

1. Introduction

1.1. PROBLEM STATEMENT

The goal of this project is to develop an unmanned drone capable of assisting farm owners in inspecting and evaluating their crops. Our drone will collect data by scanning the fields and then utilize a vision model to compare the gathered data with other information to identify any issues with the crops, such as pests or diseases.

While there may be other companies that have made similar products, we intend to show that it is possible to create a product that can accomplish similar tasks on a cheaper budget. Other companies have created a similar platform, but require farmers to purchase both their own drone as well as a subscription service, in order to use their proprietary app. We intend to create a product that can be created using basic off-the-shelf parts, as well as a desktop application for ease of access.

1.2. INTENDED USERS

The three main user groups for this drone will be farmers, insurance companies, and farming supply companies. Farmers will likely use this drone to monitor their own crops to avoid loss of income and to try and catch potential issues sooner rather than later. Farmers will likely want a user interface that is simple to manage and understand, while still allowing them complete control over the management of the drone and understanding of the information that it provides. Insurance companies may see this drone as a way to avoid/mitigate damages. Since any damage that may happen to a farmer's crops could potentially result in a policy payout for the insurance company, they may seek to utilize our drone to help mitigate risk. This could also potentially benefit the farmers who use our drone, because if the insurance companies have confirmation that they've been using our technology to monitor their fields, they may receive a better deal on their agriculture insurance policies. One final group that may use our drone is farming supply companies that may seek to privatize this idea. If this idea performs well, different agriculture companies may try and create their own versions of our software for their own private sale. They would be looking for effective, functional work from the drone, and would be looking to see how it performs and how accurately and efficiently the vision model performs when identifying these pests and diseases, as well as seeing how soon we can detect these issues, and if they can be stopped before they can do any real damage. As more companies enter this market, the number of options available to farmers will increase, creating added incentive and benefits for both companies and consumers.