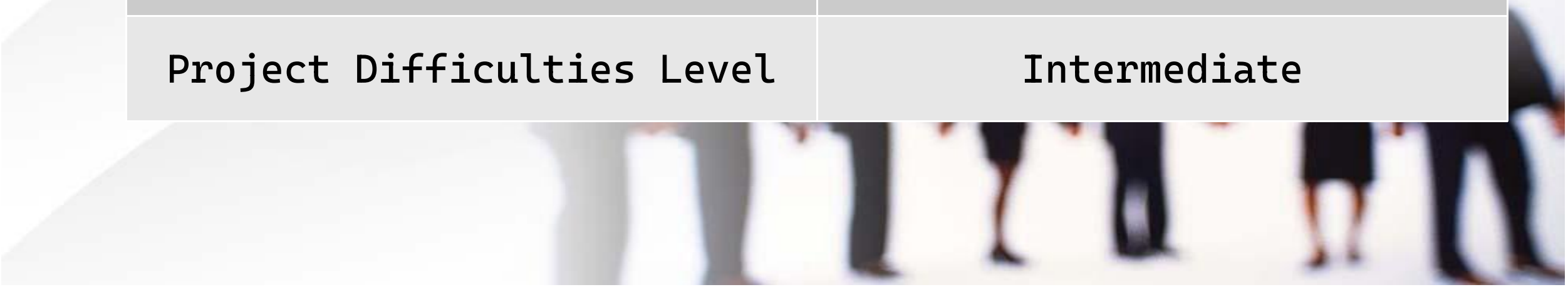
PW Skills Project for Internship

Project Title	Flight Price Prediction
Technologies	Machine Learning Technology
Domain	Aviation
Project Difficulties Level	Intermediate

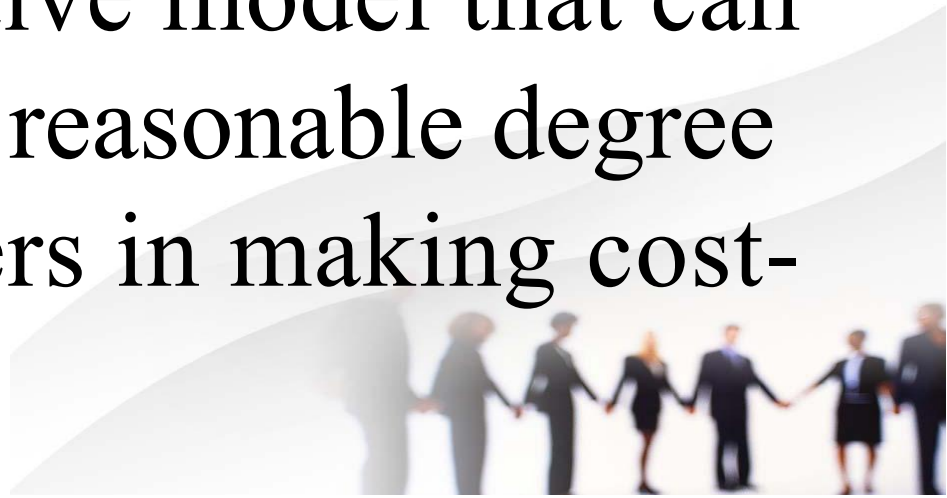


Introduction

The "Flight Price Prediction" project aims to develop a machine learning model that can accurately predict flight ticket prices based on various factors such as the airline, departure and arrival cities, date and time of travel, and other relevant parameters. The ability to predict flight prices can be valuable for travelers, travel agencies, and airlines alike, helping them make informed decisions and optimize their travel plans.

Problem Statement

The unpredictable nature of flight ticket prices poses challenges for travelers who want to find the best deals. Prices can fluctuate rapidly based on demand, seasonality, availability, and other factors. The goal of this project is to build a predictive model that can estimate flight ticket prices with a reasonable degree of accuracy, thereby assisting users in making cost-effective travel decisions.



Dataset

Before training the machine learning model, the flight dataset needs to be preprocessed. This involves steps such as data cleaning, feature selection, handling missing values, encoding categorical variables, and normalization or scaling of numerical features. Exploratory data analysis (EDA) can also be conducted to gain insights into the dataset and identify any patterns or correlations that may exist.

