

# Sanjeevani Drone

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**Abstract**— A Hexadrone also called as a hexarotor helicopter or hexacopter, is a multirotor helicopter that is lifted and propelled by six rotors. hexacopters are classified as rotorcraft. It is used for social cause, like flood such natural disasters. By using this drone we can easily distribute food, medicine, safety guards to the needy people. The maximum needy stuff that a drone can carry up to 2kgs. It has multidirectional navigation. Using GPS we can trap the drone through android app. This vehicle is highly capable to fly soon and reach any place in a very possible time. so using this we can control the hunger and can safe guard the people from some contagious diseases. This project is used to provide user friendly service in natural disaster emergency. This project have 2 modules. One will be placed in accessing unit and other will be placed on drone. Accessing unit will be having control to direct the drone to reach the respective area where help is needed, With the necessary information from management. Then the drone picks up the needy stuffs and moves towards needy people. The drone location will be tracked by using ARM, GPS and GSM module. ARM activates the GPS to read location of the place with respect to Latitude and Longitude. Then ARM sends that location information to concern person via GSM to track drone. We fix the camera on the drone to shoot the footage from the sky and that footage will be available as live streaming in the LCD.

## I. INTRODUCTION

hexacopter, is a multirotor helicopter that is lifted and propelled by six rotors. hexacopters are classified as rotorcraft. It is used for social cause, like flood such natural disasters. By using this drone we can easily distribute food, medicine, safety guards to the needy people. The maximum needy stuff that a drone can carry up to 2kgs. It has multidirectional navigation. Using GPS we can trap the drone through android app. This vehicle is highly capable to fly soon and reach any place in a very possible time. We fix the camera on the drone to shoot the footage from the sky and that footage will be available as live streaming in the LCD.

## II. LITERATURE SURVEY

US forces ready a Pioneer drone during Gulf War 1991. Israel aerospace 'maverick' Abraham Karem invented the predator drone' in 1974. The Oxford English Dictionary describes drones as a remote- less controlled piloted aircraft or missile'. on February 4, 2002, that the CIA first used an unmanned Predator drone in a targeted killing. Supplies of basic necessities, including milk, water and vegetables, were affected due to logistical difficulties.

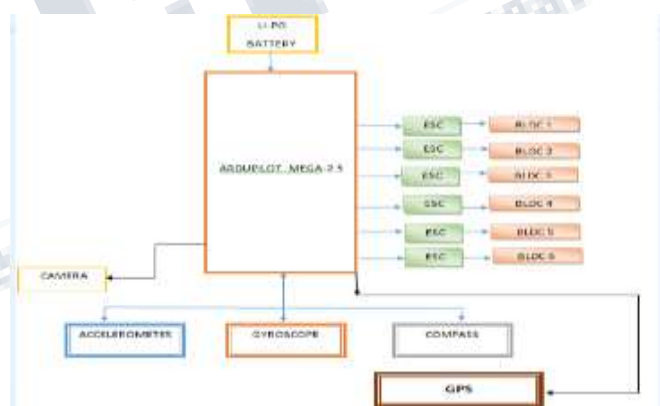
## III. PRODUCT DESCRIPTIONS

### A. Product Perspective:

The main use of our product is we use in the natural disaster purpose for helping peoples. Our product is a replacement for an existing system, as we know that during flood many people affected. The Hexa -copter which

we have designed is too help the people during the flood like providing food, firstaid ,etc. this is been accessed by joy stick.

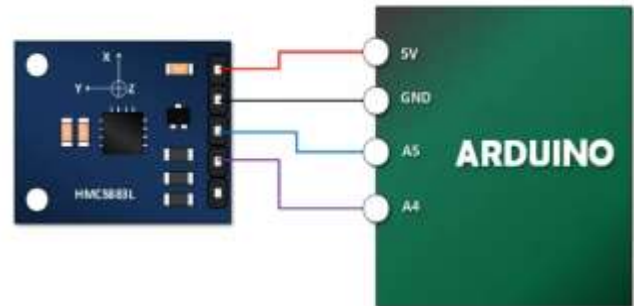
### B. Block Diagram



## IV. PRODUCT FUNCTIONS

We have already mentioned the main components in the above block diagram. At first any user must connect to WIFI secured with WPA2 in android based mobile so that he can connect and then operate with our SANJEEVANI Drone. Li-Po rechargeable battery is connected to run motors. We use ARDUINO mega 2560 which helps in interfacing the app with the motors of drone that is interfacing software with hardware. An android app is interfaced with the ARDUINO mega board through Wi-Fi module. The ARDUINO MEGA-2560 is a 8-bit processor, 16MHz clock speed. This Arduino board can be programmed using the Arduino software (IDE). The accelerometer will measure the acceleration forces and the

acceleration forces may be static or dynamic. We use an accelerometer + gyroscope (IMU) is connected to hardware system and interfaced with Arduino board. Gyroscope is a sensor which gives output to Arduino board and maintains the orientation of the drone. The gyroscope helps in balancing and stability of drone by giving values of x, y, z. GPS UBLOX NEO 6M is cost effective and high performance and helps in initializing the location of crop yield. We used an immersable pump which is immersed inside the fertilizers tank it then pumps the fertilizers and sends to the sprinkler to spray.



