PROJECT REPORT

K.L.N COLLEGE OF ENGINEERING, POTTAPALAYAM

(An Autonomous Institution, Affiliated with Anna University, Chennai)

Airlines Data Analytics for Aviation Industry

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BONAFIDE CERTIFICATE

Certified that this project report **"…….TITLE OF THE PROJECT……..."**

is the bonafide work of "**NAME OF THE CANDIDATE(reg number),**

NAME OF THE CANDIDATE (reg. number), NAME OF THE

CANDIDATE (reg. number)", who carried out the project work under our supervision.

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ABSTRACT

The airport codes may refer to either the IATA airport code, a three-letter code that is used in passenger reservation, ticketing, and baggage-handling systems, or the ICAO airport code which is a four-letter code used by ATC systems and for airports that do not have an IATA airport code. To provide better Airline and AirPort services and to avoid delays in Air Travel across different locations at the Municipality level. The aim is to provide airports, airlines, and the traveling public with a neutral, third-party view of which airlines are delivering on their promise to get passengers from Point A to Point B on time. For that purpose, we use the method of data analytics and the internet of things to store the data which is used needed. Data sets of various countries, the number of flights based on the continent, weather, region, Air station, and Number of airports that are suitable for the running of the flights are being collected in the form of the data sets and penned down in charts. In the IBM Cognos cloud area, the collected information is stored for further processing. On following the collection of the data set the processed information is dropped into the spreadsheets.

Using the given dataset, we plan to create various graphs and charts to highlight the insights and visualizations. In doing this perfect information about the flights is obtained and many overhead delays in the arrival and departure of the planes can be avoided.

LIST OF FIGURES

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1. INTRODUCTION

1.1 Project

An Airport has a huge amount of data related to the number of flights, data and time of arrival and dispatch, flight routes, No. of airports operating in each country, and a listof active airlines in each country. A data analyst can be used to predict future glitches, prevent them from happening, and make maintenance procedures more accurate and thorough. The airport codes may refer to either the IATA airport code, a three-letter code that is used in passenger reservation, ticketing, and baggage handling systems, or the ICAO airport code which is a four-letter code used by ATC systems and for airports that do not have an IATA airport code. In this project based on the customer reviews and flight arrival timing and cost the best flight is determined

1.2 Project Overview

The main aim is to provide better Airline and AirPort services and to avoid delays in Air Travel across different locations at the Municipality level.

It can be used to predict future glitches, prevent them from happening, and make maintenance procedures more accurate and thorough.

Using the flight delay data, we identified which flight is mostly prone to delays. They arrived at conclusions that are useful for selecting flights in the future.

1.3 PURPOSE

To provide better Airline and AirPort services and to avoid delays in Air Travel across different locations at the Municipality level. Based on the third-party review that is customer, the best flight which coversthe destination in a short time will be decided.

2. LITERATURE SURVEY

2.1Existing Problem

Flight delays are a significant problem for society as they evenly impair airlines, transport companies, facility managers, and passengers. Studying prior flight data is an essential activity for every player involved in the air transportation system. Besides, developing accurate prediction models for flight delays is a crucial component of the decision-making process. Prescribing actions to solve ongoing delays is an even more challenging task due to the air transportation system's complexity. In this regard, this paper presents a thorough literature review of data science techniques used for investigating flight delays. This work proposes a taxonomy and compiles the initiatives used to address flight delay studies.

2.2 References

[1]. Leonardo Carvalho, Alice Stenberg, Leandro maia goncalves, Ana Beatriz cruz, Jorge A,soares, On the relevance of data science for flight delay research, 2018.

[2]. Shi Qiang Liu, Andrea D'Ariano, Erhan Kozan, Mahmoud Masoud CARRS-Q, SaiHo Chung, Aviation management , 2019.

[3]. P. H. K Tissera, A.N.M.R.S.P. llwana, K.T. Waduge, M.A.l. Perera, D.P. Nawinna, D. Kasthurirathna, Predictive Analytics Platform for Airline Industry, 2020.

2.3 Problem Statement And Definition

The airport codes may refer to either the IATA airport code, a three-letter code that is used in passenger reservation, ticketing, and baggage handling systems, orthe ICAO airport code which is a four-letter code used by ATC systems and for airports that do not have an IATA airport code. To provide better Airline and AirPort services and to avoid delays in Air Travel across different locations at the Municipality level. The aim is to provide airports, airlines, and the traveling public with a neutral, third-party view of which airlines are delivering on their promise to get passengers from Point A to Point B on time.

3. IDEATION & PROPOSED SOLUTION

Average aircraft delay is regularly referred to as an indication of airport capacity. Flight delay is a prevailing problem in this world. It's very tough to explain the reason for the delay. Nowadays, the aviation industry plays a crucial role in the world's transportation sector, and a lot of businesses rely on various airlines to connect them with other parts of the world. The ultimate benefits of big data analytics include timely responses to current and future market demands, improved planning and strategically aligned decision-making, as well as crystal clear comprehension and monitoring of all main performance drivers relevant to the airline industry. Data mining produces insights into the decisions for adding or subtracting the flights to the routes where more or lesser passenger movement is found. The purpose of this project is to look at the approaches usedto build models for predicting flight delays that occur due to bad weather conditions.

3.1 Empathy Map Canvas

An empathy map is a collaborative tool team can use to gain a deeper insight into their customers. Much like a user persona, an empathy map can represent agroup of users, such as a customer segment.

