Army Defence Robot

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Abstract **- On today's date there are many problems related to our Indian army. As they are facing lots of problems when there is an attack from our enemies. So, in this project mainly focus is given to detection of enemy and protection alert for the army base. A robot will be semi-autonomous operated and will detect enemies approaching the army base using camera and send required information to the army base so that they can take essential steps against it. This robot will be equipped with missiles which will be launched by the army or operated by the army wirelessly. This project will definitely improve the protection for our Indian army and send important alerts to them.**

I. INTRODUCTION

Problem Summary and Introduction

In the defence depart different type of weapons like gun, tank, missiles etc. in that missile very effective weapons and also effective remarkable currently for missile shooting there different aircraft like MIG221 etc. Which carry missile and human pilots and this cause high manufacture cost and high consumption money. It's also put life of the pilot in safety zone. So for the missile shooting we can use unmanned Arial vehicle (UAV) for carry vehicle and shooting at the pre define target without not much assume money. It is so not bother about safety of pilot new technology apply them. We can shooting the missile at longer distance for the control station so it will become most featured weapons and future defence.

Aim

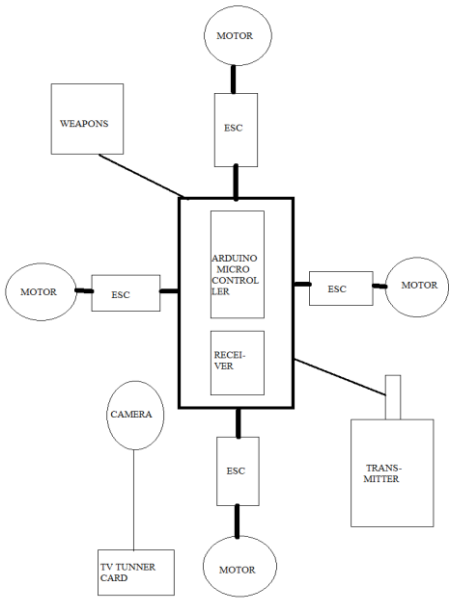
An Unmanned Aerial Vehicle (UAV), also known as a drone, is an aircraft without a human pilot. Its flight is controlled either autonomously by computers in the vehicle or under the remote control of a pilot on the ground or in another vehicle. The typical launch and recovery method of an unmanned aircraft is by the function of an automatic system or an external operator on the ground.

Objectives

Protection will be improved for the army base. Semi-autonomous operation. Missile launcher will be equipped. GPS data will be improved.

II. BLOCK DIAGRAM

Transmitter is a main portion of our drone by which it can control movement and entire work of drone. Transmitter contain control of flying of drone, missile launcher and camera as well. Receiver receives signals from transmitter and send digital signal to Arduino.



Arduino is a controller which control the whole operation of drone. Arduino is connected to a motors that leads the flying of drone. Motors are connected with propeller which rotates by means of motors and drone lift up according to transmitter's signal. Arduino monitor the whole function of drone, proper function, controlling and all done by controller. Missile launcher with connected with Arduino as signal is received by transmitter it will operate camera and set the target. Arduino is coupled with missile launcher and camera. Hence, camera set the location of area and send command to Arduino. Arduino set the location of missile launcher and command it to fix. So, see the action of camera live on screen by using Bluetooth in this way while drone works.

Brief of components

1. *Brushless DC motors*

Brushless DC motors (BLDC motors, BL motors) also known as electronically commutated motors (ECMs, EC motors) are synchronous electric motors powered by direct-current (DC) electricity and electronic commutation systems, rather mechanical commutates and brushes. The current-to-torque and frequency-to-speed relationships of BLDC motors are linear. BLDC motors may be described as stepper motors, with fixed permanent magnets and possibly more poles on the rotor than the stator, or reluctance motors. Rating is 1100 KV.

2. Slow Fly propeller

These props come from China, however were almost certain they are made by the same mold that makes the GWS props. Prop hub has the hex nut fitting to suit motors like the torpor bell motors or small gearboxes with the threaded shaft.A slow fly propeller is designed for smaller out runner motors, typically the torpor bell motors or slightly larger. They most suited to run on smaller planes at a lower RPM. Also great for gearbox reduced motors. A slowly propeller typically has a spoon shaped blade.

3. Electronic speed controller

The purpose of a motor speed controller is to take a signal representing the demanded speed, and to drive a motor at that speed. With the purpose to vary an electric motor's speed and direction ESCs are often used on electrically-powered radio controlled models. An ESC can be a stand-alone unit which plugs into the receiver's throttle control channel or incorporated into the receiver itself, as is the case in most toy-grade R/C vehicles. Some R/C manufacturers that install proprietary hobby-grade electronics in their entry-level vehicles, vessels or aircraft use onboard electronics that combine the two on a single circuit board.

4. 15CM_Servo_Lead_Extension

These are stronger & allow more current than standard servo wires. Great for larger planes with servos that experience high loads.

5. Battery

Specification:

Capacity: 6000mAh

Discharge: 35C Constant / 70C Burst

Weight: 875.0 g

Dimensions: 145x45x59

Balance Plug: JST-XH

6. Microcontroller unit

The Main Controller (MC) is the brain of the system, it communicates with all ESCs and RC transmitter to carry out the autopilot functionality. It has a built-in Inertial Measurement Unit (IMU) consists of one 3-axis accelerometer, one 3-axis gyroscope and a barometer for sensing the attitude and altitude.

