UNIVERSITY OF NORTH TEXAS - UNT

Software Development for Artificial Intelligence

Group 24

Phase 4: Develop a user interface

1. Team Members

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2. About Project Scope

In the Flight Price Prediction project, the objective is to prepare a model that predicts the price fare of the flight based on many factors which include the airports of departure and arrival, flight duration, etc. This project incorporates several processes and functions which are very important towards getting a cost prediction system that is accurate and efficient.

To achieve the end result of being able to reasonably predict the prices of the airfares, there is a plan to use data and apply some analytical and machine learning approaches that will build a model which will be able to predict the price of the flight.

Inputs and Outputs:

The primary input data consists of features related to flight bookings, including departure and arrival locations, flight duration, airline, and historical prices.

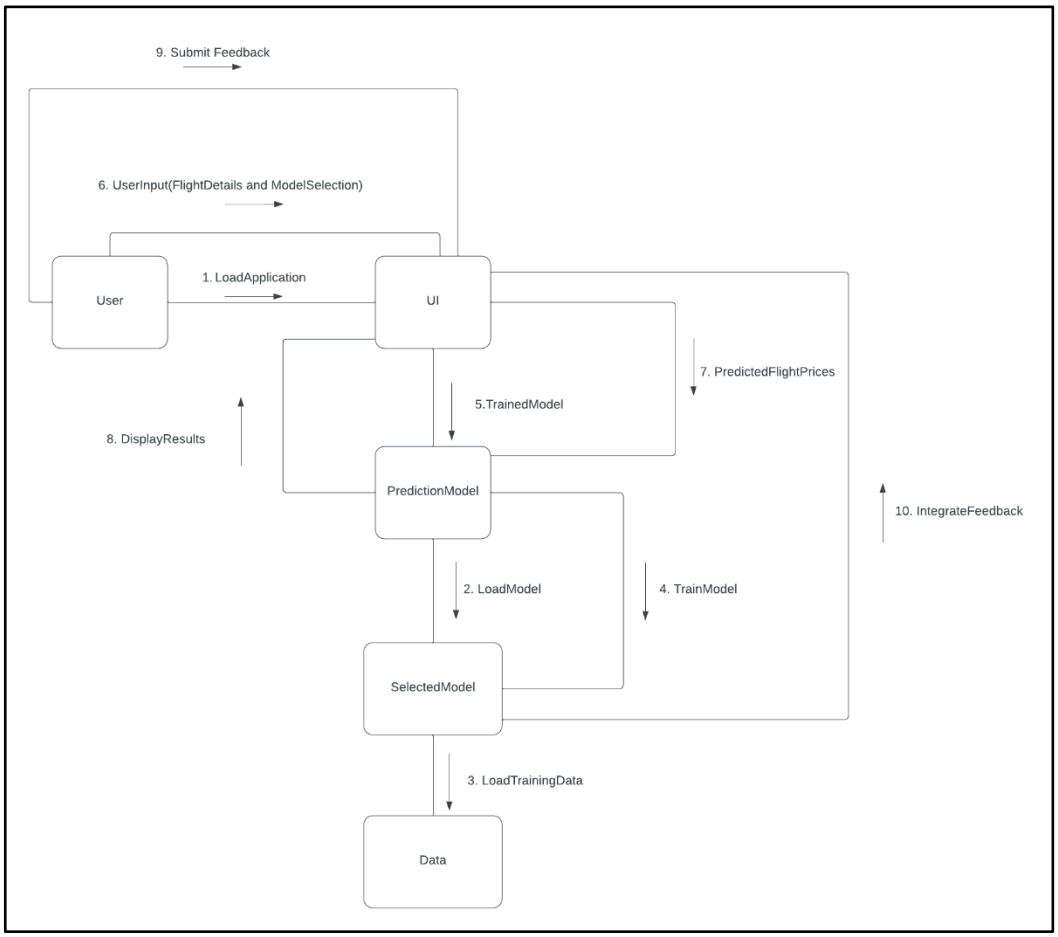
The main output of the flight price prediction system is the predicted flight prices corresponding to the input features provided by users.