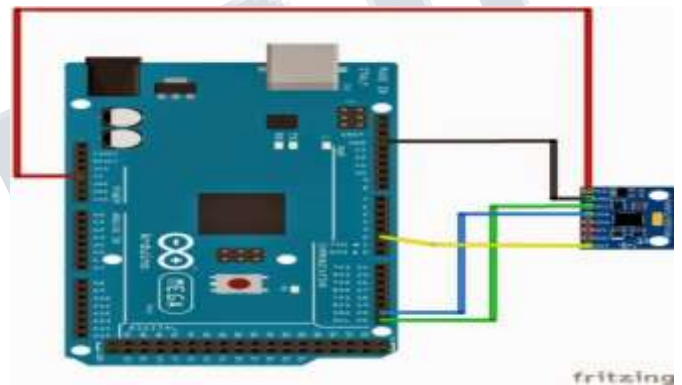
*Fig 1. Arduino interfaced with hmc5883l*

**V. USER CLASSES AND CHARACTERISTICS**

Mainly our drone is useful for high and low level disaster .user should have at least basic Knowledge of using a smart phone (Android based mobiles) so that user will be able to use the app which we have designed for our project. Engineers and technicians can also use our product for testing purposes. Users can use our product for emergency purpose for example flood etc...

**VI. OPERATING ENVIRONMENT**

The Software operates on Arduino mega board. Arduino board a microcontroller on 16 MHz with no dedicated operating system, which runs on standalone software doesn't require any additional application support.



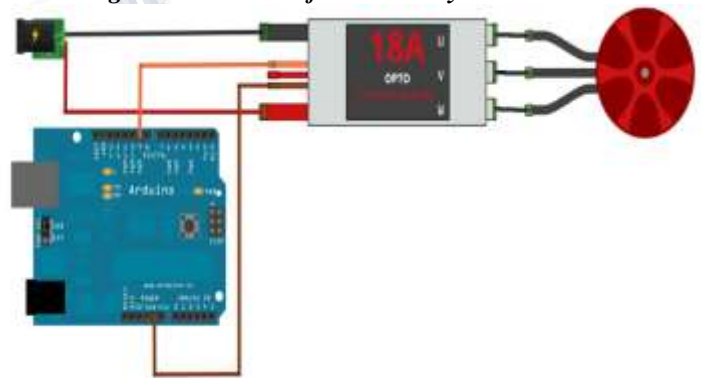
*Fig 2. Arduino Interfaced with Gyro 6050*

**VII. USER INTERFACE**

The logical interface in the software product is Android standard UI .We have included the GUI standards ,screen layout constraints, lever is used for altitude, moving front, back left and right and functions like help. And also used for to start the START drone and LAND to stop the drone.

**A. Hardware Interfaces**

MPU6050 Gyro+Acc is connected with Arduino using the I2C interface, HMC5883L Compass is interfaced using multiplexed I2C Bus, the ESC's are controlled by connecting it to analog ports. The software supported devices are the android mobiles, nature of the data is strings and text messages, the communication protocols are TCP/IP. The GPS 6050 is also interfaced with the Arduino board to find locations.



*Fig 3. Arduino Interfaced with ESC*  
**B. Software Interfaces**

Using the android studio we have interfaced the software components. Library functions used are android's NDK (native development kit), SDK (software development kit).The data going out are the altitudes, movements,

rotations. Nature of communication is through direct peer to peer. The HTTP Server is hosted through APACHE Server.

### C. Communications Interfaces

Network server communication service is peer to peer. Message formatting is strings, plain text. Communication standard HTTP. Communication security is WPA2 PSK. Data transfer rate 100mbps



## VIII. SYSTEM FEATURES

Our drone live stream the area which is highly affected and find the location by GPS then it carries the need stuff to the people provide it ontime. It is highly efficient and of low cost. It is reliable for any type of weather conditions . The mode of operation of our drone makes it easy to handle. It is controlled with the android based mobile app which is interfaced to the ARDUINO board, GPS, ACCELEROMETER, WIFI MODULE, GYRO and DIGITALCOMPASS. The downward airflow generated by the propellers lifts the drone, moves forward .

## IX. COMPONENTS DESCRIPTION

**A. ARDUINO MEGA 2560:** It is a micro controller which has 54 digital I/p O/p pins out of which 14 pins can be used as PWM pins. It allows inserting a new code, software running on the system.

**B. ACCELEROMETER ADXL335:** The three axis accelerometer IC used to read X, Y, Z acceleration as the voltages. It will measure the amount of acceleration due to

gravity and with the help of it we can find out the tilting angle.

**C. WIFI MODULE ESP 8266:** The WIFI module uses the software serial port and the hardware serial port for uploading and debugging. The ESP 8266 is a transceiver module. It is of small size and low cost and will work on 3.3V and consumes current Upto250mA. It is not usually powered on battery it should be powered with 3.3V not with 5V so we use the level conversion to communicate with Arduino.

**D. LI-PO BATTERY:** Lithium batteries are the preferred power resources for most electric modelers today. They offer high discharge rates and a high energy storage/weight ratio. However, using them properly and charging them correctly is no trivial task.

**E. GPS MODEL 6050:** The MPU 6050 sensor contains accelerometer and MEMS gyro in a single chip. It has 16-bits analog to digital and has a sensor 12c-buss to get interface with Arduino. It contains both accelerometer and gyro.

**F. HMC5883L 3 AXIS MAGNETOMETER:** It is a three axis digital compass magnetometer which gives the direction of the drone it is interfaced using I2C with Arduino.

## X. CONCLUSION

The scope of the project is the best option for helping people during floods. Set waypoints to deliver the load and the drone traverses it and does the required job, or manually control the drone. Wireless camera for easy monitoring .Better way to reach people to help ontime .Here the user can control the drone using an android app and he can connect to the app using Wi-Fi module which is interfaced in the drone. It will precisely route the land area of that particular people, land using GPS no matter shape of the field and the job done. Here we have used the Arduino board which is the open source electronics prototype platform which is interfaced with the Wi-Fi module and GPS. To balance the directions and orientations we have used the ACCELEROMETER, GYRO (MPU 6050), MAGNETOMETER (HMC 5883L). We have a wireless camera that can transmit and receive pictures with high resolution.

## REFERENCES

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