# Voice Controlled Drone For Agriculture Purpose

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**Abstract:** Now voice interfacing is becoming more popular and attractive in a days. Because it is made primary input for many devices. By using different voice commands we can control different devices. The handicapped persons can also handles the devices using different voice commands. We evaluate the controlling of the drone with MATLAB coding. In the coding, we control the computer with speech commands and taken the voice commands from human operator. The PC interpret the talked words either content or summons to execute work in MATLAB. The database is produced by include extraction of orders in the PC. When we given commands to computer then it matches with database using MFCC algorithm. If the commands are matched then operation is performed.

**(Keywords: MATLAB coding, voice commands, MFCC Algorithm)**

## 1. INTRODUCTION:

The construction and design of quadcopter is the goal of our project. The drone is capable for Indoor and Outdoor flight with a speech processing. It is used for monitoring and surveillance. The use of a drone project are integrated in different system like control system. This quad-rotor is capable for stable flight with manual instructions.

Our goal is to develop our own project code as per requirement. To enable Arduino board there are many open-source are available so we use it as flight controller. To learn more about the quad-copter and makes flight stable, we wanted to develop ourselves code.

## 2. Methodology:

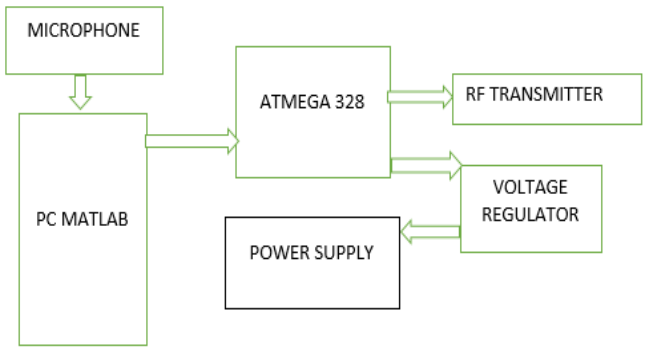


Fig.1 Block diagram of Transmitter section

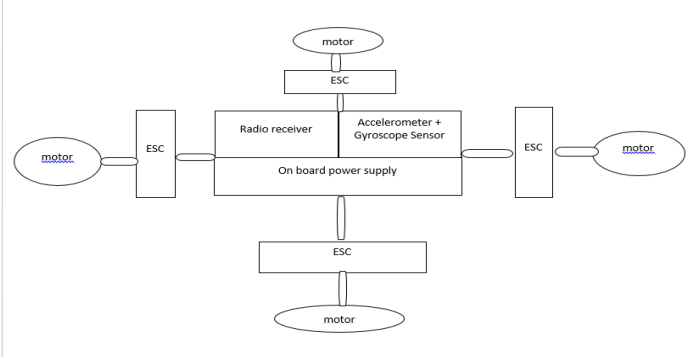


Fig.2 Block diagram of receiver section

## 1. ATmega328 MCU

The Atmel 8-bit AVR RISC-based microcontroller combines 32 KB ISP flash memory with read-while-write capabilities, 1 KB EEPROM, 2 KB SRAM, 23 general purpose I/O lines, 32 general purpose working registers, three flexible timer/counters with compare modes, internal and external interrupts, serial programmable USART, a byte-oriented 2-wire serial interface, SPI serial port, 6- channel 10-bit A/D converter, programmable watchdog timer with internal oscillator, and five software selectable power saving modes. The device operates between 1.8-5.5 volts.

**Features:**

- Low power consumption
- Availability
- Open source compiler
- Highly active online support community
- No extend hardware programmer needed(inbuilt bootloader)
- Rich library set for programming
- PWM available inbuilt

## 2. Quadcopter Frame

The function of this frame is to provide physical structure to whole aircraft. It used to join the motors to quad-copter. The edge must be extensive enough to enable each of the four propellers to turn without impact, yet must not be too expansive and thusly too substantial for the motors.

Fig.3 Quadcopter frame

## 3. Motors and Propellers

The motor is used to provide the lifting thrust to quad-copter by spin the propeller. Mostly in quad-copter the BLDC motors are used. Because they provides superior thrust-to weight ratios for Quadcopters. The quad-copter requires complex speed. There are mainly two ratings: KV ratings and current ratings. If we applied 1v then how fast it give response it indicated by KV rating. The current rating indicates maximum current that is 1000KV 15Amp.

Fig. 4 Motor

Fig .5 Propeller

**4 Speed Controllers**

Each motor needs an individual electronic speed controller (ESC for short). These speed controllers acknowledge orders as PWM flags and yield the proper engine speed appropriately. Each motor will require one electronic speed controller (ESC)**.** The ESC is a very important part of UAV. It's sort of the "middle man" between the motors and something called the "Flight Controller". Suitable ESCs must be guaranteed that they can give enough current to the engines.