External Entities:

These entities are not part of the system, but they interact with the system for expected results.

Entity Name	Description
User	They input flight-related features into the system and expect predicted prices as output.
Hardware	The infrastructure on which the system operates, including CPUs, GPUs, RAM, and storage.
Third Party Resources	External datasets used to enhance model training and validation.

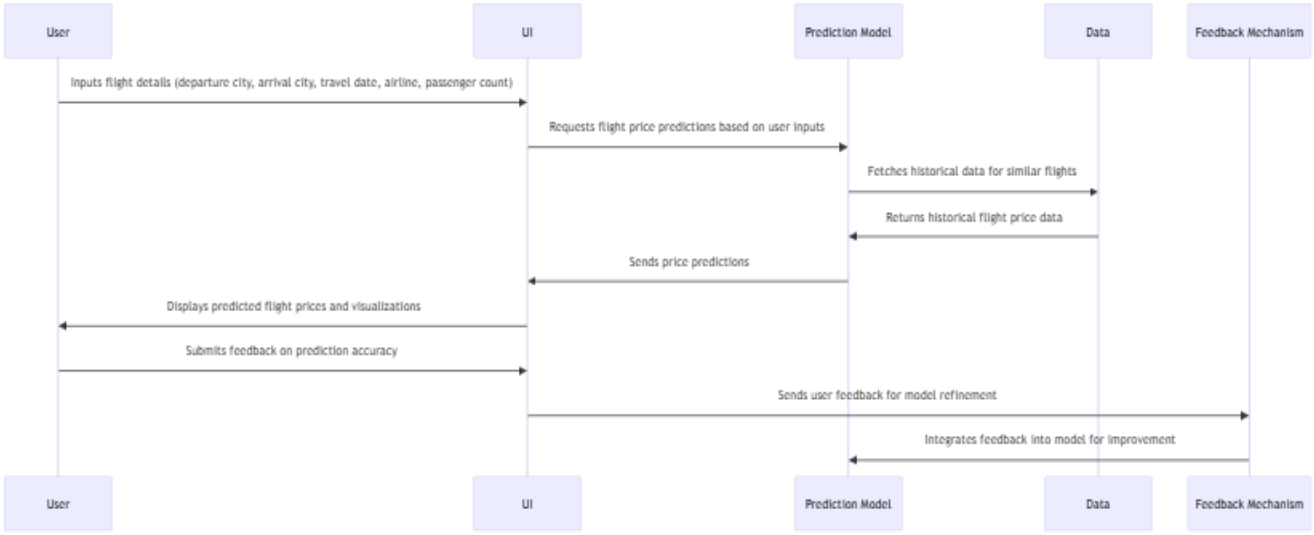
Communication Diagram



In this communication diagram, the interaction begins with the user accessing the user interface (UI) to input essential flight details, including departure and arrival cities, travel dates, airlines, and passenger counts, and the user can also choose the model of their choice to make predictions. The UI then communicates with the Prediction Model, requesting flight price predictions based on the user inputs. In turn, the Prediction Model interacts with the Data Processing component to fetch historical data for similar flights, receiving this data to enhance prediction accuracy. Once the necessary historical data is retrieved, the Prediction Model calculates and sends the predicted flight prices back to the UI. The UI displays these predicted prices alongside visualizations that help the user better understand fare trends.

After analysing the results, the user can provide feedback on the accuracy of the predictions through the UI. This feedback is sent to the Feedback Mechanism, which integrates the user's insights to refine and improve the model. This communication loop ensures a dynamic and insightful user experience as users interact with the flight price prediction system.

Sequence Diagram



Lessons Learned

1. The integration and updated architecture provided a clear view of functionality of the system. It helped us in development of user interface in systematic manner.

2. Working together helped us to tackle some challenges associated with development and also leading to enhancement of user interface for better interaction.

3. The use cases are well utilized to draft the requirements and components needed to be present in the user interface. It also provided proper communication and linking of components together.

4. Monitoring the system closely provided us with limitations and shortcomings associated with it. Following alternative approaches yielded the better results.

5. Communication and sequence diagrams have been instrumental in following the order of events associated with the proper functioning of system.