DataSet Link:

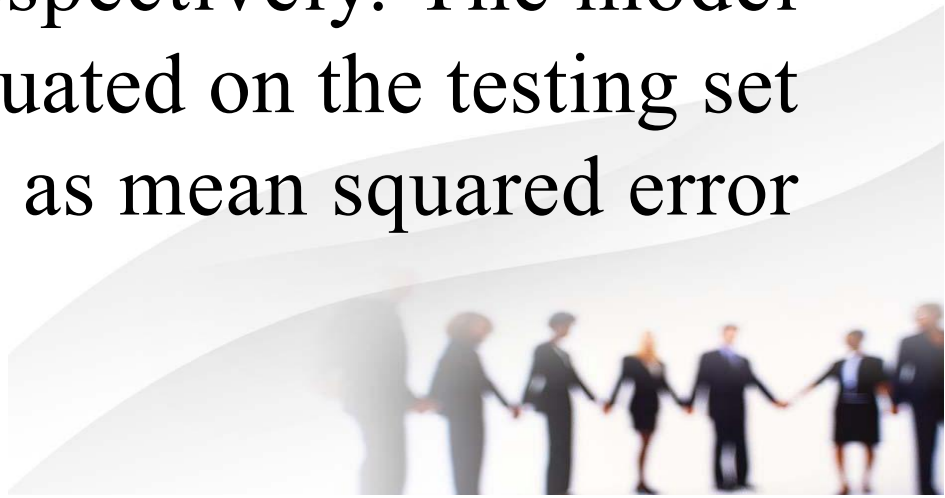
https://www.kaggle.com/datasets/nikhilmittal/flight-fare-prediction-mh

Feature Engineering

In order to enhance the predictive power of the model, feature engineering techniques can be applied. This may include extracting additional features from existing ones, such as deriving the day of the week or time of day from the departure timestamp. Feature engineering can help capture important information that may influence flight prices.

Model Selection and Training

Several machine learning algorithms can be considered for this regression problem, including linear regression, decision trees, random forests, gradient boosting, or neural networks. The choice of model will depend on the dataset size, complexity, and desired accuracy. The dataset can be split into training and testing sets, typically using a 70-30 or 80-20 ratio, respectively. The model will be trained on the training set and evaluated on the testing set using appropriate evaluation metrics such as mean squared error (MSE) or mean absolute error (MAE).



Model Evaluation

The trained model's performance should be evaluated to assess its accuracy and reliability. Cross-validation techniques, such as k-fold cross-validation, can be employed to obtain more robust estimates of the model's performance. The evaluation metrics mentioned earlier can be used to compare the model's predictions against the actual flight prices in the test set. Additionally, visualizations like scatter plots or residual plots can provide insights into the model's performance and any potential areas for improvement.

