Flight Delay Prediction for aviation Industry using Machine Learning

project Based Experiential Learning Program

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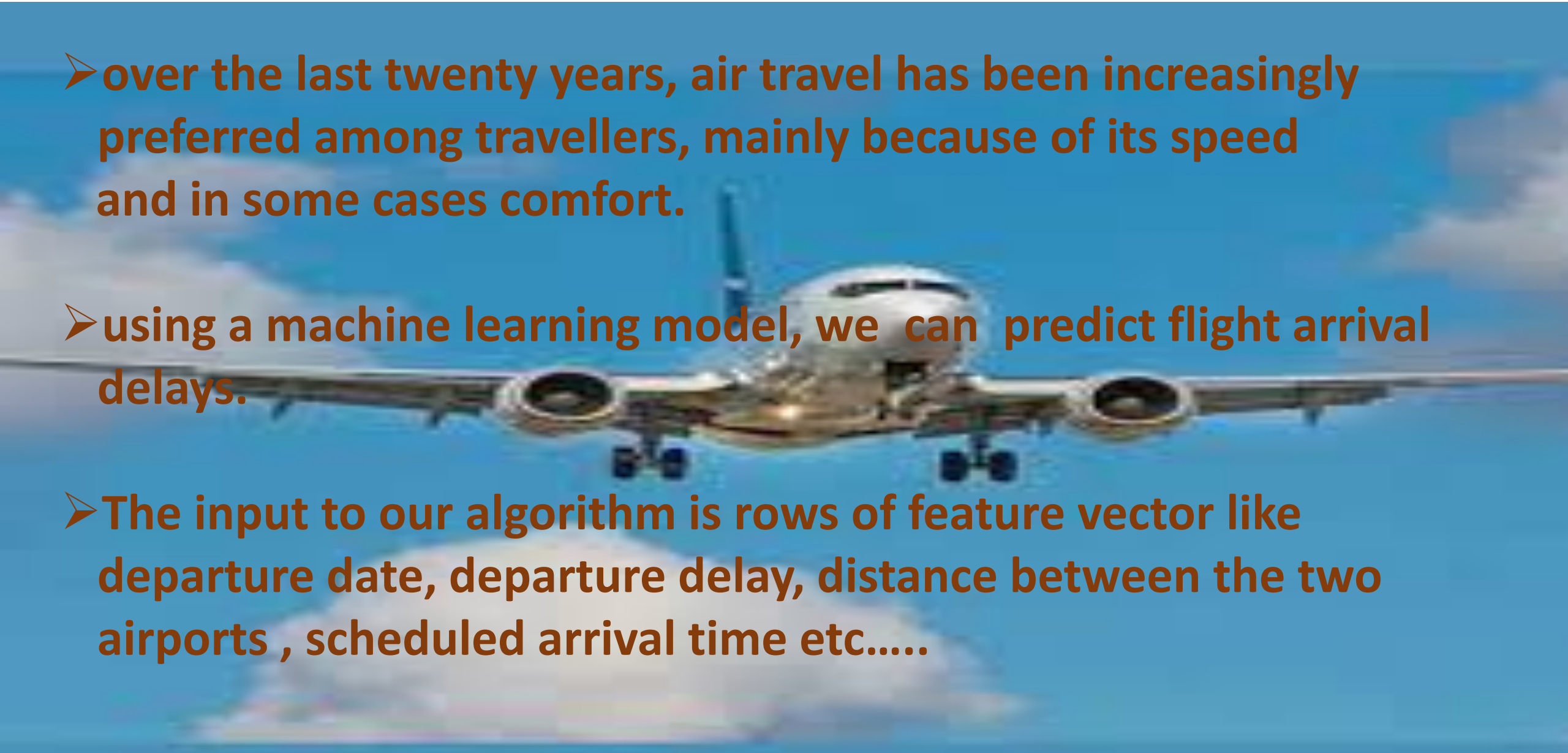
INTRODUCTION



- over the last twenty years, air travel has been increasingly preferred among travellers, mainly because of its speed and in some cases comfort.

- using a machine learning model, we can predict flight arrival delays.