Fig. 6 Speed controller

**5 Battery**

Lithium polymer is battery type of Rechargeable. It offer much higher capacities, allowing them to hold much more power. The battery is used to provide electrical power to the motors and also to all electronic components of the quad-copter. The Lithium Polymer (LiPo) batteries are used. LiPo batteries have a discharge rating and limit rating. The limit rating, in milliamp-hours (mAh) demonstrates how much current the battery may yield for 60 minutes. Discharge rating, demonstrated by the letter "C", indicate how quick the battery might be securely released. To decide max permitted current, duplicate the C esteem with the battery.

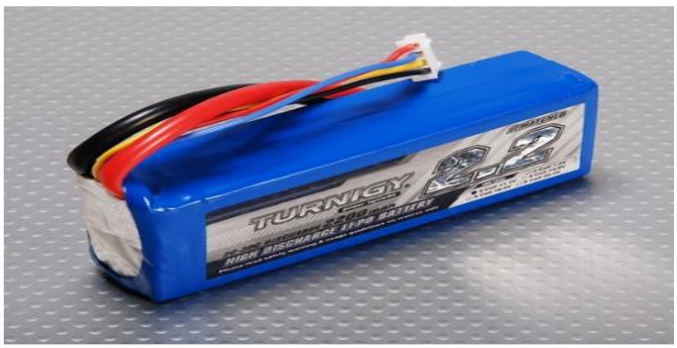


Fig.7 LiPo Battery

**6 Radio Receiver**

The radio get (Rx) gets radio signs from a RC transmitter and proselytes them into control signals for each control channel (throttle, yaw, roll and pitch). Present day RC recipients work on a 2.4 GHz radio recurrence, while more seasoned Rx units frequently utilized 72 MHz frequencies . Rx units may have as few as 4 channels, however numerous have more channels for extra control choices.

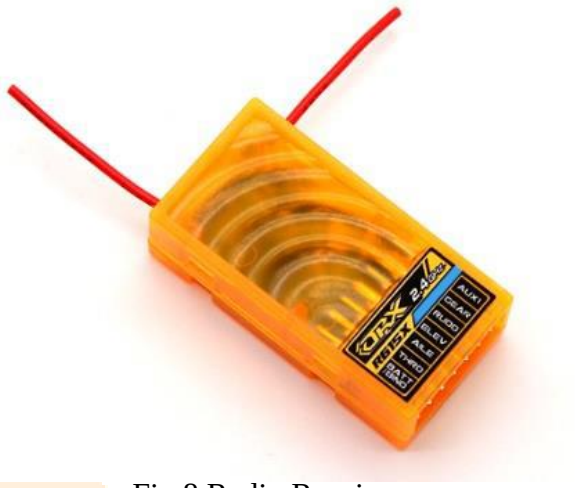

Fig.8 Radio Receiver

**7 Flight Controller**

The flight controller is said "mind" of quad copter. It plays out the activities to keep the quad copter steady and controllable. It used to acknowledge the client control charges from radio beneficiary. It consolidates this summons with readings from the Gyrator sensor(s), and computes engine yield. In the quad copter generally select flight controller load up. This load up have a coordinated gyrator and accelerometer sensor and likewise it have very much tried flight control programming.

## Software Requirement:

**MATLAB:** In this planned framework, it is expected to control a PC with discourse orders utilizing MATLAB. The thought behind this framework for PC control with voice order is taken from the Voice worked human utilizing MATLAB. In the event that the robot can worked utilizing voice order then a comparative framework can be created for controlling a PC utilizing voice charge. So we have composed a framework for controlling the PC with voice summons by human. The PC makes an interpretation of the talked words into either content or charges to execute works in the computer**.**The intelligent discourse acknowledgment framework empowers the PC to comprehend talked directions. The discourse acknowledgment framework utilizing MATLAB is prepared such that it perceives characterized orders and the outlined PC will work in view of the guideline through the discourse summons. In this framework, at first a

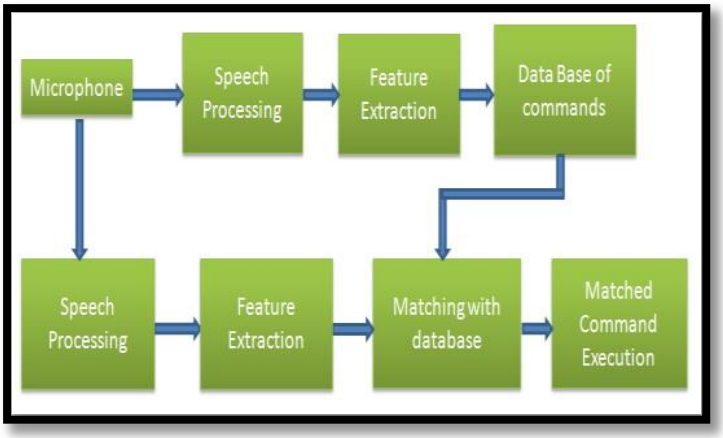


Fig.9 Computer control with voice command

database is produced by include extraction of the orders. The database charges are connected to the applications in PC. At whatever point the voice charge is given to the PC, it is contrasted and the Database by utilizing MFCC calculation. On the off chance that the order matches with the reference database summon then the application connected to that charge will be executed. The fundamental focal point of outlined framework is to give a chance to the disabled to work PC with voice charge with less endeavors.