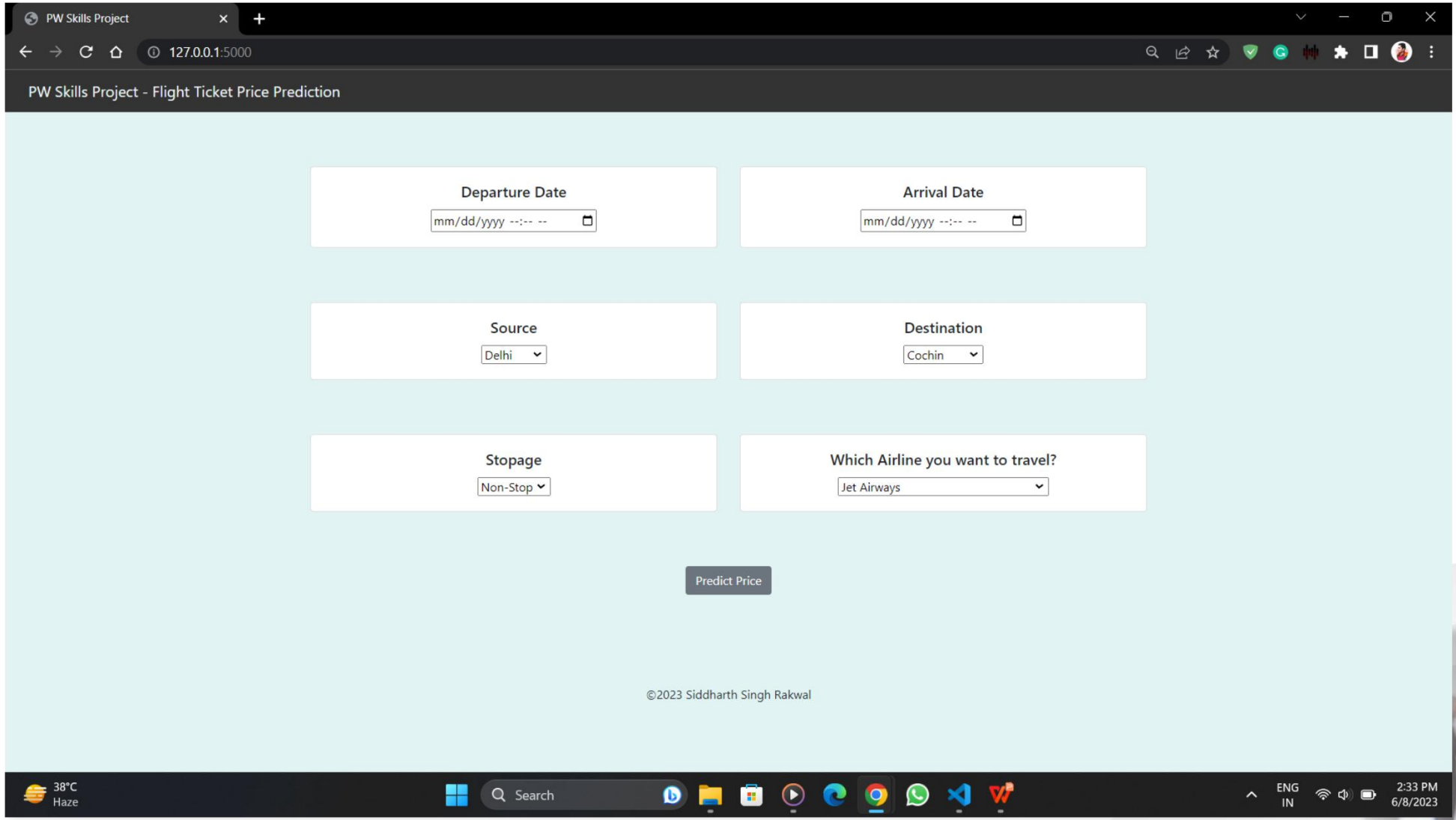
Hyperparameter Tuning

To optimize the model's performance, hyperparameter tuning can be performed. This involves adjusting the model's parameters to find the best combination that yields the highest accuracy. Techniques such as grid search or random search can be employed to explore the hyperparameter space and identify the optimal settings. Cross-validation can also be used to avoid overfitting during the hyperparameter tuning process.

Deployment

Once the model has been trained and evaluated, it can be deployed for practical use. This can be done through a web application, API, or any other user-friendly interface. Users can input relevant flight details, and the deployed model will provide an estimated price based on the trained regression model.

