

JuhyunI_ Global Flight Network Analysis

The "Global Flight Network Analysis" project is an challenging exploration project that dig into in to the complex world of international air travel, using advanced data analysis techniques to uncover patterns, hubs, and connections in global aviation. By integrating and analyzing extensive datasets on airports, airlines, and flight routes, the project offers some valuable insights into how airports are interconnected globally and the pivotal roles they play in facilitating global connectivity.

The project utilizes a variety of datasets including airport data, airline data, flight routes, and countries information to provide a deep dive into global air travel.

I have successfully mapped and analyzes travel patterns, airline hubs, and explores concepts such as the "six degrees of separation" within the aviation industry.

It also includes 4 interactivity Feature which it finds:

- * The shortest path between two airports with customizable search criteria.
- * Filter data by various parameters like airline or geographical region.
- * Visually explore connections and paths between airports using dynamic maps.

At its core, this project uses graph theory to model airports as nodes and flights as edges, creating a dynamic map of the air travel landscape. This model was supposed to allows for an in-depth analysis of how travel and connectivity unfold across different regions and airlines. However due to the lack of some data It provides a foundation for understanding the operational scale of airlines and airports, which can be crucial for stakeholders in making informed decisions related to travel, investment, or policymaking.

* Challenges I've faced:

* Data Completeness: since legal implications can vary significantly depending on country's regulations some interactive features were unsuccessful due to the lack of comprehensive data, such as detailed past, current, and future airline trip information for all airlines. Ensuring access to complete and up-to-date datasets could significantly enhance the analysis and interactivity.

* Performance Optimization: Handling and processing large volumes of flight data and generating real-time results require optimized algorithms and potentially more powerful computing resources to improve user experience and system performance.

* User Interface Design: Enhancing the usability and accessibility of the interactive tools to cater to both technical and non-technical users can expand the application's user base and increase its practical utility.