

Capstone Project 1

Classification of Origin-Destination Pair Delays

Problem Statement:

Predict whether or not the departure delay on an Origin-Destination pair, with a 6-hour prediction horizon, will exceed a 15 min threshold; such that the future delay will fall into one of two classes, 'above threshold' and 'below threshold'.

Design Matrix:

Target (Class)	OD Link	Hour of Day	Day of Week	Day of Month	OD-Pair Delay
1	AirportA-AirportB	0	1	1	10
0	AirportA-AirportB	6	1	1	30
1	AirportA-AirportB	12	1	1	12
0	AirportA-AirportB	18	1	1	80

Classes:

1 - 'Above Threshold' (OD-Delay Beyond 15 min, 6 hrs in the future)

0 - 'Below Threshold' (OD-Delay Below 15 min, 6 hrs in the future)

Main Features:

Origin-Destination Link - Origin Airport ID and Destination Airport ID

Hour of Day - All flights between time t and $t+1$ hour are categorized as belonging in time t
I.e. flights at 1:15am, 1:35am, and 1:55am will fall into hour 1, flights at 12:15am, 12:35am, and 12:55am will fall into hour 0

Day of Week - Day of the week in which flight occurred (1 for monday - 7 for sunday)

Day of Month - Day of the month in which flight occurred

Origin-Destination Pair Delay - Median departure delay of all flights that took off from the origin Airport to the Destination airport during that hour