Interface


PW Skills Project
127.0.0.1:5000
PW Skills Project - Flight Ticket Price Prediction
Departure Date
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Arrival Date
mm/dd/yyyy --:-- --
Source
Delhi
Destination
Cochin
Stopage
Non-Stop
Which Airline you want to travel?
Jet Airways
Predict Price
©2023 Siddharth Singh Rakwal
38°C
Haze
Search
ENG
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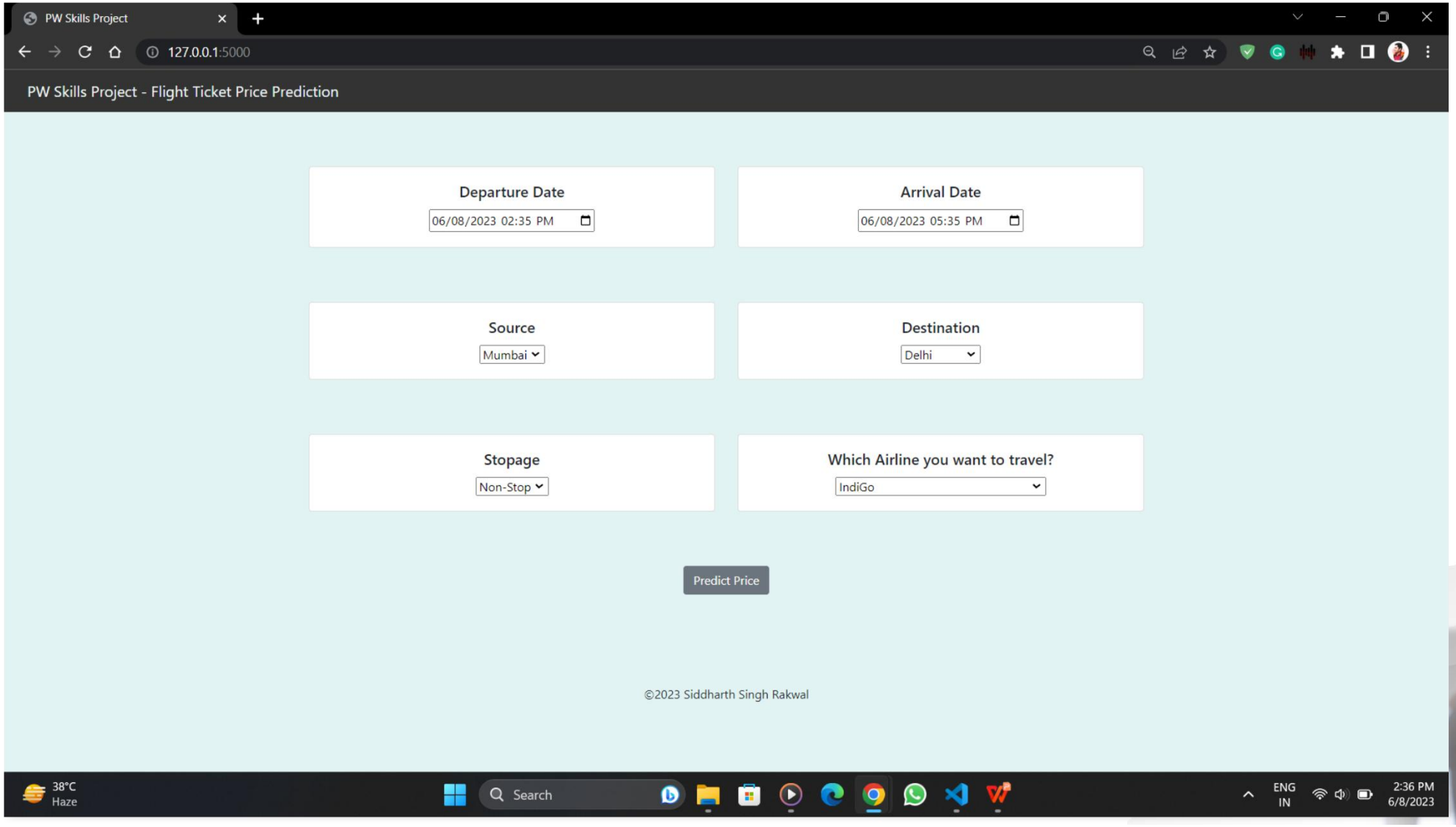
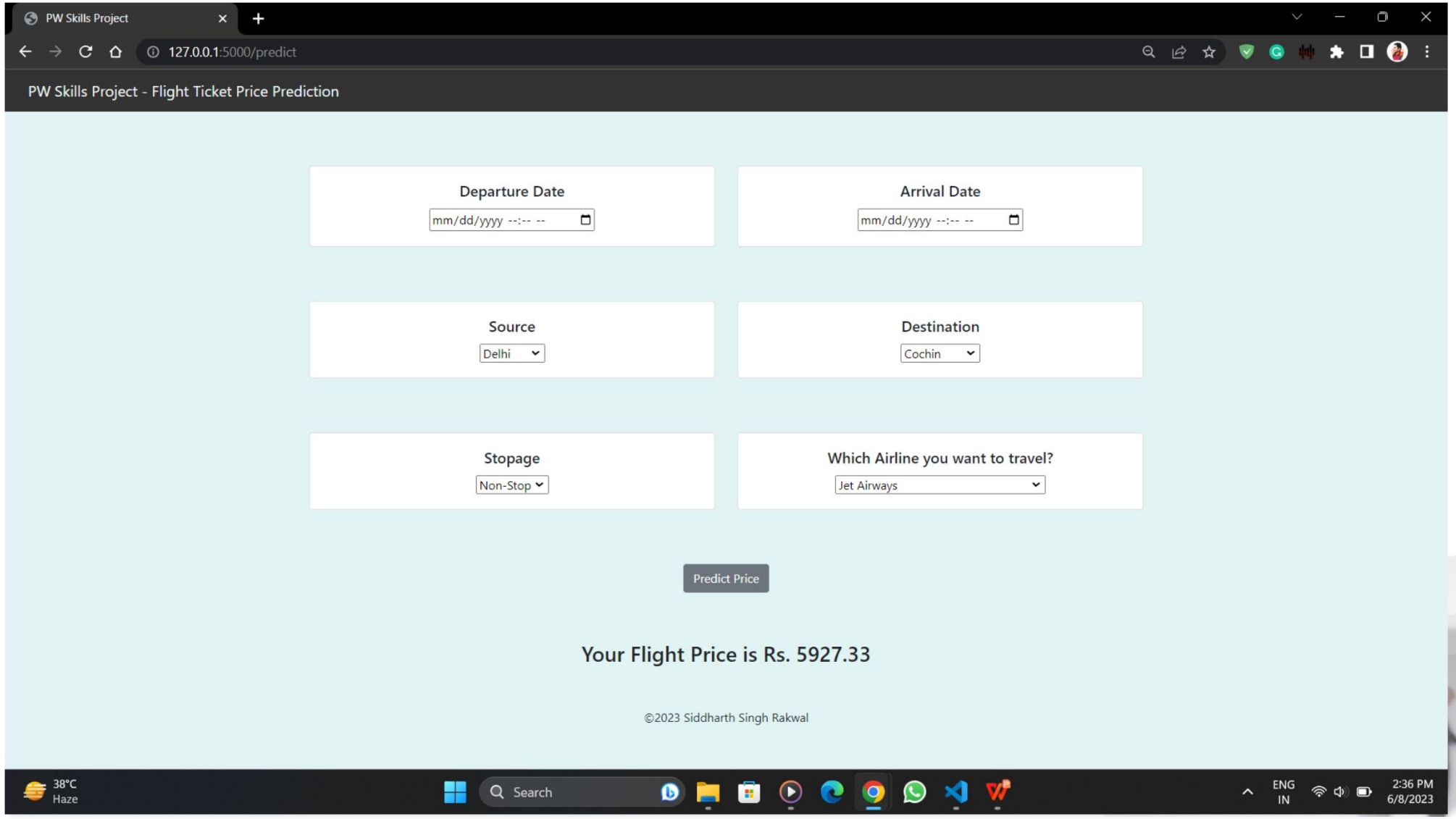
6/8/2023

Demo



Filling Details

Result


PW Skills Project
127.0.0.1:5000/predict
PW Skills Project - Flight Ticket Price Prediction
Departure Date
mm/dd/yyyy --:-- --
Arrival Date
mm/dd/yyyy --:-- --
Source
Delhi
Destination
Cochin
Stopage
Non-Stop
Which Airline you want to travel?
Jet Airways
Predict Price
Your Flight Price is Rs. 5927.33
©2023 Siddharth Singh Rakwal
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Conclusion

The "Flight Price Prediction" project utilizes machine learning techniques to develop a model capable of predicting flight ticket prices. By leveraging historical data and relevant features, the model aims to provide accurate price estimates for flights. This project has the potential to benefit travelers, travel agencies, and airlines by assisting them in making informed decisions and optimizing their travel plans.