

Reforestation Aerial Vehicle

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Abstract— Deforestation is today's most serious problem all over the world. Due to excessive popularization & industrialization, forest area's are getting destructed in massive ratio. Not only forests are getting destructed, it is leading to spoil the biodiversity system. Almost all Asian territory is facing unplanned climate seasons over past few years. It's also leading to global warming also. To avoid deforestation, many of developed countries have implemented some innovative ways & one most useful & popular way for reforestation is showering & spreading the seeds over forest area from real aircrafts & it has achieved a huge success.

But still it's affordable & possible for developed countries only, to make use of real aircraft for this purpose . As India is developing country, we are proposing here the innovative & alternative solution if reforestation with help of drones. As our idea is to make a UAV drone capable of carrying a small seed bag & dropping those seeds over the preplanned area. This drone uses the GPS assistance system, so it can maintain its boundaries & coordinates accurately. It saves a huge cost of real aircraft & pilots fares.

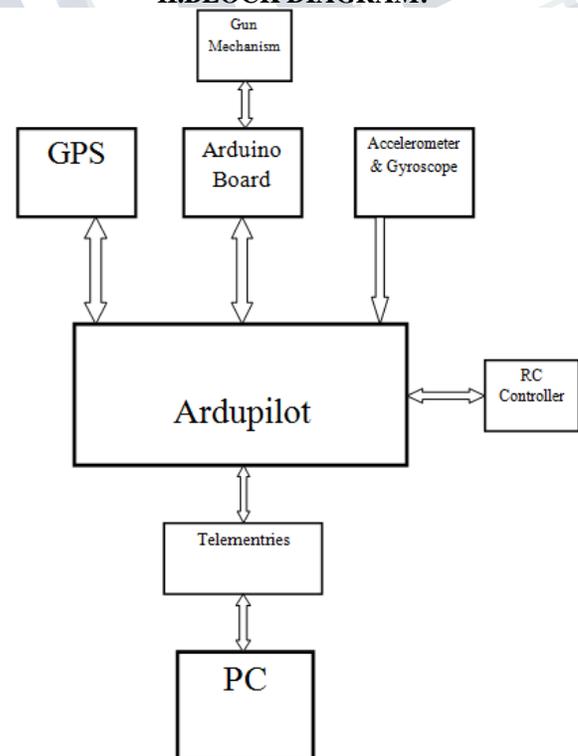
Keywords:-- Accelerometer, Arduino Board, APM Ardupilot Board, Telemetry, Gyroscope, GPS.

I. INTRODUCTION

Increased deforestation is resulting in global warming. There are many methodologies to overcome deforestation. The main Moto of our project study is to overcome, Industrial scale Deforestation by Industrial scale Reforestation.

There are a variety of Tree-planting techniques, including planting by hand and delivering dry seeds by air. However, hand-planting is slow and expensive and spreading dry seeds results in low uptake rates. Use of Drone will overcome the hectic manual planting work. We are aiming to build a drone prototype to shoot seeds aerially. The project being developed will carry a gun like assembly, along with collection of seeds. This structure will shoot the seeds in a particular user defined manner.

II. BLOCK DIAGRAM:



Above figure shows the block diagram of Project Assembly Mechanism. The sensors provides information regarding, speed, elevation and tilt motions. These sensors send information to the Ardupilot and then to PC . Accordingly movements are adjusted using the RC

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Controller. The Gun Mechanism is controlled via Arduino Board, Which is connected to Ardupilot and then to PC. The Gun mechanism is controlled via specific custom designed Software.

Ardupilot: (also ArduPilotMega - APM) is an open source unmanned aerial vehicle (UAV) platform, able to control autonomous multicopters, fixed-wing aircraft, traditional helicopters, ground rovers and antenna trackers. Ardupilot is an award winning platform that won the 2012 and 2014 UAV Outback Challenge competitions . It was started in 2007 by members of the DIY Drones community. The first ArduPilot version supported only fixed wing aircraft and was based on a thermopile sensor, which relies on determining the location of the horizon relative to the aircraft by measuring the difference in temperature between the sky and the ground.

GPS: The Global Positioning System is a space-based radionavigation system.

Accelerometer and Gyroscope:

Gyroscope is a device used for measuring the angular velocity in the three axes. It works under the concepts of angular momentum and can be used to determine the orientation of an object. Typical applications of gyroscope includes missile guidance, flight control, smart phones, game station joy sticks etc. Mechanical gyroscopes, MEMS gyroscope, optic fiber gyroscope, ring laser gyroscope.

Accelerometers measure acceleration, you can easily use this information to calculate the tilt of an object by subtracting the current accelerometer data from a value that you know to be zero tilt.

Arduino Board:

Arduino Uno is a microcontroller board based on the ATmega328P. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.

Telemetry: Telemetry is the automatic measurement and wireless transmission of data from remote sources.

RC Controller: Radio control is the use of radio signals to remotely control a device. Radio control is used for control of model vehicles from a hand-held radio transmitter.

Industrial, military, and scientific research organizations make use of radio-controlled vehicles as well.

III. CONCLUSION

The project is a research oriented project. Therefore efficiency of the project changes depending on the technology used and amount of finance invested. Currently it is build using Quad-Copter with a payload of 1000gms. Depending on the nature of drone, efficiency and working is dependent. Main motto of the project is to overcome industrial scale deforestation via Industrial scale reforestation and to benefit socially for Humanity.

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