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An autonomous-drone-based system that streamlines data collection, processing and storing for wildfire management teams

## Problem

With climate change, **wildfires** are burning hotter and longer in Washington state, costing 153 million dollars annually. Collecting **data on the vegetation below the canopy**, "**surface fuel type data**," is necessary to create accurate fuel models to predict fire behavior and improve decision making in forest and fire management. Because what actually propels the fire forward is the vegetation below the canopy.

### Difficulty of collecting surface fuel type data

The current method is to send people on foot into the forest to collect the data, which is labor intensive, time consuming and expensive.



## Process

#### From research to design to build



#### From our research, we gained the findings of specific design requirements

## Solution

#### An autonomous-drone-based data collection system.

FireBOT provides users with the ability to activate the drone to **autonomously collect the surface fuel type data** by providing **a user interface** to plot multiple GPS points and monitor the flight status with live stream video as well as intervene for exceptional situations.

Our automated approach enables the drone to fly over the tree canopy and descend downwards to 6 feet above ground level to collect images of surface fuel type data. It reduces the overall risks to the user by eliminating the need to traverse inaccessible forest and saves time

# Development Process



#### **Controller Interface**



for photographic data with eye level view, date & time and GPS coordinates. Then we created a system to streamline data collection and tested it.

## Hardware & Software Diagram







## Solythe WuMSTIMar 2023Martha C. JohnsonMSTIDec 2022Carl AdamsMSTIDec 2022Queenie QiuMSTIMar 2023