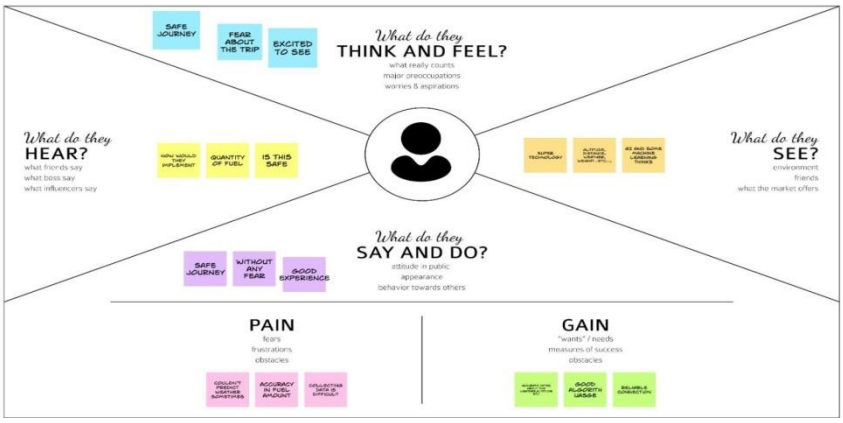


Fig 3.1(1) Empathy Map Canvas-Airline Data Analytics For Aviation Industry

The empathy map was originally created by Dave Gray and has gained much popularity within the agile community.

3.2 Ideation & Brain Storming

A mind map is a diagram used to visually organize information into a hierarchy, showing relationships among pieces of the whole.

Fig 3.2(2) Brain storm and ideation

It is often created around a single concept, drawn as an image in the center of a blank page, to which associated representations of ideas such as images, words, and parts of words are added. Major ideas are connected directly to the central concept, and other ideas branch out from those major ideas.

3.3 Proposed Solution

Table 3.3(1) Proposed Solutions

S.no	Parameter	Description
1.	Problem Statement(problem to be solved)	The airport codes may refer to either the IATA airport code, a three-letter code that is used in passenger reservation, ticketing, and baggage handling systems, or the ICAO airport code which is a four-letter code used by ATC systems and for airports that do not have an IATA airport code.
2.	Idea/Solution Description	Machine learning and analytics have touched almost all fields around the globe including the aviation industry. The purpose of data analytics in aviation is to examine the vast amount of data generated daily and provide useful information to airlines, airports, and other aviation stakeholders so that they can improve their operational planning and execution, as well as any related products and services. Airlines use AI systems with built-in machine learning algorithms to collect and analyze flight data regarding each route distance and altitude, aircraft type and weight, weather, etc. Based on findings from data, systems estimate the optimal amount of fuel needed for a flight

3.	Novelty/Uniqueness	1. Cost Reduction Airlines are very concerned about baggage handling metrics like lost-bag tally, and SLAs. They rely on real-time baggage tracking data to avoid losing damaging or delaying bags and face compliance issues. 2. Fuel Management- Airlines track real-time fuel consumption data on Dashboards from take-off to landing. This monitoring is crucial to be ultra-efficient in reducing fuel costs and airline emissions. 3.Revenue Maximization- Airlines segment customers, target with personalized offers, and analytics techniques such as modelling and forecasting.
4.	Social Impact/Customer Satisfaction	Trajectory Optimization • Predictive Maintenance • Delay Estimation • Targeted Advertising • Crew Performance Assessment • Sentiment Analysis • Prediction of Customer Behaviour.
5.	Business Model(Revenue Model)	The 4 Most Important Business Models for Airlines 1. Full-Service Carriers. Full-service carriers are airlines that operate with a business model that includes offering a range of pre-flight and onboard services at the price of the ticket. 2. Low-Cost Carriers 3. Charter Airlines. 4. Cargo Airlines.
6.	Scalability of the solution	Data analytics has revolved around every industry, including aviation. Technology

		has changed how business is conducted and helps to make better decisions. As a result, data analytics plays a vital role in the aviation industry. It assists in collecting data and planning a powerful strategy that helps to grow the business overall. According to a report, after adopting

3.4 Proposed Solution Fit

Problem-solution fit is a term used to describe the point validating that the base problem resulting in a business idea really exists and the proposed solution actually solves that problem. Validate that the problem exists: When you validate your problem hypothesis using real-world data and feedback

Fig 3.4(1) Problem Solution Fit

4. REQUIREMENT ANALYSIS

4.1 Functional requirement

Functional requirements may involve calculations, technical details, data manipulation and processing, and other specific functionality that define what a system is supposed to accomplish.

Table 4.1(1) Functional Requirement

FR No	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration throughGmail.
FR-2	User Confirmation	Confirmation via Email
FR-3	Search for flights	The registered user cansearch for one-way, round-trip, and multiple-destination flights by choosing specific datesand destinations.
FR-4	Specify passenger	Customers select the number of passengers and their category eitheradults, infants, or children.
FR-5	Sorting flight	Customers will sort the flight either by price or duration of the flight and will register.
FR-6	Better airline service	Provide better airline service by analyzing time consumption, and comfort of the passenger.

