

Smart Farming using Drone : Engineering College Prospective

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ABSTRACT

The world-wide farming system faces tremendous challenges. The United Nations Food and Agriculture Organization (UN FAO) expects that food production must be raised by 70% throughout the following 40 years to meet increasing demand due to rising economic welfare and population growth. The main challenge of global agriculture is providing a food to the growing population, which is predicted to increase from seven billion people today to approximately nine billion around the year 2050. Whereas India's population, currently estimated at 1.34 billion, is projected to rise to 1.51 billion by 2030 and further to 1.66 billion by 2050. India is categorized by small-scale farmers. Furthermore 80% of the total land in the country is divided into pieces of less than 5 acres. So drone being a modern technologies can be solution for farming to reduce drudgery and with less time lots of data for research can be reported for easiness to bring sustainability in futuristic agriculture.

INTRODUCTION

The majority of the crops are dependent on rain, with around 45% of the land irrigated. It determines that around 55% of the total population in India depends on farming which is dependent on rain. Due to the acute labour shortage and high labour cost, changes in the climatic conditions, crop losses due to pests, poor availability of the funds and agricultural inputs, wastage of inputs, terrible support price structure these are all the problems which are limit the access for good quality of food for the people. Even though agriculture is the major sector of our economy, but still it is far short of western countries when it comes to adapting latest technologies for better farm output. In order to keep with the challenges, there is need to find ways to improve our current farming practices and processes with improved technologies. Agricultural drones provide relief for the modern day farmer, which are helping to increasing productivity level and declining expenses by reducing the need for human labour and other input resources.

- **How drones operate: -**

The drones can spray disinfectants over large areas like parks, roads, highways, and foot-

paths with a high degree of efficiency. The roads and areas can be selected on Google maps and the drone can be automated to perform the task within a signal range of 3 km. A drone can cover more than 1.2 hectare in one flight, and more than 60 hectares in a day. Also the students claim that the drone “can be used to spray disinfectants over vehicles on highways when things start to normal again.” It can also be “used simultaneously as an announcement tool for police when spraying.” The drone can be controlled using a mobile app and it is crash proof. The drone is equipped to adjust itself to terrain height and avoid obstacles.

- **The drone’s efficiency: -**

A drone can spray two to four liters per minute and can be filled twice for one charge. The drone is highly efficient and can accomplish the task in 15 minutes which would otherwise take a person 1.5 days of work. In this manner, a single drone system can replace around 20 workers, which is what is really needed in the present COVID-19 situation as maximum people are required to stay within the safety of homes. The drone system is very effective for sanitizing and disinfecting especially during the ongoing health crisis when doing so manually may be highly risky to the health of manual workers. It can be used at night as well. These drone systems have been designed to spray disinfectants in public areas including agricultural fields and have already been tested and are ready for use immediately.

DRONE

A Drone, commonly known as Unmanned Aerial Vehicle (UAV) is essentially flying ROBOT (The air vehicles that do not carry a human operator). The aircraft may be remotely controlled or can fly autonomously through software-controlled flight plans in their embedded system working in conjunction with onboard SENSORS and Global Positioning System (GPS).

OBJECTIVE OF THE PROJECT

Lack of rain and farmer suicide are caused by an uneven and unpredictable distribution of rainfall, which can be alleviated by this automated irrigation system. Because it is a tropical country, the high temperature and evaporation rise quickly. Because every hamlet in India lacks adequate electricity, this sophisticated irrigation system will aid in increased production in such places. Irrigation systems, in general, require 4 billion liters, or 20% of the existing electricity generation capacity. Every year, diesel consumes 85 million tons of coal. Significantly decreased by installing a solar-powered autonomous watering system. The main objective of this project is to create a self-contained drip irrigation that would save the farmers time, money, and effort. Humans’ interaction is 14 required for conventional farming watering systems. The use of automatic watering technology can decrease the need for human interference