## Flowchart :

This PC control with bad habit charge frameworks likewise includes two stages to be specific, preparing and testing. Preparing is the way toward acquainting the framework with the voice qualities of the speakers enrolling. Testing is the real acknowledgment assignment. The square chart of preparing stage is appeared in fig. Highlight vectors speaking to the voice attributes of the speaker are separated from the preparation expressions and are utilized for building the reference models. Amid testing, comparable element vectors are separated from the test expression, and the level of their match with the reference is gotten utilizing some coordinating system. The level of match is utilized to touch base at the choice.

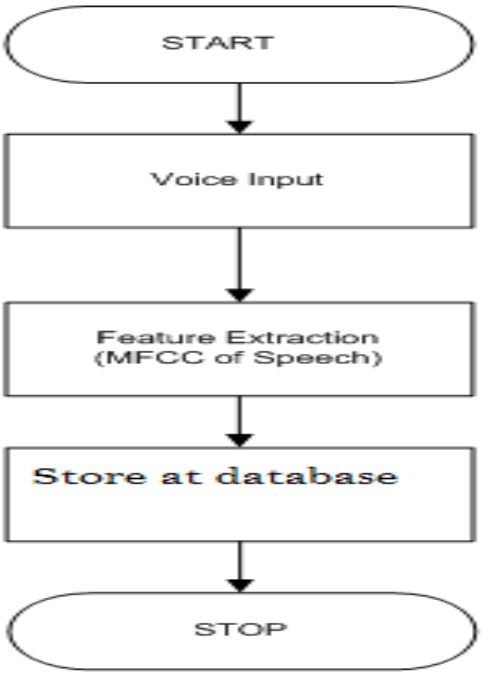


Fig 10. Flowchart of training phase

The testing phase of the system is also called as execution phase of the system. The flow diagram for the testing phase is shown in fig.11. The testing phase includes the real time input speech signal through the microphone, speech processing, feature extraction, matching with database and execution of matched command.

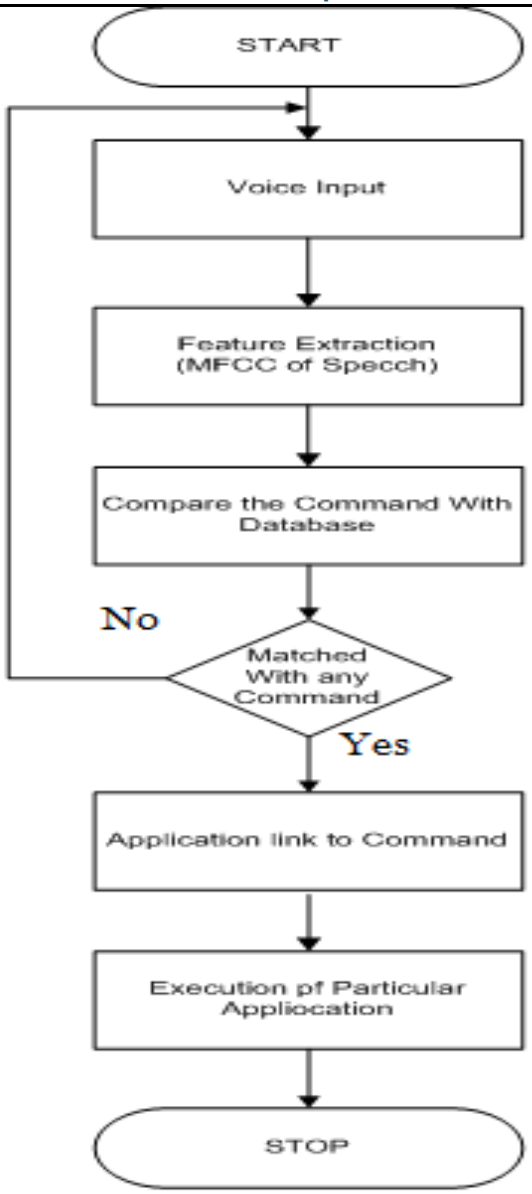


Fig 11. Flowchart of testing phase

## Result:

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 voice command. It acts appropriately to the user specified commands given via a speech processing by MATLAB.

## Acknowledgment:

We take this opportunity to thank the teachers and senior authorities whose constant encouragement made it possible for us to take up a challenge of doing this project. We express our deepest sense of gratitude towards our JSPM Rajarshi shahu college of engineering for giving permission to use the college resources and his constant encouragement for this work.

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