4.2 NON-FUNCTIONAL REQUIREMENTS

FR No	Non-Functional Requirement	Description
NFR-1	Usability	It defines how difficult it will be for a user to learn and operate the system and it can be assessed from different points of view.
NFR-2	Security	Software is protected from unauthorized access to the system and its stored data. There will be more security to the passenger.
NFR-3	Reliability	To ensure that the aircraft maintenance program tasks are effective and their periodicity is adequate.
NFR-4	Performance	Revenue is often looked at on a passenger revenue per available seat mile basis.
NFR-5	Availability	Where all required maintenance is accomplished and the aircraft is airworthy, as defined by the regulations, and is considered available for flight.
NFR-6	Scalability	The capability of a system, network, or process to handle a growing amount of work.

5. PROJECT DESIGN

5.1. Data Flow Diagram

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

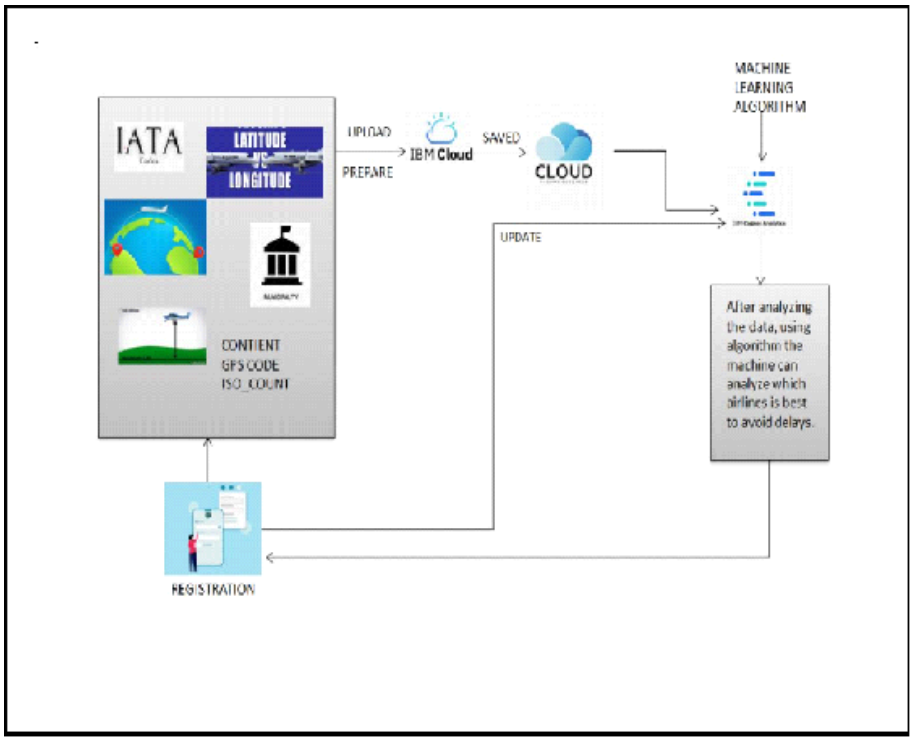


Fig 5.1(1) Data Flow Diagram

5.2 Solution & Technical Architecture

Technical Architecture (TA) is a form of IT architecture that is used to design computer systems. It involves the development of a technical blueprint concerning the arrangement, interaction, and interdependence of all elements

sothat system-relevant requirements are met.

The Deliverable shall include the architectural diagram below and the information as per Table1 & Table2.

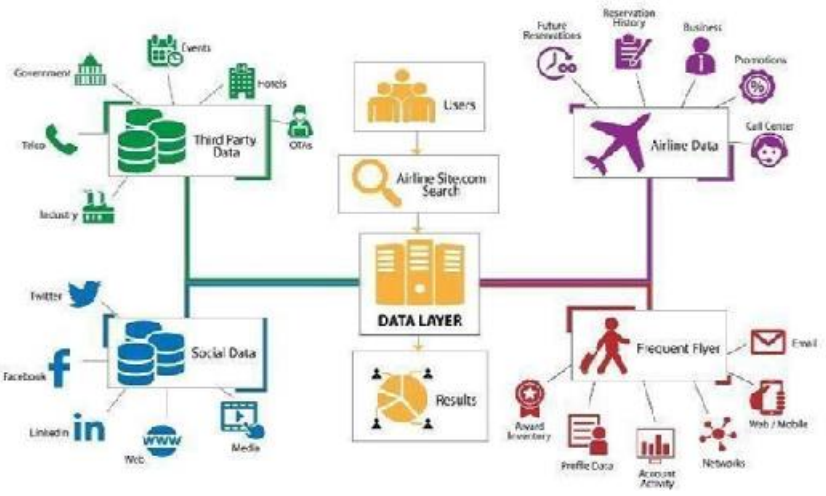


Fig 5.2(1)Technical Architecture

5.3 User Stories

Table-5.3(1) Components & Technologies

S.No	Components	Description	Technology
1.	User Interface	How a user interacts with the application. Example: Mobile App	HTML, CSS, Java Script, Excel
2.	Application Logic-1	The logic for a process in the application	IBM Watson STT service, Python
3.	Application Logic-2	The logic for a process in the application	IBM Watson Assistant
4.	Database	Data Type, Configurations	MySQL, NSQL
5.	Cloud Database	Database service on the cloud	IBM DB2, IBM Cloudant
6.	File Storage	File Storage requirements	IBM Blocks Storage or other

			storage service or Local File system
7.	External API-1	Purpose of External API used in the application	IBM Weather API
8.	External API-1	Purpose of External API used in the application	Aadhar API
9.	Infrastructure (Server/Cloud)	Application Deployment on Local System/Cloud Local Server Configuration: Cloud Server Configuration	Local, Cloud Foundry

Table-5.3(2): Application Characteristics

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used.	The technology of opensource framework.
2.	Security Implementations	List all the security/access controls implemented, and the use of firewalls.	Example: SHA256, Encryption, IAM Controls, OWASP.
3.	Scalable Architecture	Justify the scalability of the architecture.	Cognos Used.
4.	Availability	Justify the availability of the application (e.g: use of load balancers, distributed servers).	AWS Used.