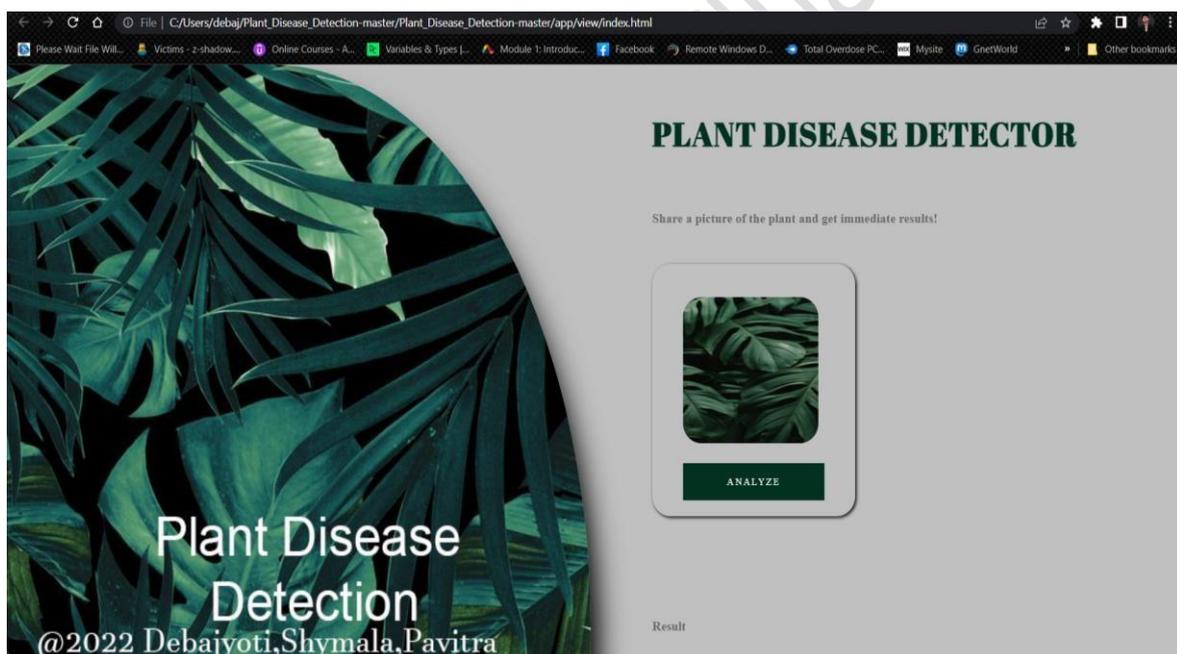
ARCHITECTURE DIAGRAM



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METHODOLOGY

Drones can be controlled by remote control system or a ground cockpit. Drones come in a wide variety of sizes, with the large drone mostly used for military purposes such as the Predator drone, other smaller drones which can be launched by hand, to other unmanned aircraft which require short runways. An unmanned aerial vehicle system has two parts, the drone itself and the control system. The nose of the unmanned aerial vehicle is where all the sensors and navigational systems are present. The rest of the body is complete innovation since there is no loss for space to accommodate humans and also light weight. The engineering materials used to build the drone are highly complex composites which can absorb vibration which decreases the noise produced. We can see from this above diagram that this work in any type of environment without taking too much time and also without creating noise .it can work in night and day both. And there is no use of any pilot in it also. That's why it is also known as Unmanned Aerial Vehicle. At first we have to mark the field in which drone should operate on our PC or mobile or tablet. Then drones will start its work in the field and capture the images of the target areas with the help of Multispectral camera sensors. The images obtained is to be analyzed using software in order to get the precise information. Here we can see the major patrollers are the cameras, sensors and software“.



CONCLUSION

Farmers, over the past decade there has been a growing number of examples of applications of drones in farming. However, there are still some crucial limitations related to drones including high initial costs, sensor capability, strict aviation regulations and lack of interest from the farmers may impede adoption of drones. Hence it is clear that the application of drones in farming is still in its early stage and maybe there is a considerable amount of room for further development concerned to both the technology and the various applications. Providentially, it is expected that with the development of drone technology, improved image processing techniques, lower costs and may allow drones to hover

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