

3drone

Final Design Presentation

The Team

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Purpose

This app seeks to provide a method of visualizing drone flights used in interior building inspections, or wherever autonomous GPS-driven flights are not feasible.

This visualization will enable drone pilots to better understand the flight paths of professional pilots who have conducted simulated inspections within the space. Delivering this functionality is contingent on communicating spatial flight path data intuitively within a 3D space.

Charley Thorton

Charley is obsessed with new technology and toys. He is somewhat reserved, but will talk your ear off about his latest gadgets. He has a very nice PC, and feels right at home with a keyboard and mouse. He dropped out of college midway through an electrical engineering degree to start a business flying drones. It turned out to be a lucrative move. He is a certified drone pilot under FAA-107. His business often conducts wedding videos, building inspections, and land surveying. They once filmed a shot for a movie! Charley personally flies the drones whenever he can. Charley has a few friends, but they are very close.

Contracted Pilot Conducting Inspection

Charley Thorton was hired to fly a drone to collect data on points within the building that need to be inspected. Because Charley has never flown in this building, he was given a device that has this application.

Follow along with Charley: <https://2021-sd-ui.github.io/1/>

Uploading Data (Using Defaults)

Charley is currently looking at the “Upload View” tab to upload files or to use the default files. Charley clicked the default button, as he was instructed. Charley then clicks the “Align View” tab that switches the view to the 3D representation of the building to be aligned

Aligning Scene

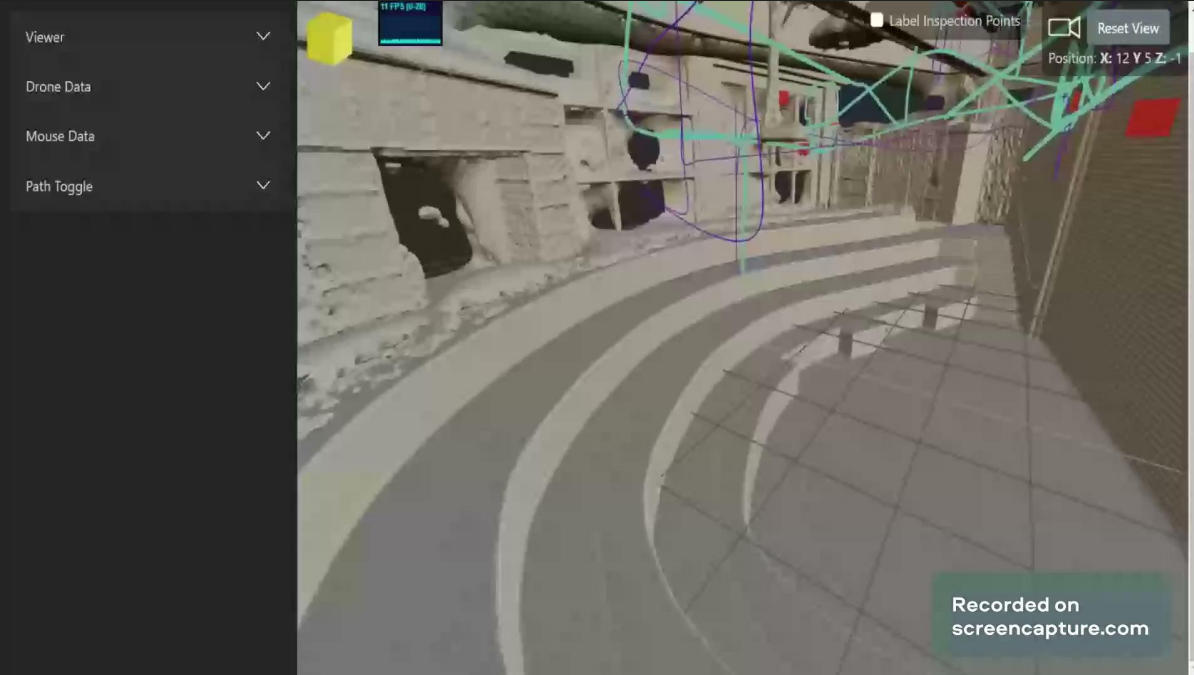
Charley notices that the inspection points do not match the current building location in 3D space. Using the options to translate and rotate the building, charley realigned the space to match with the data points.