Specifications:

Supported Multi-Rotor**:** Quad-rotor I4, X4, Hex-rotor I6, X6, IY6

Supported ESC output**:** 400Hz refresh frequency

Recommended Transmitter**:** PCM or 2.4GHz

Working Voltage Range**:** MC**:** 4.8V~5.5V

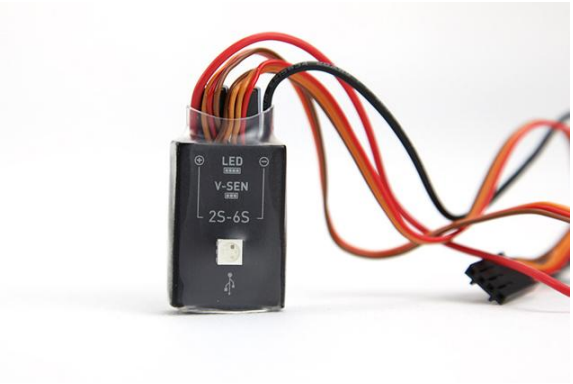
Power Consumption**:** MAX**:** 1.5W (0.3A @ 5V), Normal: 0.6W

Operating Temperature**:** -10°C ~ 50°C

Dimensions**:** MC**:** 45.5x31.5x18.5mm,VU: 32.2x21.1x7.7mm

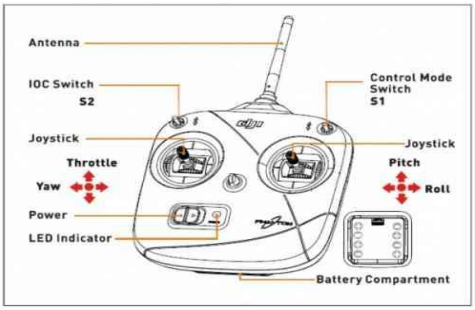
Weight**:** MC**:** 25g, VU: 20g

7. Versatile Unit (VU) ×1:



Specially designed for NAZA-M LITE. It solves the high power consumption problem of multi-rotor system, supply and monitor power for NAZA-M LITE and other electronic devices. It also has an LED to indicate different operating states of NAZA-M LITE and a USB interface for configuring the NAZA-M LITE unit and firmware upgrade.

8. 6ch TX/RX



Specifications:

Mode-2 Left hand side throttle controller

Full range 2.4GHz 6-channel radio

4-Model Memory

4 Type (Airplane, Heli90, Heli120, Heli140)

4 Models Select

Programmed by PC with included software.

Transmitter / Receiver: 2.4GHz

Mode Type: Airplane, Helicopter, Glider

Stick Mode: Left Hand or Right Hand

Modulation: Frequency Modulation

Power: 12 VDC

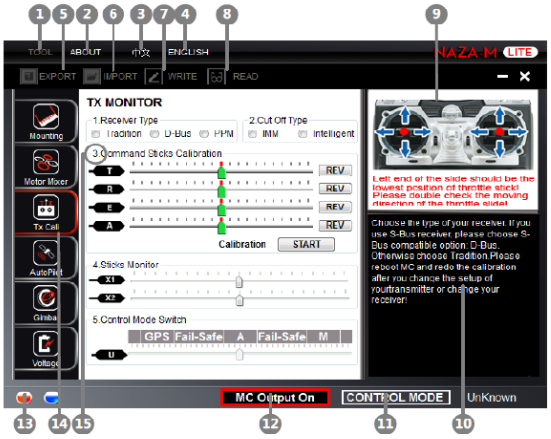
RF Power: Less than 0.8w

Net Weight: 575g

Packing Weight: 968g

III. IMPLEMENTATION

Configuration:



1. TOOL:

Calibration: For gyroscope calibration and acceleration checking.

Firmware upgrade: Always check for any updates of your firmware from Website, This will keep your autopilot system up-to-date.

Disable All Knob

Check for Updates: Check out the latest versions of assistant software and firmware. If it needs Updating, please follow the links displayed to find the download page.

2. ABOUT

Info: Information regarding your product.
Error Code

3. 中文: Chinese interface.

4. ENGLISH: English language interface.

5. EXPORT: Export configure data.

6. IMPORT: Import version compatible configure data.

7. WRITE: This will write data of the current page to your MC. The parameter or the title of which will turn red and bold when modified, make sure you click the Write button or press Enter to update your system.

Optional parameters will be written to MC directly after modification.

8. READ: read parameters from MC for current page.

9. Graphic guidance

10. Text guidance

11. CONTROL MODE: Control mode indication.

12. MC Output On Indicate there are outputs to ESCs; when communication is established between MC and assistant software via USB cable, MC Output Off appears, it indicates there are no outputs to motors, then you can configure your multi-rotor with assistant software more safely!

13. Red light: MC□ PC has been disconnected.

Green light: MC□ PC has been connected.

Blue light: MC□ PC is communicating.

14. Here you can find all the configuration contents in Configuration chapter

15. Configuration step.

Hardware:

IV. CONCLUSION

As per the design specifications, the quad copter self stabilizes using the array of sensors integrated on it. It attains an appropriate lift and provides surveillance of the terrain through the camera mounted on it. It acts appropriately to the user specified commands given via a remote controller. Its purpose is to provide real time audio/video transmission from areas which are physically in-accessible by humans. Thus, its functionality is monitored under human supervision, henceforth being beneficial towards military applications.

V. FUTURE SCOPE

We can use drone for many application of in spite we are added in a domain. In military we can use transfer blood and first-aid box to the war zone.In similar manner in flood or earthquake it can be used as observational purpose and useful tool to save humanity. If we can design drone of big size then it can be able to do work in military that is done by fighter plane today.

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