# FLIGHT DELAY PREDICTION MODELUSING MACHINE LEARNING

**LITERATURE SURVEY:**

**The Purpose of this chapter to review the previous of Researchers on the Flight Delay Prediction Model using Machine Learning. This chapter will present the main recent works on the effects of Airline and Air Port services and to avoid delays in Air Travel across different locations at Municipality level.**

H. Khaksar[1]A. Sheikholeslami Department of Transportation Engineering and Planning, School of Civil Engineering, Iran University of Science & Technology, Tehran, Iran. Flight planning, as one of the challenging issues in the industrial world, is faced with many uncertain conditions. One such condition is delay occurrence, which stems from various factors and imposes considerable costs on airlines, operators, and travelers. With these considerations in mind, we implemented flight delay prediction through proposed approaches that are based on machine learning algorithms. Parameters that enable the effective estimation of delay are identified, after which Bayesian modeling, decision tree, cluster classification, random forest, and hybrid method are applied to estimate the occurrences and magnitude of delay in a network. These methods were tested on a U.S. flight dataset and then refined for a large Iranian airline network. Results showed that the parameters affecting delay in US networks are visibility, wind, and departure time, whereas those affecting delay in Iranian airline flights are fleet age and aircraft type. The proposed approaches exhibited an accuracy of more than 70% in calculating delay occurances and magnitude in both the whole-network US and Iranian. It is hoped that the techniques put forward in this work will enable airline companies to accurately predict delays, improve flight planning, and prevent delay propagation. Airline operations are highly complex processes that are intended to regulate many expensive, tightly constrained, and interdependent resources, such as the crew, aircraft, airports, and maintenance facilities. Many studies have been carried out on airline planning problems, but only a few have been performed on the characteristics of airline delays and the prediction of delay statistics. Delays occur when an event takes place later than the time at which it is planned, scheduled, or expected to happen. Delays in departure can occur due to bad weather conditions, seasonal and holiday demands, airline policies, technical issues such as the problems in airport facilities, luggage handling and mechanical apparatus, and accumulation of delays from preceding Fights. In a study conducted by Tu et al., distribution of departure delays at Denver International Airport was estimated with the help of a probabilistic model, which relied on a combination of genetic algorithms and expectation-maximization algorithm.

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