle is also used for military purposes such as detecting landmines, enemy detection, and many more, which helps us clear soldier's paths and destroy bunkers. In some situations where soldiers are not safe and the chances of soldier death are higher, we use an electric vehicle. This vehicle also designs accordingly to survive Obstacle and environmental condition. This vehicle is controlled by using Bluetooth / Wi-Fi module. By using Wi- Fi module, we can watch live footage of the surrounding Vehicle. In this project, we are focusing on Enemy detection, Image Recognition By using control room experts, landmine detection with the help of sensors, bunker destroyer in critical situation, in surgical strike situation this vehicle is used to clear soldiers' path, Etc. In this project, we propose on developing an automated electric prototype to assist in exploring in dangerous situation with ultrasonic mapping. The vehicle is a four-wheeled vehicle with a Wi-Fi and Bluetooth module connection controller. arm with infrared sensors for autonomous purpose and 2 ultrasonic sensors for measure obstacle or enemy distance.

Keywords – Ultrasonic mapping, Path clear, Image Recognition, Accuracy, Destroy Bunkers.

1.Introduction

We use Mechatronics and Artificial intelligence to design and build this project, which is completely automatic and controlled by our control panel with help of sensors. It helps to save our soldier life and physical damages. And contribute in Enemy detection by using Image recognition. This vehicle is controlled by using Bluetooth / Wi-Fi module. By using Wi-Fi module, we can watch live footage of the Vehicle. In this project, we are covering Enemy detection, Image Recognition By using control room experts, landmine detection with the help of sensors, bunker destroyer in critical situation, in surgical strike situation this vehicle is used to clear soldiers' path, Etc. In this project, we propose on developing an automated electric prototype to assist in exploring in dangerous situation with ultrasonic mapping. The car is a 4-wheel car for the smartphone with Wi-Fi module connection controller, arm with infrared sensors for autonomous purpose and 2 ultrasonic sensors for measure obstacle or enemy distance. This project aims to produce an android remote-control car with autonomous and used to surgical strike (according to situation this vehicle upgradable) functions for hazardous location exploration. The sub-objectives are as below:

2.Literature Review

In, the RC car is controlled with mobile and has facial recognition. The strength of this research is that it can do complex programming such as facial recognition processing as command. However, the car needs a mobile to control which can be an inconvenience. Other than using camera to understand its surrounding, the Electric Vehicle is equipped with Odometry which is used to calculate its distance travelled. As the car does not equip with any other sensor, Odometry plays a very important role in tracking how far the car has travel and what distance is needed to travel.

This car design makes the car can make a very sharp turn. This is especially useful in exploring purpose as a lot of situations, the car is expected to make sudden turn instead a turn which needs a little distance to make the turn thanks to the rotation of the motor. The way they car know its surrounding is also quite interesting as this method uses mirror and some complex calculation, the manage to see the location in a 2d manner. However, since this is done with ESP32 camera, it is only limited to open area with sufficient light as camera without light does not work perfectly.

3.Problem Statement.

In any Emergency situation such as surgical strike in hostile territory in any circumstance. In that scenario, there are numerous issues that our army must deal with, including health issues, landmine detections, enemy detections, or enemy positions. In that situation, aiding the troops is our project.

4.Objective.

1.To clear the path with the help of web-camera,

2.Detect the landmines with the help of sensors.

3.Detect the enemy with the help of image recognition.

4.Minimize the soldier’s death chances.

5.Methodology.

1.This project idea is taken form Pulwama terrorist attack.

