Avoiding Flight Interruption

1. **Summary of the Project**

   We aim to analyze the potential reasons behind flight interruptions by looking at the different airlines, airports, and the reasoning behind the interruptions. Our goal is to visualize routes grouped by different criteria and find the best route to get to a particular airport by examining all the different features mentioned previously. Our approach will involve using the U.S. Department of Transportation's (DOT) Bureau of Transportation Statistics from 2015.

2. **Project Description**

   Many frequent flight travelers most likely have experienced some sort of flight delay or cancellation. We plan to make a visualization, like a map, to demonstrate flight paths from one location to another. The user will select their origin and destination, and with the use of the DOT's dataset, we will also display the different types of airlines and give the best airline that is least likely to have an interruption. In order to determine the best airline, our model will look at the dataset and show the path with the shortest distance and the least delays. We also plan to include more information about a particular flight path such as the cause of interruption (weather delay, airline delay, etc).

3. **Usefulness Description**

   Airplanes are a popular mode of transportation, and analyzing data can reveal useful patterns and trends to help travelers make informed decisions about their flights. FlightAware [https://flightaware.com/] is a well-known web app that provides delay lookup worldwide, but since our app focuses solely on the US, it offers clearer and more detailed information for users. Additionally, while FlightAware only provides information and lookup services, our app goes further by offering recommendations and improving path visualizations, which sets it apart from existing apps.

4. **Realness Description**

   Our data is from kaggle(https://www.kaggle.com/datasets/usdot/flight-delays), which contains 2015 flight delays and cancellations in the United States. These datasets were collected by the U.S. Department of Transportation, and they are free to use for the general public. These datasets provide more than 30 columns and most columns include useful information related to flight delays and cancellations. We plan to use airlines.csv, airports.csv, and flights.csv, and use most of the columns within the CSV. This dataset offers valuable insights such as the different reasons why a particular flight has been delayed (weather delay, late aircraft delay, airline delay, etc). This dataset will allow us to make some valuable recommendations.

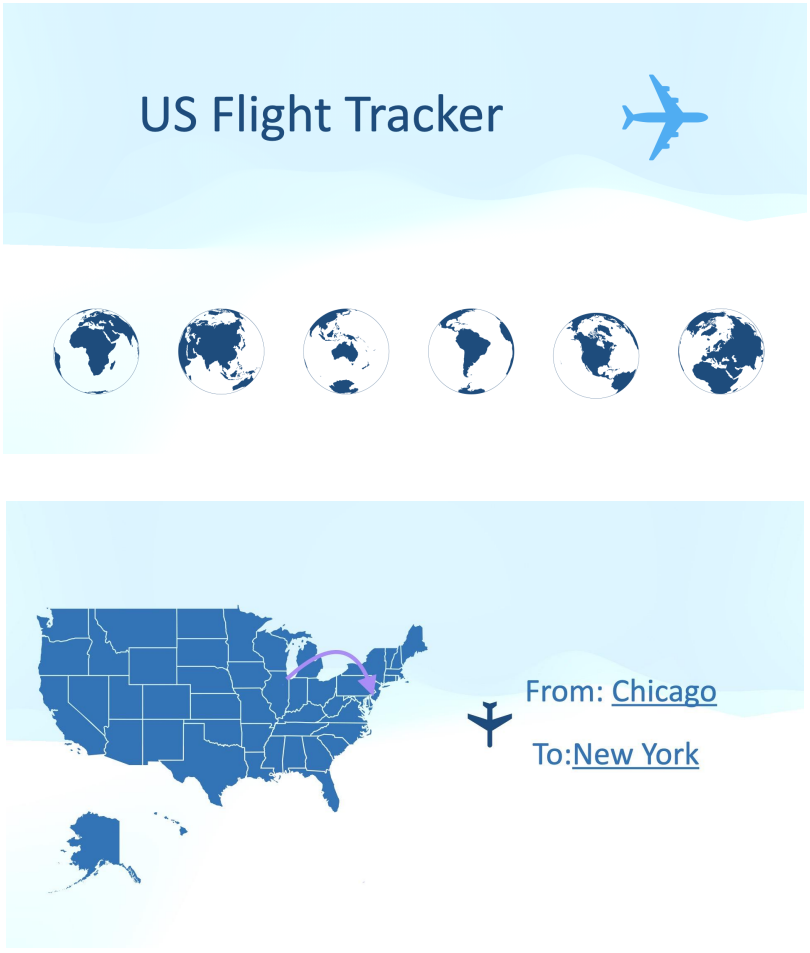
5. **Project-related Data**

   For this project, we only focus on these three datasets about flight delays and cancellations. We do not have any extra datasets. Since we plan to make a recommendation system for users, we will allow users to put in some simple data, like departure and arrival information.

6. **Web Application Basic Functions [Functionality Description]**

   Simple features:
   - Query and filter the information
   - Allow user to specify the parameters/information to query
   - Displays the overall delayed flights data

   Complex features:
   - Visualization of the flight map
   - Visualization of path of the flights given user's information



7. **Project work distribution:**

   Frontend:

   Tony Chang- Populate a card for each item in the database. Create page for the interactive map connecting frontend to backend

   Backend:

   Brandon Lau - Handle Filtering and Querying of Data, connecting backend to frontend
   Kelly Dai - User login information, functions and visualizations functions to map.

8. **Creative Component**

   Based on the given dataset, we propose to implement a recommendation system that will give the best flight path based on the given destination from users. We will look at the flight delays by a particular airline, and decide which airline is least likely to give a flight delay. In other words, we plan to group every flight interruption by airline and determine which airline has the least amount of flight interruptions.