- The input to our algorithm is rows of feature vector like departure date, departure delay, distance between the two airports , scheduled arrival time etc…..

OVERVIEW

- This project aims to compare the performance of machine learning classification algorithm when predicting flight delays.
- This project is used to create a model to predict flight departure delay.
- Predicting flight Delay can improve airline operations and passengers satisfaction. which fill result in a positive Impact on the Economy.
- Using Machine Learning to predict flight arrival delays.
- The input to our algorithm is rows of feature vector like departure data, departure delays, distance b/w the two airports sebeduled arrived time

PURPOSE

- There are plenty of other reasons why passengers face flight delay, such as time for fueling, boarding passengers, aircraft cleaning, etc.

- Airlines allow for a little bit of flexibility, and it's important for passengers to understand such so they can fit some flexibility into their schedule, too.

PROBLEM DEFINITION

❑ Specify the Business Problem

The impact of flight delay can be a risk and this risk represents financial losses, the dissatisfaction of passengers, time losses, loss of reputation and bad business relations.

❑ Business Requirements

Business requirements, also known as stakeholder requirements specification from the viewpoint of the system's end user like a CONOPS.

❑ Literature Survey

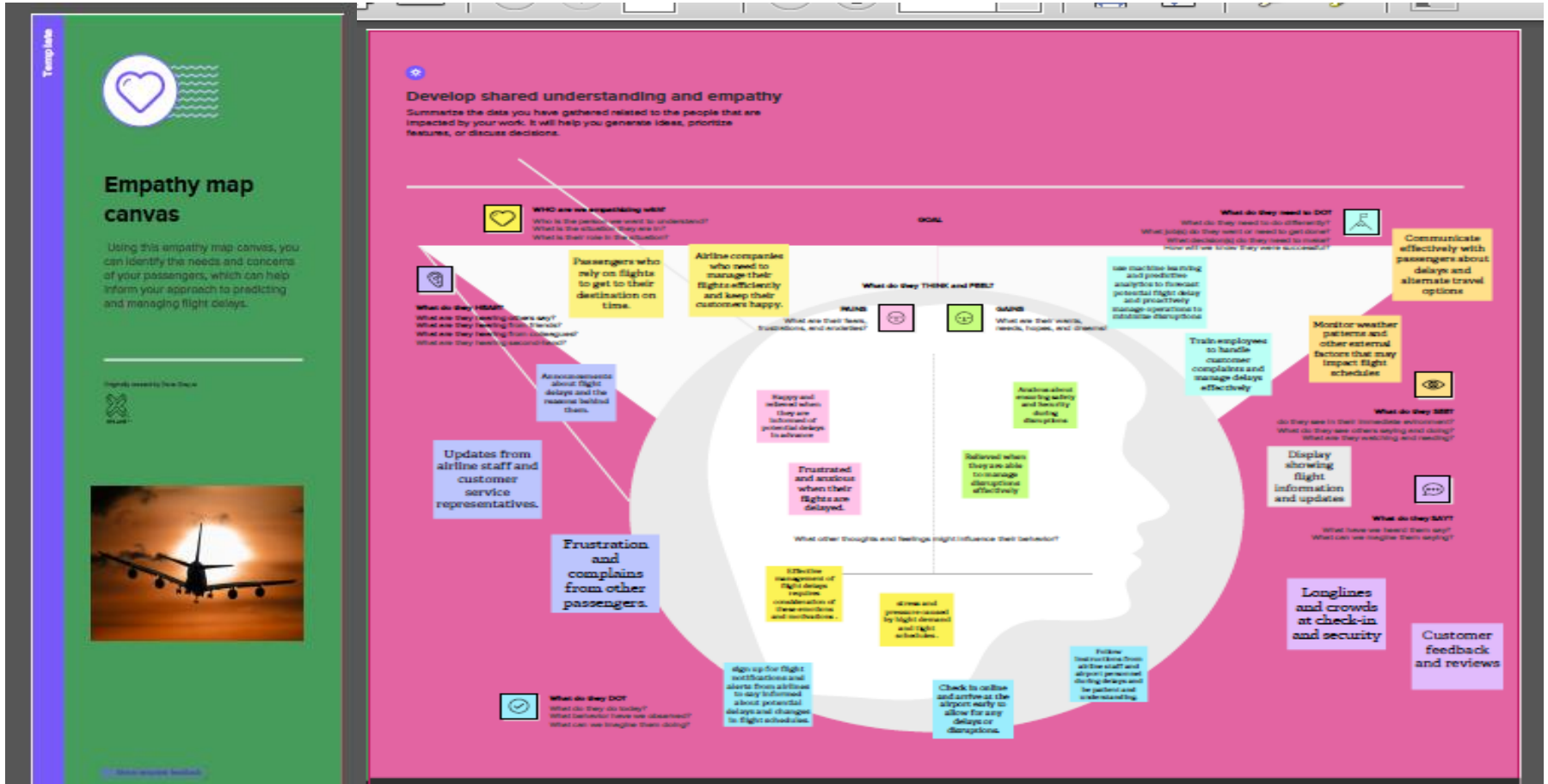
It is a systematic method for identifying, evaluating and interpreting thee work produced by researchers, scholars and practitioners.

