

---

# Flight Delay Predictor

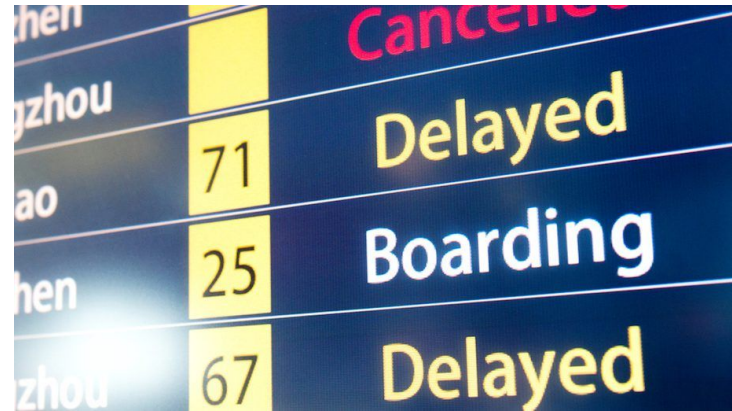
## A Smarter Way to Fly

Jue Wang (Daniel)  
MSiA 423 Course Project



## Goal

- As passengers, it helps to know beforehand whether and how long a flight will be delayed to **avoid long wait times** at airports.
- Passengers can also consult the app when purchasing flight tickets to **select the flight that is least likely to experience delay**.
- For airlines, getting a sense of what kinds of flights are more likely to be delayed for a long period of time may also be beneficial in terms of **scheduling flight** routes in the future.





# DEMO

## Flight Delay Predictor

### Airlines

☐ Endeavor Air ☐ American ☐ Alaska ☐ Jetblue ☐ Delta ☐ ExpressJet ☐ Frontier ☐ Allegiant ☐ Hawaiian ☐ Spirit ☐ PSA ☐ SkyWest ☐ United ☐ Southwest ☐ Mesa ☐ Midwest

### Airport Info

Departing from:

Type in 3-letter airport code

Arriving at:

Type in 3-letter airport code

### Flight Info

Departing at:

Type in hours

Day of Week:

Type in hours

Confirm

Scheduled air time:

Type in hours

Day of Month:

Type in hours

Domestic:

We only support domestic predictions for now

Month:

Type in hours

Your flight is predicted to be **delayed**

Probability of delay is **0.6274089935760171**



# Data

- Data is downloaded from **Bureau of Transportation** [<https://www.transtats.bts.gov/>]
- Flight on-time performance data from **January 2019 to December 2019**
- A **random sample** of the data is used for analysis and modelling
  - **74220** Rows of Flight Records
- Columns include:
  - **Delayed Minutes** (Positive or Negative)
  - **Destination and Origin Airport** (One-hot encoded)
  - **Scheduled Departing Date, Hour and Air Time**



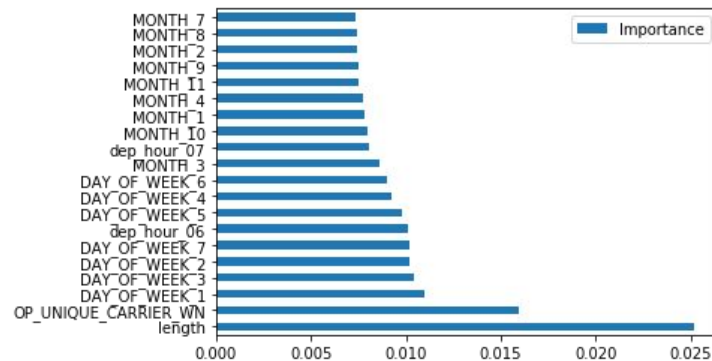
# Modelling Process

- 70 - 30 Train/Test Split
- Decision Tree - Precision = 67%
- Random Forests - Precision = 67%

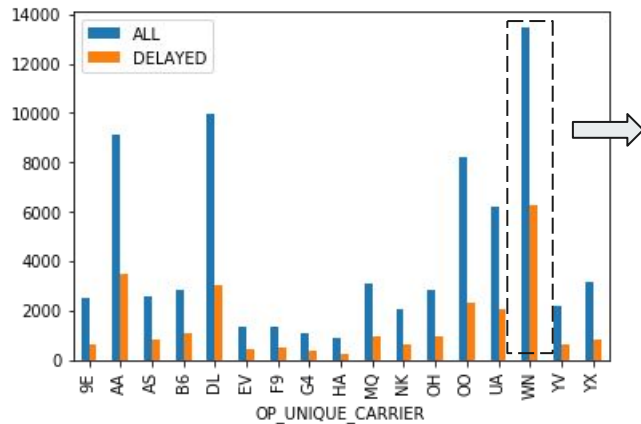
	Delayed	On-time
Predicted Delayed	1648	3349
Predicted On-time	1473	8070

## Top Predictors:

1. Scheduled Length of Flight
2. Southwest Airlines
3. Monday

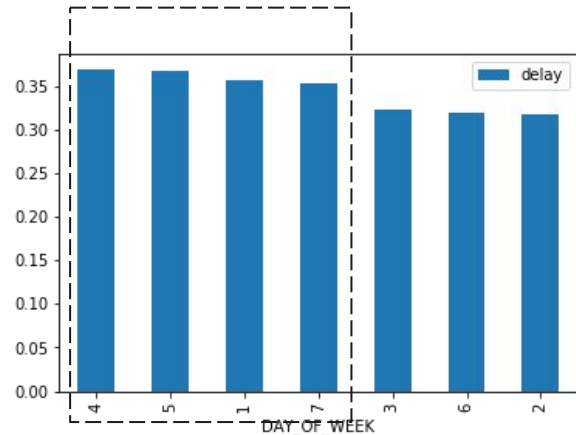


# Insights



**Southwest**

SouthWest  
Airline has  
46.7% of its  
flights delayed



Flights on Monday,  
Thursday, Friday and Sunday  
are more prone to delay



# Thank You!

Contact info:

Email: [juewang2020@u.northwestern.edu](mailto:juewang2020@u.northwestern.edu)

