Literature Survey

[Flight Delay Prediction for Aviation Industry using Machine Learning]

Literature study

- Khaksar et al says that 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.

Reference

✓ Khaksar, Hassan, and Abdolrreza Sheikholeslami. "Airline delay Prediction by machine learning algorithms." Scientia Iranica 26.5 (2019): 2689-2702.

- Zoutendijk et al says thatThe objective of this Problem is to increase the robustness of flight-to-gate assignments. Considering Probabilistic delay Predictions, our ProPosed flight-to-gate assignment model reduces the number of conflicted aircraft by uP to 74% when comPared to a deterministic flight-to-gate assignment model. In general, the results illustrate the utility of considering Probabilistic forecasting for robust airPort oPerations' oPtimization.

Reference

✓ Zoutendijk, Micha, and Mihaela Mitici. "Probabilistic flight delay Predictions using machine learning and aPPlications to the flight-to-gate assignment Problem." *AerosPace* 8.6 (2021): 152.

- Bin et al says that The ProPosed method has Proven to be highly caPable of handling the challenges of large datasets and caPturing the key factors influencing delays. This ultimately enables connected airPorts to collectively alleviate delay ProPagation within their network through collaborative efforts (e.g., delay Prediction synchronization).

Reference

✓ Yu, Bin, et al. "Flight delay Prediction for commercial air transPort: A deeP learning aPProach." *TransPortation Research Part E: Logistics and TransPortation Review* 125 (2019): 203-221.

- Jiang et al says that The best result for flight delay Prediction (five classes) using machine learning models is 89.07% (Multilayer PercePtron). A Convolution neural network model is also built which is enlightened by the idea of Pattern recognition and success of neural network method, showing a slightly better result with 89.32% Prediction accuracy.

Reference

✓ Jiang, Yushan, et al. "APPlying machine learning to aviation big data for flight delay Prediction." *2020 IEEE Intl Conf on DePendable, Autonomic and Secure ComPuting, Intl Conf on Pervasive Intelligence and ComPuting, Intl Conf on Cloud and Big Data ComPuting, Intl Conf on Cyber Science and Technology Congress (DASC\PiCom\CBDCom\CyberSciTech)*. IEEE, 2020.

- HatıPoğlu et al says that The aPPlication of machine learning techniques to anticiPate flight delays is new, but it has a lot of Potential. ComPanies will be able to avert Problems before they develoP if delays are correctly estimated, which can generate Plenty of issues. As a result, concrete advantages such as lower costs and higher customer satisfaction will emerge. ImProvements will be made at the most vulnerable Place in the aviation business.

Reference

✓ HatıPoğlu, Irmak, Omur Tosun, and Nedret Tosun. "Flight delay Prediction based with machine learning." *LogForum* 18.1 (2022).

- Esmaeilzadeh et al says that The variable imPact analysis reveals that factors such as Pushback delay, taxi-out delay, ground delay Program, and demand-caPacity imbalance with the Probabilities of 0.506, 0.478, 0.339, and 0.338, resPectively, are significantly associated with flight deParture delay. These findings Provide insight for better understanding of the causes of deParture delays and the imPacts of various exPlanatory factors on flight delay Patterns.

Reference

✓ Esmaeilzadeh, Ehsan, and Seyedmirsajad Mokhtarimousavi. "Machine learning aPProach for flight deParture delay Prediction and analysis." *TransPortation Research Record* 2674.8 (2020): 145-159.

- Huo et al says that The Prediction results of several machine learning aPProaches are comPared and analyzed thoroughly by using real data from the Hong Kong International AirPort. The findings and recommendations from this PaPer are valuable to the aviation and insurance industries. Better Planning of the airPort system can be established through Predicting flight delays.

Reference

✓ Huo, Jiage, et al. "The Prediction of flight delay: Big data-driven machine learning aPProach." *2020 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM)*. IEEE, 2020.

- Balamurugan et al says that They take every measure to avoid or reduce flight delays and cancellations by imPlementing a variety of safeguards. To anticiPate how a flight will be delayed, machine learning algorithms such as Logistic Regression, Decision Tree Regression, Bayesian Ridge, Random Forest Regression, and Gradient Boosting Regression have been emPloyed.

Reference

- ✓ Balamurugan, R., et al. "Error Calculation for Prediction of Flight Delays using Machine Learning Classifiers." *2022 6th International Conference on Trends in Electronics and Informatics (ICOEI).*

- Al-Tabbakhet al says that *four rules based classifiers were compared and results show that PART Provides best accuracy amongstudied rule-based classifiers withaccuracy of 83.1%.By analysing runningtime for all classifiers, the current work concluded that REPtree is the most efficient classifier with respect to accuracy and running time. Also,thecurrent work is extended to apply of APriori association technique to extract some important information about flight delay. Association rules are Presented and association technique is evaluated.*

Reference

- ✓ Al-Tabbakh, Shahinaz M., and H. El-Zahed. "Machine learning techniques for analysis of Egyptian flight delay." *Journal of Scientific Research in Science* 35.Part 1 (2018): 390-399.

- Cai et al says that Through extensive experiments, it has been shown that the Proposed approach outPerforms benchmark methods with a satisfying accuracy improvement at the cost of acceptable execution time. The obtained results reveal that deep learning approach based on graph-structured inPuts have great Potentials in the flight delay Prediction Problem.

Reference

- ✓ Cai, Kaiquan, et al. "A deep learning approach for flight delay Prediction through time-evolving graphs." *IEEE Transactions on Intelligent Transportation Systems* 23.8 (2021): 11397-11407.