Visualizing Flight Paths

Charley continues on, using their mouse and keyboard to “fly” throughout the 3D space. The view is a bit cluttered with all the flight paths shown. Charley decides to toggle several of the paths to make the view less cluttered by clicking each path’s name in the path visualizer widget pane.

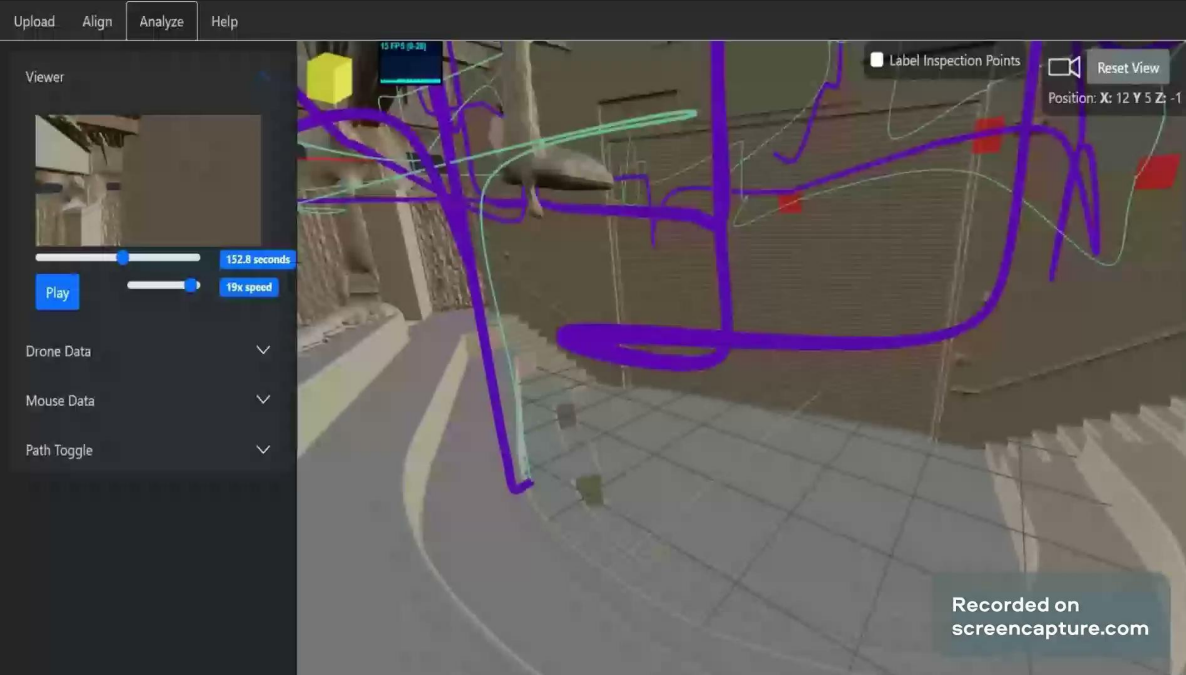
Highlighting Flight Paths

Charley wants to understand how the drone was flying during the first flight. He clicks on this path and selects “highlight”. He then presses play in the viewer window to watch an animation of the flight.



Path Data

Charley wants to know what direction the drone was flying at a specific point during a flight. He clicks on this path and selects “Move Drone Here”, displaying a directional arrow and other granular data.



Potential Usability Concerns

- Ergonomics
 - Difficulties using camera controls and following the path
- Efficient
 - Unsure which features should be prioritized to make usability easier
 - App performance on certain devices

TODOs

- Help tab
- Better click recognition (completed)
- ViewCube view snapping (completed)

Stretch

- Upload new files
- Mark inspection points/points-of-interest on timeline slider

Questions/Realtime Walkthrough