❑ Social Or Business Impact

Flight delay not only irritate air passengers and disrupt their schedules but also cause a decrease in efficiency, an increase capital costs, reallocation of flight crews aircraft.

EMPATHY MAP

- An empathy map is a template that organizes a user's behaviors and feelings to create a sense of empathy between the user and your team. The empathy map represents a principal user and helps teams better understand their motivations, concerns, and user experience



RESULT


127.0.0.1:5000
Prediction of Flight Delay
Enter the Flight Number :
Month :
Day of Month :
Day of Week :
origin MSP
destination MSP
Scheduled Departure Time :
Scheduled Arrival Time :
Actual Departure Time :
SUBMIT


127.0.0.1:5000
Prediction of Flight Delay
Enter the Flight Number : 1399
Month : 2
Day of Month : 4
Day of Week : 5
origin JFK
destination SEA
Scheduled Departure Time : 1
Scheduled Arrival Time : 22
Actual Departure Time : 1
SUBMIT


localhost:5000/prediction
Prediction of Flight Delay
Enter the Flight Number :
Month :
Day of Month :
Day of Week :
origin MSP
destination MSP
Scheduled Departure Time :
Scheduled Arrival Time :
Actual Departure Time :
SUBMIT
The Flight will be on time

ADVANTAGES

1.Going Through Security
2.Cramped Economy Flights
3.Improve customer satisfication
4.feed and comfort
5.Efficiency
6.Operational efficiency
7.Connvenience and save your time

APPLICATION

- **Collect data on flight delays:** There are several sources of data on flight delays, including public datasets, APIs, and scraping flight information from airline website.

- **Explore the data:** Once the data is cleaned and preprocesesed , you can start to explore it to identify patterns and trends. You may want to use descriptive statistics or visualization to better understand the data.

- **Develop a model:** Depending on the goals of your project, you may want to develop a predictive model to forecast flight delays.

- **Evaluate the model:** Once you've developed a model, You'll want to evaluate its performance. You may want to use metrics such as accuracy, precision, or recall to assess how well the model is predicting flight delays.

- **Deploy the application:** Finally, you'll want to deploy your application so that users can interact with it. you may want to build a web application, a mobile app, or integrate it with an existing platform.

CONCLUSION

In conclusion, the flight delay prediction project aims to build a machine learning model that can accurately predict the likelihood of flight delays based on historical flight data.