5.	Availability	Design consideration for the performance of the application (number of requests per second, use of Cache, use of CDNs).	Dashboard, Repor ts, Stories.

Table 5.3(3) -Stories

User Type	**Functional Requirement (Epic)**	**User Story Number**	**User Story / Task**	**Acceptance criteria**	**Priority**	**Release**
Customer (Web user)	Registrat ion	USN-1	As a user, I can register for the application by entering my email, and password, and confirming my password.	I can access my account /dashboard	High	Sprint-1
		USN-2	As a user, I will receive a confirmation email once I have registered for the application	I can receive confirmation mail & click confirm	High	Sprint-1
		USN-3	As a user, I can register as the applicant through mail		Medium	Sprint-1

	Login	USN-4	As a user, I can log into the application by entering my email & password.	I can get to access my web portal	High	Sprint-1
	Dashboard rd	USN-5	As a user, I can get to know what my dashboard consists of.	I can the details of my registration.	Low	Sprint-2
Customer Care Executive	Organization	USN-6	The organization which owns this airplane analysis system will enable the option to customers to reach out to the organization if they have any problem with the organization's system of customer interaction or , airplane issues- delay, landing in a different location	The customer care workers will help out the customers in trouble.	High	Sprint-1
Administrator	Administration	USN - 7	The organization takes –charge of thereminist rating policies of different departments like registration , flight booking, delay visualization, generation of delay report	As an administrator, confirmation of user while Registration is done.	High	Sprint-1

6. PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation

Table 6.1(1) Product Backlog, Sprint Schedule, and Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story /Task	Story Points	Priority	Team Members
Sprint-1	Retrieve the Data	USN-1	Retrieving the data from the passengers who are traveling in flight and the data of flight	2	High	Thirisa Priyadhrashini
Sprint-1	Visualize the data	USN-2	After retrieving the data, we have to visualize the data for a better understanding	1	High	Sarumathy Priya
Sprint-2	Track the flight timing and airline names	USN-3	Tracking the delays which are made by the flights and in other situations	2	High	Thirisa Saru
Sprint-2	Create interactive graph	USN-4	In each scenario, we have to create a graph for better visualization	2	High	Priyadharshini Priya
Sprint-3	Create dashboard	USN-5	Creating an interactive dashboard with the given dataset and information	1	High	Saru Priya
Sprint-3	Creation of story	USN-6	Creating the story for each respective phase		High	Thirisa Priyadharshini
Sprint-4	Predict the delays	USN-7	Finally, this project delivers the airlines which made most of the delays in airport and flight	1	High	Thirisa _Priyadharshini

Table 6.1(2)- Project Tracker, Velocity & Burndown Chart

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022

6.2 Sprint Delivery Schedule

6.2.1 Mile stone &Tasks

Milestone	Task	Duration
Milestone-1	Collection of Data	October-24/10/22
Milestone-2	Uploading the required data on the platform	October-27/10/22
Milestone-3	Visualizing of data	October-30/10/22
Milestone-4	Creating a dashboard	November-2/11/22
Milestone-5	Display the data in the dashboard	November-5/11/22
Milestone-6	Prepare a standardized data set and use the data required with the help of a python program	November-8/11/22
Milestone-7	Usage of various algorithms to obtain the desired result	November-11/11/22

Milestone-8	Display them in the required format	November-15/11/22
Milestone-9	Deployed in the GitHub	November-19/11/22

6.3 REPORTS FROM JIRA

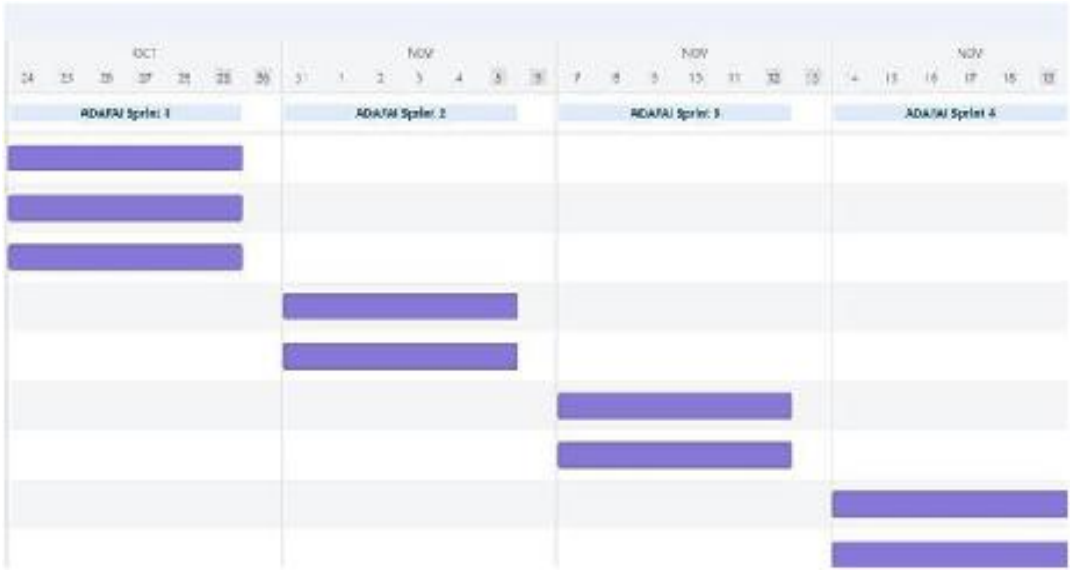


Fig 6.3.1(1) Report

7. CODING & SOLUTIONING

7.1 Feature 1

HTML &CSS CODE

These are written to establish a web page that is saved for the user experience**.**

