

# **Evaluation Assignment 5**

## **Heuristic Evaluation**

Team 1: 3D rone App

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## **Undergrad design of 3D rone App:**

The App's aim is to give a way to visualize drone flights that are utilized in interior building inspections or other situations where autonomous GPS-driven flights aren't possible to operate. Drone pilots will be able to better understand the flight paths of expert pilots who have completed simulated checks within the space due to this visualization. The ability to communicate spatial flight route data intuitively inside a 3D space is required to provide this feature. In the app, there should be an upload part where there will be some flights path to get trained. In Analyze mode (Main View), pilots or users can get the 3D representation of the buildings and flight paths. Paths can be identified by different colors and highlighted according to the requirements of user. It can be made visible or invisible. Also, one can align the scene with the available paths by adjusting the positional data. Drone data will be available based on the current position of the drone also the mouse data is another option to represent the closest position of the path at the mouse's current position.

The program will be used mostly on PCs that have a keyboard and mouse. It'll be a web application that runs through the browser. It can also be used on a tablet or smartphone, though this is not encouraged.

## **Identification of User Interface Domain:**

3D\_rone App is basically a web application based on inspecting civil structures to ensure safety and security. Main objective of this application is to give confidence to the drone pilots who are the primary users of this app by training them with adequate flight path as well as preventive measures to be taken during the flight to inspect. A simplified user interface through upload and download can be a great solution to the drone pilots to get trained through experienced drone pilots completed routes. Specific location warning signs can help to improve the path pilots are taking. Researchers can also collect data from the application to analyze the data for their research purposes. A building inspector can also be an important user to inspect the project progress throughout the help of this app data. So, the user interface needs to be simplified keeping in mind that users from all domains can get the best use of it.

## **Heuristic Usability Principles:**

Some basic heuristic principles can be as follows [1]:

### **Visibility of System:**

The system must be able to keep users up to date on its status by providing suitable feedback in a timely manner like the recent changes of data, connectivity of the internet connection etc.

### **User Control and Freedom:**

Users should have the ability to manage the system processes or operations, including the ability to reverse and retake them if desired. A confirmation message should always be there before committing the task.

### **Sync between system and the real world:**

There should be a synchronous relationship between the system and the app by making the user interface generalized for every type of users while navigating. Using too much technical terms can make the system boring or ineffective to some users.

### **Error Prevention:**

Application should be interactive to prevent error happening at first place by providing hints or generalized information to users about the task they are attempting to.

### **Consistency and Standards:**

The system should be transparent. It should not employ the same or close terminology for separate operations, as this could lead to user misunderstanding.

### **Recognition rather than recall:**

For subsequent searches, the location or part of the inputs may be the same. Previous inquiries can be retained so that users can choose from a drop-down menu rather than having to memorize details.

### **Flexibility and Efficiency of use:**

The system should be flexible enough to allow users of varying levels of skill to utilize it effectively; experts should be capable of speeding things up by eliminating excess features, while novices should be able to traverse the system easily.

### **Aesthetic and minimalist design:**

As the App is being used for a critical inspection, every important section should be highlighted in a simplistic manner. Color choosing is very important while selecting for each section. Irrelevant and unnecessary information should be avoided.

### **Help and Documentation:**

The app should include a help section that explains how to utilize it. The statement should be simple to read and free of complexity and technical terminology. If any technical phrase is used, it should be properly explained.

## **Usability Problems List:**

There can be of several usability problems generated from the heuristic evaluation:

- Flexibility should be there for the novice pilots to understand the flight paths and pros and cons of the path they are selecting to get trained to inspect. There should be enough supporting directions to get through it.
- If the user's internet connection is lost while uploading the model and path, the app should warn them. Users should be able to identify partially uploaded data once the connection is restored. In this instance, just partial data for that user should be preserved. To identify users, there may be a register/login option. If users prefer to utilize it as a guest, registration can be made optional.

- Drone pilots' control and freedom should be there to align the path and the inspection points to get the 3D space looks appropriate.
- Interactive pages should be there to give all types of users the idea about what they are doing to prevent error and redoing the same task again and again
- Proper documentation and help should be there to support the naïve users as some of them are not going to use this app very frequently. That's why help page can be a great option for them to get through it whenever they want.
- The design of the pages should be aesthetic to draw the attention of the users like scientists and students who will not go through this app frequently.

### **Critical Usability Concerns:**

Among the usability concerns mentioned above, there are few critical usability concerns.

- If the user's internet connection is lost while uploading the model and path, the app should warn them. Users should be able to identify partially uploaded data once the connection is restored. In this instance, just partial data for that user should be preserved. To identify users, there may be a register/login option. If users prefer to utilize it as a guest, registration can be made optional.

**Scenario:** A building inspector is going to inspect an important site via drone in a few days and Charles, a construction worker, is trying to verify the inspection points as asked with the data uploaded by his manager are accurate or not before the actual inspection. During uploading the data by his manager, may be there was an interruption of connection which results the full data is not uploaded. Thus, Charles is now unable to inspect.

- Proper documentation and help should be there to support the naïve users as some of them are not going to use this app very frequently. That's why help page can be a great option for them to get through it whenever they want.

**Scenario:** Anthony, a building inspector / regulator is going to inspect the building data through the app. As he is very rare to use this type of app to inspect, many of the things are seeming not clear to him while taking a decision. Technical terms are not explained in detail which is also creating problem to the inspector as he is unable to take any decision whether the data is in threshold level or not. Anthony feels that some of the major parts he is skipping to check whereas those are there in the app but not properly redirected. He is not feeling confident on his inspection now.

### **References:**

[1] "<https://www.uxness.in/2015/02/10-heuristic-principles-jakob-nielsens.html>"