The project involves various steps such as data preprocessing, feature engineering, model selection, and evaluation

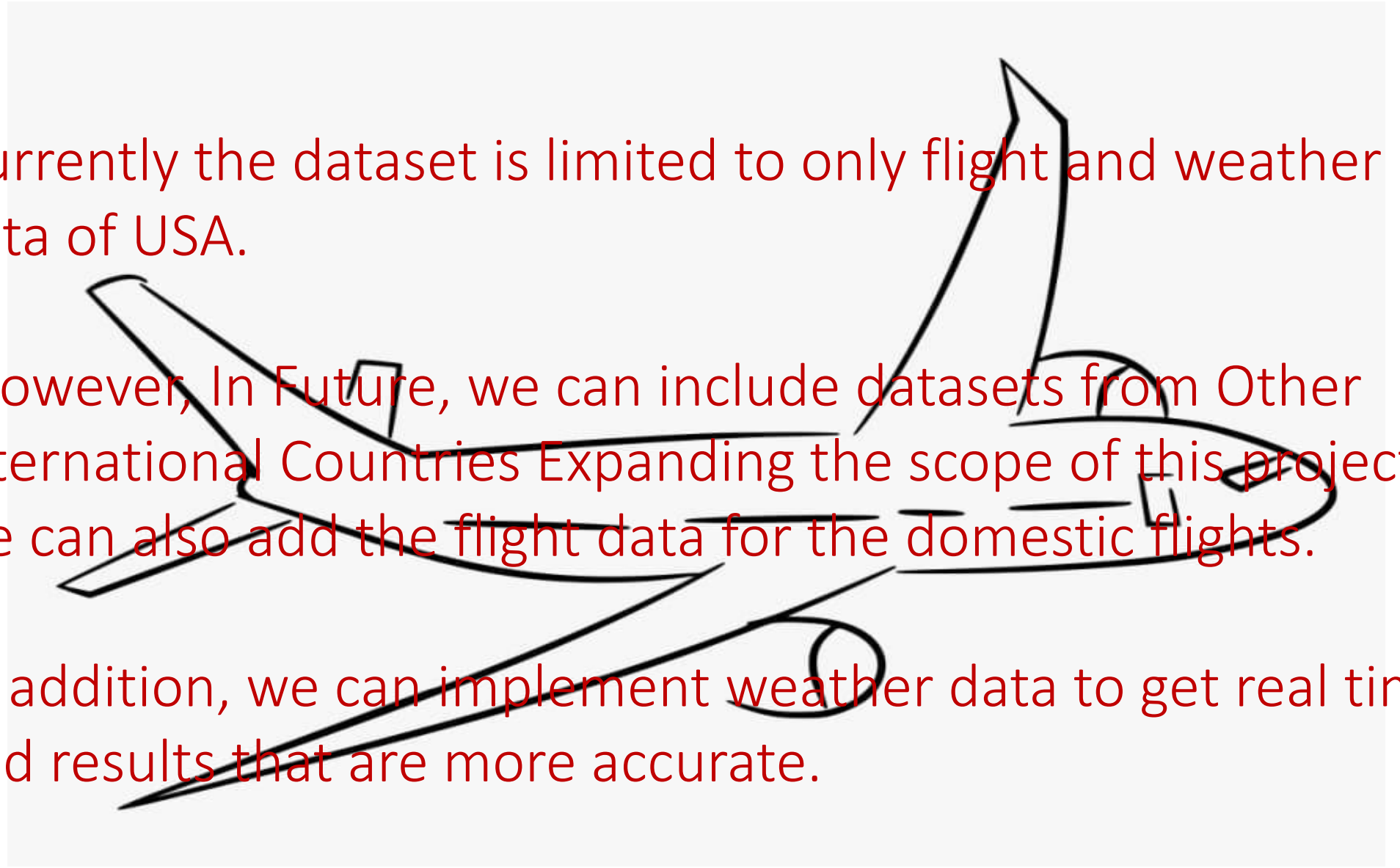
Predicting the likelihood of flight delays, the model can be used by airlines and airports to better plan and manage their operations.

This can help airlines adjust their schedules in advance, minimize the impact of delays, and improve the travel experience for passengers.

The performance of the model has been evaluated using various metrics, and the best performing model can be deployed for real-time prediction of flight delays.

Overall the project has the potential to make a significant impact on the aviation industry , improving airline operations, reducing passenger frustration, and enhancing the overall travel experience.

FUTURE SCOPE



- Currently the dataset is limited to only flight and weather data of USA.
- However, In Future, we can include datasets from Other International Countries Expanding the scope of this project we can also add the flight data for the domestic flights.
- In addition, we can implement weather data to get real time and results that are more accurate.

Thank You