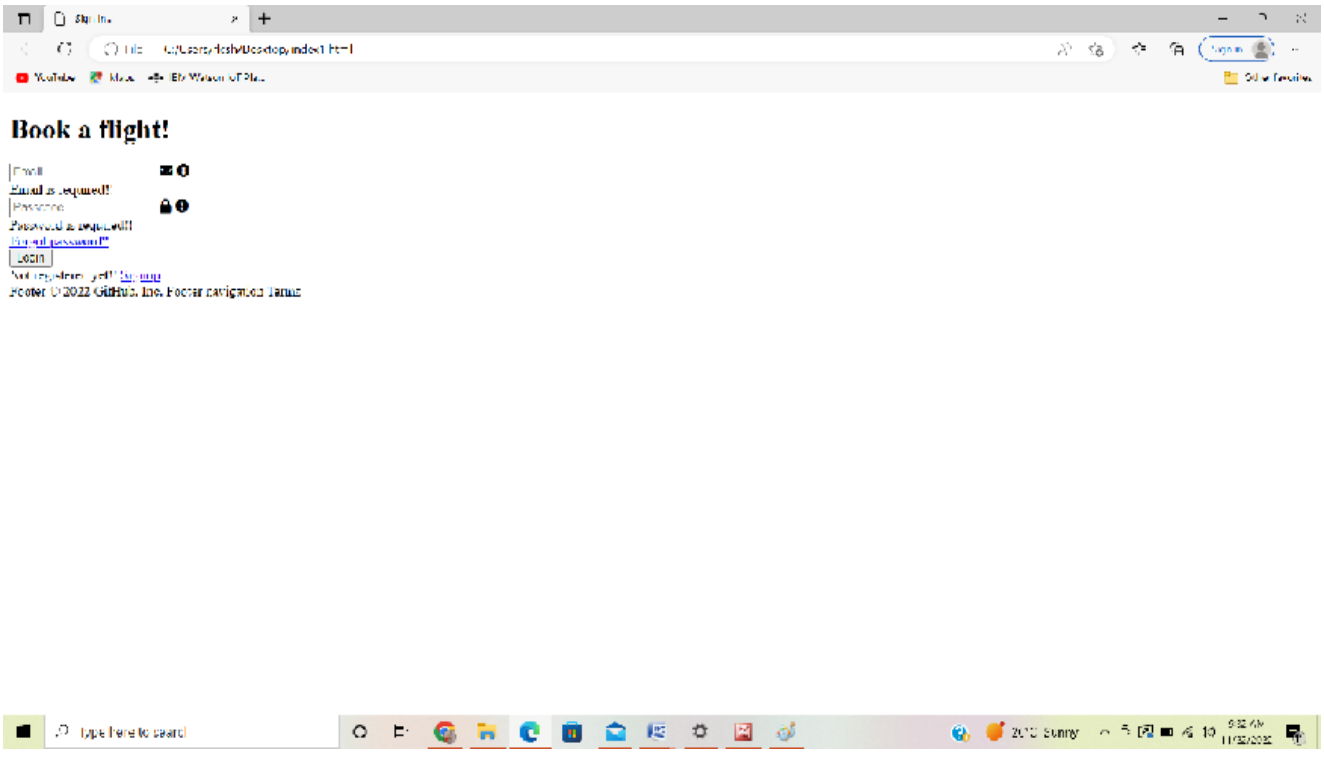
7.1(a) INDEX

```
<!DOCTYPE
html>
                <html lang="en">
                <head>
                   <meta charset="UTF-8">
                   <meta name="viewport" content="width=device-width, initial-
                scale=1.0">
                   <title>Login Form</title>
                   <link rel="stylesheet" href="style.css">
                   <link rel="stylesheet"
                href="C:\Users\PC\OneDrive\Desktop\style.css" />
                </head>
                <body>
                   <div class="wrapper">
                      <header>Login Form</header>
                      <form action="https://capnpeace.github.io/airlines-
```

```
dashboard/">
            <div class="field email">
                <div class="input-area">
                    <input type="text" placeholder="Email Address">
                    <i class="icon fas fa-envelope"></i>
                    <i class="error error-icon fas fa-exclamation-
circle"></i>
                </div>
                <div class="error error-txt">Email can't be blank</div>
            </div>
            <div class="field password">
                <div class="input-area">
                    <input type="password" placeholder="Password">
                    <i class="icon fas fa-lock"></i>
                    <i class="error error-icon fas fa-exclamation-
circle"></i>
                </div>
                <div class="error error-txt">Password can't be
blank</div>
            </div>
            <div class="pass-txt"><a href="#">Forgot
password?</a></div>
```

```
                <input type="submit" value="Login">
            </form>
            <div class="sign-txt">Not yet member? <a href="#">Signup
now</a></div>
    </div>
    <script src="script.js"></script>
</body>
</html>
```

OUTPUT:



7.1(b) RESULT

```
<!DOCTY
PE html>
        <html lang="en">
        <head>
            <meta charset="UTF-8">
            <link rel="stylesheet"
        href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/css/bootstra
        p.min.css" integrity="sha384-
        ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQUOhcWr7x
        9JvoRxT2MZw1T" crossorigin="anonymous">
            <title>Delay-Prediction</title>
        </head>
        <style>
        body{
         background-image: url('airline delay prediction.gif') ;
         background-repeat: no-repeat;
          background-attachment: fixed;
          background-size: cover;
          }
```

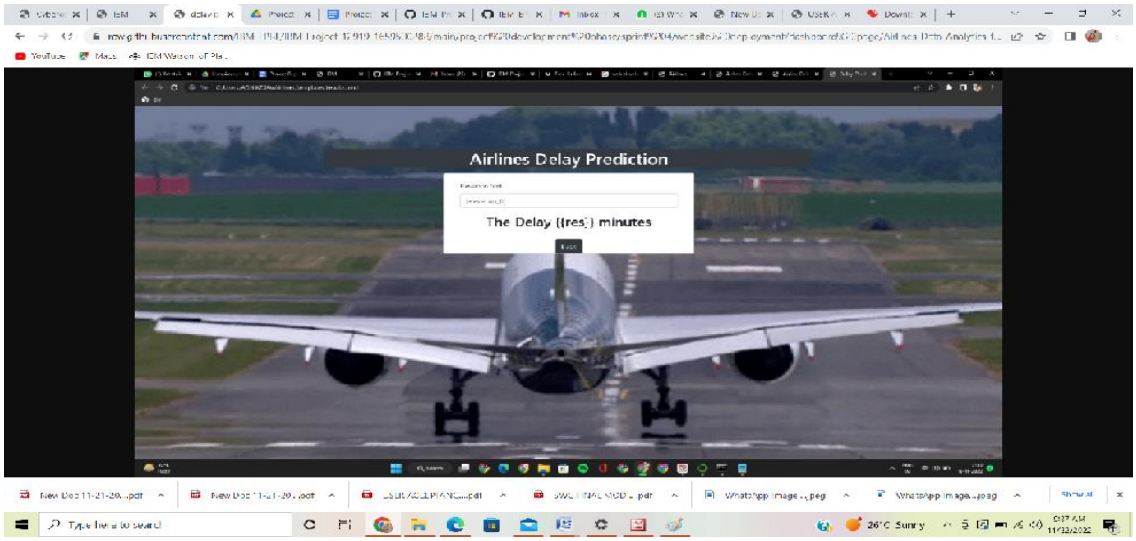
```
  </style>
<body >
<br><br><br><br>
    <div class="container" >
    <h1 class="text-center m-3 badge-dark text-wrap">Airlines Delay
Prediction</h1>
        <div class="card container" style="width: 50%;">
            <div class="card-body" >
                <form action="/" method="post">
                    <div class="form-group">
                      <label for="formGroupExampleInput1">Elevation
feet</label>
                      <input
                        type="text"
                        class="form-control"
                        id="formGroupExampleInput1"
                        name="elevation_ft"
                        placeholder="{{elevation_ft}}"
                        required
                      />
                    </div>
```

```
                    <h2 class="text-center  text-wrap" >The Delay  rate is
{{res}} minutes </h2>


                    </form>
                </div>


                    <center><a href="/"><button type="submit" class="btn
btn-dark">Back</button></a></center>
                </div>
    </div>
</body>
</html>
```

OUTPUT:



7.2 FEATURE 2

7.2(a) PYTHON CODE

This is written for the purpose of data analytics

In [1]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

In [6]:
```
# reading the database
data = pd.read_csv("airports.csv")
```

In [8]:
```
data.drop(["id"], axis=1, inplace=True)
data.head()
```

Out[8]:

	ident	type	name	latitude_deg	longitude_deg	elevation_ft	continent	iso_country	iso_region	municipality	scheduled_service	gps_code	iata_code	local_code	hor
0	00A	heliport	Total Rf Heliport	40.070801	-74.933601	11.0	NaN	US	US-PA	Bensalem	no	00A	NaN	00A	
1	00AA	small_airport	Aero B Ranch Airport	38.704022	-101.473911	3435.0	NaN	US	US-KS	Leoti	no	00AA	NaN	00AA	
2	00AK	small_airport	Lowell Field	59.947733	-151.692524	450.0	NaN	US	US-AK	Anchor Point	no	00AK	NaN	00AK	
3	00AL	small_airport	Epps Airpark	34.864799	-86.770302	820.0	NaN	US	US-AL	Harvest	no	00AL	NaN	00AL	
4	00AR	closed	Newport Hospital & Clinic Heliport	35.608700	-91.254898	237.0	NaN	US	US-AR	Newport	no	NaN	NaN	NaN	

