APPLIED DATA SCIENCE

DEVELOPING A FLIGHT DELAY PREDICTION MODEL USING MACHINE LEARNING

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INTRODUCTION

A flight delay is when an airline flight takes off and/or lands later than its scheduled time. The Federal Aviation Administration (FAA) considers a flight to be delayed when it is 15 minutes later than its scheduled time. A cancellation occurs when the airline does not operate the flight at all for a certain reason. In the European Union, Flight Compensation Regulation 261/2004 states that flight delays for over three hours, cancellations and denied boarding entitles passengers to a compensation from €250 up to €600 per passenger from the airline. In the United States, when flights are canceled or delayed, passengers may be entitled to compensation due to rules obeyed by every flight company, usually Rule 240, or Rule 218 in certain locations. This rule usually specifies that passengers may be entitled to certain reimbursements, including a free room if the next flight is the day after the canceled one, a choice of reimbursement, rerouting, phone calls, and refreshments. When a flight is delayed, the FAA allocates slots for takeoffs and landings based on which flight is scheduled first. The Transportation Department imposes a fine of up to $27,500 per passenger for planes left on the tarmac for more than three hours without taking off (four hours for international flights). However, passengers are not entitled to direct monetary compensation under US law when a delay occurs. Instead, airlines are merely required to pay for lodging costs of passengers if the delay or a cancellation is through their own fault, but not if the cause is beyond their control, such as weather.

PROBLEM STATEMENT

Operating a flight is challenging on so many different levels, largely because of all the different people involved.On the one hand, there are factors that are under the direct control of the carrier, such as aircraft turnarounds between flights, passenger punctuality, technical and crew performance, etc. On the other hand, there are perhaps even more factors that are outside of the airline's control, such as weather, air traffic control, security, airport conditions, etc.The reality is such that so long as airplanes continue flying, flight delays will be a part of the experience. According to the Bureau of Statistics, about 20% of all flights are delayed by 15 minutes or more. The aim of the project is to predict the time delay of the flight which reaches the destination due to various problems such as air traffic ,adverse weather conditions ,knock-on effect due to a delayed aircraft ,waiting for passengers ,waiting for baggages etc… But in this project we are considering only the important data such as departure time ,arrival time ,time delay of the flight and several other data by using the machine learning algorithms such as Decision Tree ,XG Boost ,regression and classification algorithms.