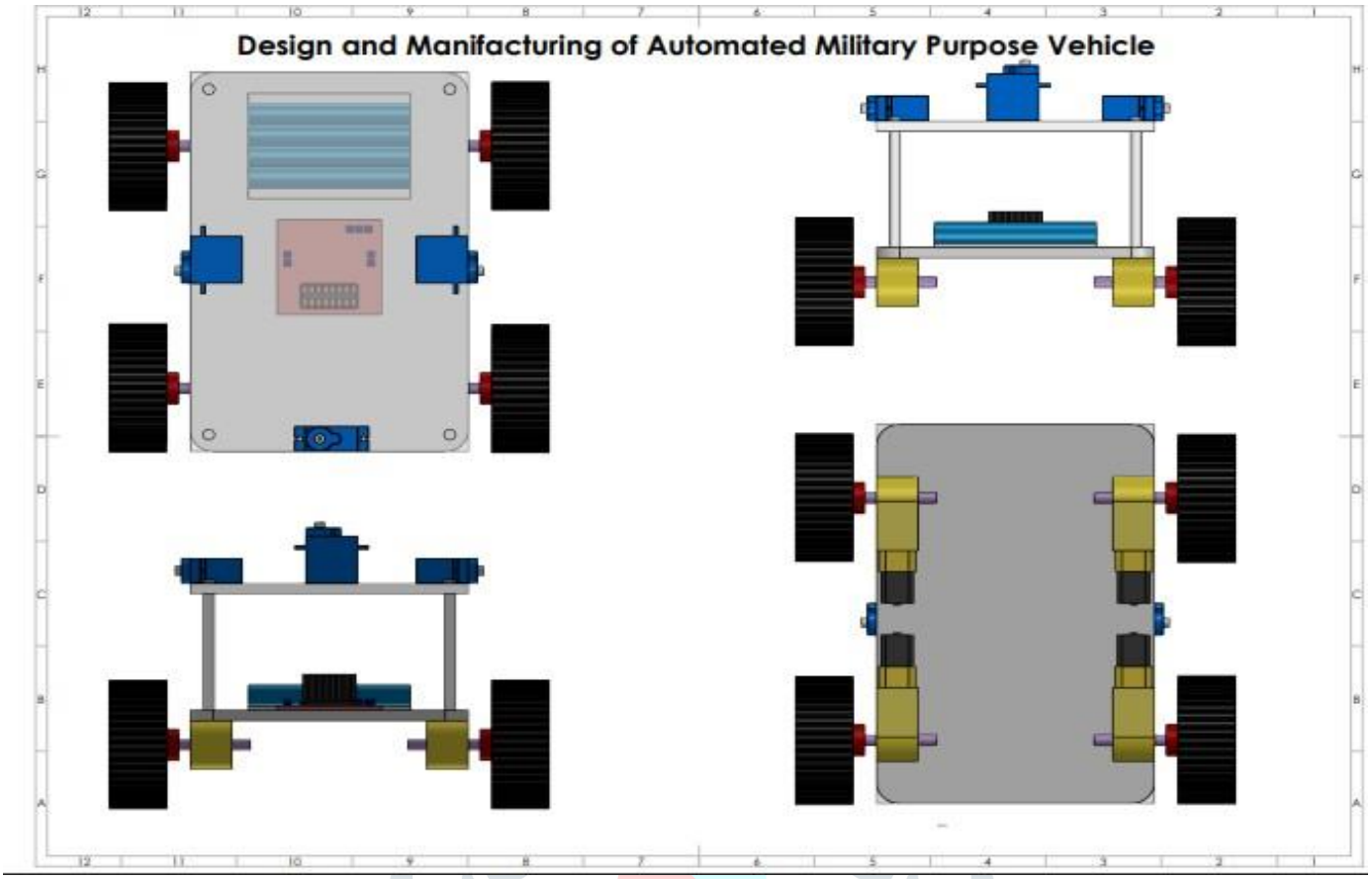
2.We research on that attack topic, what are the ways to contribute to army

3.Then we decide the project topic.

4.To start the collecting components to using this project.

5.Then we are started working on the project topic.

6. Experimental Method.



7.Components.

1.Arduino UNO AtMega 328P.

2.Motor drive.

3.HC-06 Bluetooth Module.

4.ESP32866 Camera.

5.Lithium-ion batteries.

6.Jumper wires.

7.Servo motors.

8.Wheels.

9.Polypropylene sheet.

10. Gear motors.

8. Future scope.

It is easy to learn and teach people to be able to do basic things with the Arduino, yet it's capable enough to do fairly sophisticated things if you as a developer have the capability to take advantage of it. It is allowing people to develop projects inexpensively to build and control their own devices, such as sensors that send data to the Internet and control systems for all kinds of things. It is also reducing the cost of development by allowing companies to develop prototypes much more quickly and with less initial investment.

9. Conclusion:

In this semester at project stage 1to 5, we studied the coding language. We studied how to work steering mechanisms and different types of sensors actuators. How to evaluate model and their types. We are studied how to construct the electric vehicle. We can developed the teamwork.

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