In [9]:
```
data.describe()
```

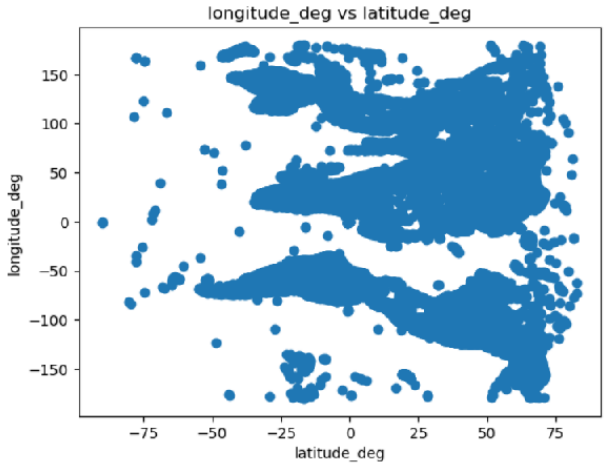
Out[9]:

	latitude_deg	longitude_deg	elevation_ft
count	67312.000000	67312.000000	54335.000000
mean	25.945866	-31.136863	1268.620006
std	26.380436	84.227690	1624.730666
min	-90.000000	-179.876999	-1266.000000
25%	11.195161	-93.801077	208.000000
50%	35.437555	-70.799722	725.000000
75%	43.035376	18.963488	1558.000000
max	82.750000	179.975700	22000.000000

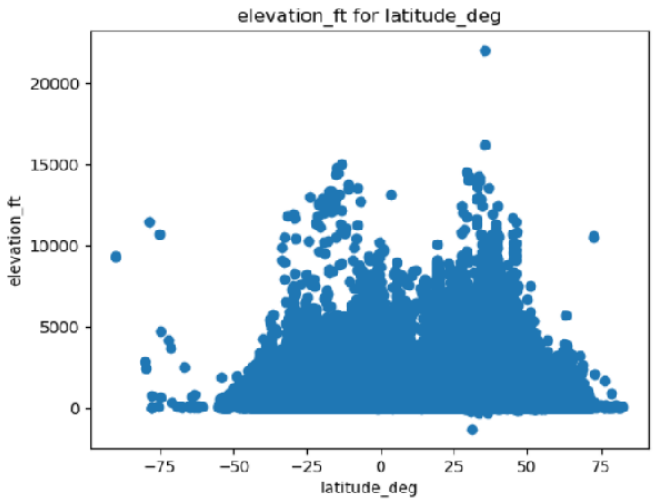
In [12]:
```
data.info()
```

```
RangeIndex: 67312 entries, 0 to 67311
Data columns (total 17 columns):
 #   Column              Non-Null Count  Dtype
---  ------              --------------  -----
 0   ident               67311 non-null  object
 1   type                67312 non-null  object
 2   name                67312 non-null  object
 3   latitude_deg        67312 non-null  float64
 4   longitude_deg       67312 non-null  float64
 5   elevation_ft        54335 non-null  float64
```

In [14]:
```
plt.scatter(data['latitude_deg'],data['longitude_deg'])
plt.title('longitude_deg vs latitude_deg')
plt.xlabel('latitude_deg')
plt.ylabel('longitude_deg')
plt.show()
```



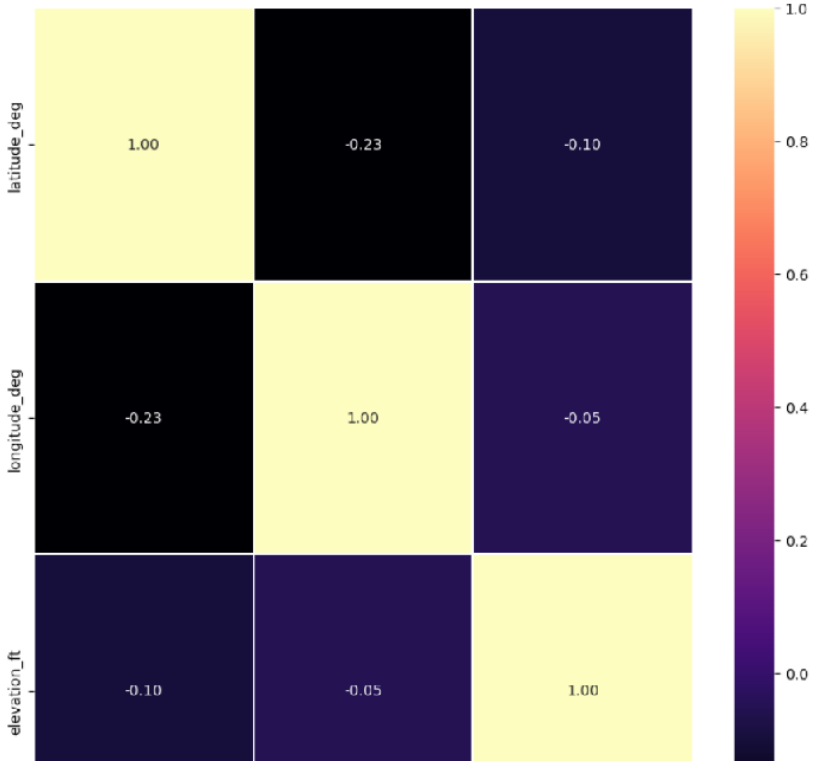
In [15]:
```
plt.scatter(data['latitude_deg'],data['elevation_ft'])
plt.title('elevation_ft for latitude_deg')
plt.xlabel('latitude_deg')
plt.ylabel('elevation_ft')
plt.show()
```



]:
```
data[data.elevation_ft >= 2000].plot(kind='scatter', x='longitude_deg', y='elevation_ft',color="BLUE")
plt.xlabel("longitude_deg")
plt.ylabel("elevation_ft")
plt.title("elevation_ft>=2000")
plt.grid(True)
plt.show()
```

In [20]:

```
plt.figure(figsize=(10, 10))
sns.heatmap(data.corr(), annot=True, linewidths=0.05, fmt= '.2f',cmap="magma")
plt.show()
```



8. TESTING

8.1 Test Cases

Project Development Phase

Model Performance Test

Date	10 November 2022
Team ID	PNT2022TMID11538
Project Name	Project - Airlines DataAnalytics for Aviation Industry
Maximum Marks	10 Marks

The project team shall fill in the following information in the model performance testing template.

