APPLIED DATA SCIENCE

DEVELOPING A FLIGHT DELAY PREDICTION MODEL USING MACHINE LEARNING

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LITERATURE SURVEY

Khaksar, H., & Sheikholeslami, A. (2017). Airline delay prediction by machine learning algorithms*. Scientia Iranica*.

Flight planning, as one of the challenging issue 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 occurance 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.

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