Post-Interview Notes and Member Roles

Team Name: 3D_rone

Scientist Name: Ricardo Perira – Assistant Professor, Construction Management

Interview General Goal:

Date: 1/18/2022

Start Time: 4:00 PM EST

End Time: 5:00 PM EST

Meeting Medium: In Person

Meeting Location: MTU Library Room 236

Introductory statements:
- A statement

Roles: e.g. moderator, questioner, and recorder

Name	Role
Abby Myers	Not present at meeting
August Miller	Technical/Implementation Domain Questions
Charles Vidro	Recorder
Eva Muller	Host/Moderator
Ian Lawrie	Recorder
Tom Berg	Frontend Domain Questions

Notes:

- History
    - Large buildings often must be inspected in order to ensure safety. Specifically, buildings such as sports arenas must have the ceiling trusses inspected. Each "joint/node" where the truss meets must be visually inspected for defects. Traditionally, this has been done by using scissor lifts and continually going up/down many times in order to cover the entire space. This obviously is very inefficient and slow. With the advent of modern drone technology, the task of inspecting large buildings has been streamlined.
    - Flying drones is a difficult task. Very much subject to human error. Additionally, in indoors environments there is little or no GPS signal, and so flights must be manual.
    - Flying for monetary gain requires a license. Additionally, pilots must be skilled. Goal of scientist's research as it relates to this project is to analyze previous pilots' flights, decisions, and troubles to learn and help in training new pilots in a virtual environment. That is, to train people to repeat or perform a similar flight path.
    - Data available for the drone is timestamp, x, y, z, roll, pitch, and yaw.
    - Data sets are uneven, that is some flight paths may contain 5 minutes of data, others 10 minutes, etc.
        - Data sets are dependent on the flight time
    - A 2D app has been developed but has difficulties in conveying information such as altitude, depth, etc. Thus a need for the 3D app.
- Purpose
    - To provide a method of visualizing drone flight plans for inspecting buildings to teach novice users (a drone pilot who hasn't flown in a particular building) the flight paths of professional pilots who have already conducted previous inspections within the space.
    - Communicate spatial flight path data intuitively
        - Avoid Cluttering paths
    - Explore ways to demonstrate existing data from the 2D app within a 3D space.
- Features
    - Display flight path(s)
    - Display drone orientation
    - Display time
    - Navigate 3D space (both location and rotation)
    - Control with keyboard and mouse
    - Desired but not required features
        - Upload own data
        - First person drone POV (Think windowed mode in apps such as Youtube)
        - Convey time spent in an area (hover areas / density of stop time)
        - Display areas to inspect
- Users
    - Primary

- ■ Novice drone pilots to professional drone pilot that have not flown in specified area (ie. inside building)
  - ○ Secondary
    - ■ Construction Managers and Facility Managers
    - ■ non-drone pilots looking at flight data
- ● Data
  - ○ Main output is an easy-to-digest flight visualization
  - ○ Main input is
    - ■ Scene model
    - ■ Flight path data points
      - ● Duration of flight varies