S.No	Parameter	Screenshot
1	Dashboard design	

2	**Data entry**	
3	**Data responsiveness**	**The delay rate is 353.0 minutes**

8.2 User Acceptance Testing

Acceptance Testing
UAT Execution & Report Submission

Date	03 November 2022
Team ID	PNT2022TMID21992
Project Name	Airlines Data Analytics for Aviation Industry
Maximum Marks	4 Marks

1. Purpose of Document

The purpose of this document is to briefly explain the test coverage and open issues of the Airlines Data Analytics for Aviation Industry project at the time of the release to User Acceptance Testing (UAT).

2. Defect Analysis

This report shows the number of resolved or closed bugs at each severity level, and how they were resolved

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
Dataset	3	3	3	3	12
Duplicate	0	0	0	0	0
External	1	1	1	1	4
Fixed	4	4	5	5	18
Not Reproduced	0	0	0	0	0
Skipped	0	0	0	0	0
Won't Fix	0	0	0	0	0

3. Test Case Analysis

This report shows the number of test cases that have passed, failed, and untested

Section	Total Cases	Not Tested	Fail	Pass
Loading dataset(kaggle)	1	0	0	1
Integration of dataset(Db2)	1	0	0	1
Dashboard	18	0	0	18
Exploration	18	0	0	18
Story	9	0	0	9
Report creation	9	0	0	9
Final report	18	0	0	18

9. RESULTS

9.1 Performance Metrics

There are various metrics to calculate the efficiency of the data models themselves. The performance of a data model developed by data scientists is a direct way to measure their efficiency. Methods include confusion matrix, F1 score, Precision-Recall Curve, and Receiver Operating Characteristics, among others. The idea is to seeif the performance is better than the baseline models. It is important to consider that a model takes time to improve and that models are not foolproof.

In this project with the help of data analytics the flight which covers the destination in a short time when compared to the other flight is calculated easilywith more accuracy. The accuracy rate is higher by using data analytics.

10. ADVANTAGES &DISADVANTAGES

10.1 ADVANTAGES:

- The advantages include being able to fly to almost any destination in the world and having a variety of different aircraft for different purposes and cutting down on travel time.
- High Speed - It makes this model an optimum choice if the client has anurgent need to ship a product. It is the quickest transport mode and is therefore ideal for long-distance transport of goods.
- There is less need for heavy packaging - Air exports, in general, entail less hard packaging than ocean shipments. This ensures you save both time andmoney by not having to provide extra packaging services.
- Fast Service - Air transportation offers convenient, reliable, and fast servicesof transport. It is considered the cheapest way to ship peregrinated goods. It offers a standard, convenient, reliable, and fast service.

10.2 Disadvantages

- Risky - Air travel is the riskiest mode of transport since there can be

considerable losses to goods, customers, and crews as a result of a minor crash. Compared to other means of travel, the risks of collisions are higher.

- Cost - Air travel is considered to be the most expensive means of transportation. The cost of maintaining aircraft is higher and the building cost f aerodromes and avions are much higher. That's why air travel is so expensive that it gets beyond ordinary people's grasp.

- Capacity for Small Carriage - The aircraft have no room and therefore are not ideal for carriage of voluminous and cheaper materials. As is seen forrails, the load volume cannot be raised.

- Accident-prone - Compared to other modes air travel is always at high riskof accidents. There are more accidents on count while traveling by air transport. The reason can be bad weather, signal issues, or machine parts failure which causes loss of people, crew, or goods.

11. CONCLUSION

Customer experience is always at the top of the priority list for airlines. Customers that are dissatisfied or disengaged inevitably result in fewer passengers and less money. Clients must have a positive experience every time they travel. Looking at the bright prospects of the aviation industry, it makes sense to invest in airline stocks as they are likely to benefit from the government's push to make the aviation industry a bulwark of the transportation industry in India. From this project, we conclude that The usage of big data analytics is booming today, with its ability to be used to draw useful insights from past data research. Its uses in the aviation industry have a wide array of applications ranging from predicting flight delays to detecting faults in airplane parts. In this paper, we conducted exploratory data analysis on the flight dataset to draw inferences on arrival and departure delays and to identify relationships between flight timings and delays. Using the flight delay data, we identified which flight is mostly prone to delays. They arrived upon conclusions that are useful for selecting flights in the future. from the review of the customer and the flight which covers the destination incorrect time and in the shortest time that airline flight will be selectedas the best airline service.

12. FUTURE SCOPE

With the growth of data, the use of analytics in the airline industry is the next big wave. The ultimate benefits of big data analytics include timely responses to current and future market demands, improved planning and strategically aligned decision-making, as well as crystal clear comprehension and monitoring of all main performance drivers relevant to the airline industry.

In the future, this project has been developed with some extra features. The customer can give a query for any dissatisfaction that query will be solved review of the customer will be collected. Then if a customer wants to change the destination midway they can give one alert message to the service and that nearby destination will be given to the customer.

13. APPENDIX

13.1 GitHub Link

https://github.com/IBM-EPBL/IBM-Project-12919-1659500288.git

13.2 Project Demo Link

https://youtu.be/kkeliNeC6vc