**DELIVERABLE 2: READ.me *(Draft 2)***

**Group 4: Final Project**

Group Meeting: Sunday, May 7, 2023

**January 2020 Flight Predictions:**

**Flight Delays, Best and Worst Airports and Airlines**

1. **SEGMENT 2 DELIVERABLES: COMPLETED**
2. **Detailed README.md**

*\*A detailed README.md file that includes the projects status, images, descriptions, and results*

1. **Machine Learning Model – First Attempt**

*\*First attempt of a machine learning model, including a confusion matrix and accuracy score*

Classification Model testing

* Logistic Regression Model:
* Training Accuracy: 93.21%
* Testing Accuracy: 93.14%
* Precision (weighted average): 93%
* Recall (weighted average): 93%
* F1-Score (weighted average): 93%
* Random Forest Classifier:
* Training Accuracy: 90.78%
* Testing Accuracy: 89.69%
* Precision (weighted average): 90%
* Recall (weighted average): 90%
* F1-Score (weighted average): 87%
* Gradient Boosting Classifier:
* Training Accuracy: 93.21%
* Testing Accuracy: 93.21%
* Precision (weighted average): 93%
* Recall (weighted average): 93%
* F1-Score (weighted average): 93%

Best Model for our Project:

It has the highest testing accuracy (93.21%) among the three models, which shows it works well with unseen data. It has a strong balance between precision, recall, and F1-score, indicating that it performs well across different metrics.

The model is not only good at identifying true positives but also at minimizing false positives and false negatives, making it the most reliable choice. We believe this will be the best model for our final project.

Calendar

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Chart, line chart

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1. **Visualization Dashboard**

*\*First attempt of a working dashboard*

1. Working Tableau dashboard link:

<https://public.tableau.com/app/profile/kennan.foust/viz/ProjectTableau_16832615644700/Dashboard1?publish=yes>

1. Tableau Dashboard – Draft 1:

A screenshot of a graph

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1. **Database**

*\*Database that stores data for the project (if applicable)*

1. A database was setup using AWS. Link to database is below:

http://flightdelay.cqtoprenvzmu.us-east-2.rds.amazonaws.com

1. ER Diagrams were created using Quick DBD *(pictured below)*
2. PgAdmin – *(screen shot pictured below)*
3. *Flight Delay Database Query Tables (listed below)*

ER Diagrams

*Graphical user interface, text, application, chat or text message

Description automatically generated*

PgAdmin

*A screenshot of a computer

Description automatically generated with medium confidence*

Flight Delay Database Query Tables

Table 1:

CREATE TABLE Flights (  
    DAY\_OF\_MONTH int,  
    DAY\_OF\_WEEK int,  
    OP\_UNIQUE\_CARRIER varchar,  
    OP\_CARRIER\_AIRLINE\_ID int,  
    OP\_CARRIER varchar,  
    TAIL\_NUM varchar,  
    OP\_CARRIER\_FL\_NUM int,  
    ORIGIN\_AIRPORT\_ID int,  
    ORIGIN\_AIRPORT\_SEQ\_ID int,  
    ORIGIN varchar,  
    DEST\_AIRPORT\_ID int,  
    DEST\_AIRPORT\_SEQ\_ID int,  
    DEST varchar,  
    DEP\_TIME float,  
    DEP\_DEL15 float,  
    DEP\_TIME\_BLK varchar,  
    ARR\_TIME float,  
    ARR\_DEL15 float,  
    CANCELLED float,  
    DIVERTED float,  
    DISTANCE float  
);

**Table 2:**

CREATE TABLE Arrival\_Airports (  
    airport varchar PRIMARY KEY,  
    airport\_name varchar  
);

**Table 3:**

CREATE TABLE Departure\_Airports (  
    airport varchar PRIMARY KEY,  
    airport\_name varchar  
);

**Table 4:**

CREATE TABLE Airlines (  
    carrier varchar PRIMARY KEY,  
    carrier\_name varchar  
);

**Table 5:**  
ALTER TABLE Flights  
ADD FOREIGN KEY (DEST) REFERENCES Arrival\_Airports(airport);ALTER TABLE Flights  
ADD FOREIGN KEY (ORIGIN) REFERENCES Departure\_Airports(airport);ALTER TABLE Flights  
ADD FOREIGN KEY (OP\_UNIQUE\_CARRIER) REFERENCES Airlines(carrier);

1. **Group 4 Presentation – Draft**

*\*Draft of presentation*

1. Link to PowerPoint presentation in main branch.

File title is “Group 4 Final Project Draft 1”