LITERATURE SURVEY

TITLE **:** On the relevance of data science for flight delay research:

AUTHORS **:** Leonardo Carvalho, Alice Stenberg, Leandro maia goncalves, Ana Beatriz cruz, Jorge A,soares.

YEAR **:** 2018.

DESCRIPTION :

Flight delays are a significant problem for society as they evenly impair airlines, transport companies, air traffic controllers, facility managers, and passengers. Studying prior flight data is an essential activity for every player involved in the air transportation system. Besides, developing accurate prediction models for flight delays is a crucial component of the decision-making process. Prescribing actions to solve on-going delays is an even challenging task due to the air transportation system complexity. In this regard, this paper presents a thorough literature review of data science techniques used for investigating flight delays. This work proposes a taxonomy and compiles the initiatives used to address the flight delay studies. It also offers a systematic literature review that describes the trends of the field and methods to analyse the applicability of newly proposed methods.

PROS:

- accurately predicting these flight delays allows passengers to be well prepared for the deterrent caused to their journey .
- enables airlines to respond to the potential causes of the flight delays in advance to diminish the negative impact.

CONS:

- Late due to weather predicting this is diificult.
- A few factors responsible for the flight delays like runway construction to excessive traffic are rare, but bad weather seems to be a common cause.

TITLE **:** Aviation management.

AUTHORS : Shi Qiang Liu, Andrea D'Ariano, Erhan Kozan, Mahmoud Masoud CARRS-Q, Sai-Ho Chung.

YEAR **:** 2019.

DESCRIPTION :

Aviation or air transaortation refers to the activities surrounding mechanical flights in the airlines and the aircraft industries. In this paper, we present a recent literature survey on aviation management. The literature review is classified into the following main categories: Airline Capacity Analysis; Air Traffic Flow Management; Airline Fleet Assignment; Tail Assignment with Aircraft Maintenance Routing; Airline Crew Pairing; Airline Recovery and Rescheduling; Airline Revenue Management; Collaborative Decision Making; Aircraft Scheduling. This classification aims to motivate the researchers and practitioners in aviation management to develop more applicable, realistic and wideranging optimization methodologies for meeting the current needs of aviation industry.

PROS:

- Advanced scheduling optimization tools for the better management of the available infrastructure and resources.
- accurate timing information so that conflicts between aircraft are resolved.

CONS:

- air traffic control operations and related issues are still scheduled by human controllers.
- ignore any military/defence use of drones .

TITLE **:** Predictive Analytics Platform for Airline Industry.

AUTHORS **:** P. H. K Tissera, A.N.M.R.S.P. Ilwana, K.T. Waduge, M.A.I. Perera, D.P. Nawinna, D. Kasthurirathna.

YEAR **:** 2020.

DESCRIPTION :

The research is to develop accurate demand forecasting model to control the availability in Airline industry. The primary outcome of the model is that the Airline organization can maximize the revenue by controlling the availability. The product in airline industry is the seat, which is an expensive, unstock able product. The demand for the seats is almost uncertain, the capacity is constraint and difficult to increase and the variable costs are very high. Hence the priority of the expected demand forecast is very high for airline industry. An accurate mechanism to predict the revenue for future months of ODs (Origin destinations) is done using fare and passenger data. The revenue is derived by the number of passengers and the fares they pay which vary for each flight. Airline travel is very susceptible to the social, political and economic changes. Therefore, passenger buying patterns change quite dynamically. Hence, it is challenging to develop an accurate method to project the revenue for each route.. We have the current ticketed revenue plus we have the current booked passengers. We also have the ticketed passenger details of previous flights. Hence most of the information is available, however changing market conditions is an unknown variable which can have a significant impact on passenger travel patterns. Through this research We are going to design and develop the best fit model to forecast flight OD level passenger demand based on the historical data.

PROS:

- Focus on the passenger demand forecasting,average fare forecasting,no show forecasting and visualizing the passenger demand and annual revenue prediction for od level point of sales.
- Reliability is improved.

CONS:

- With limitation of predictors because of sensitivity of the data and limited access to the data it may have impacted the models and the accuracy.

TITLE : Exploratory data anlysis on aviaton dataset.

AUTHORS : Saba Firdous; Haseeba Fathiya; Lipsa Sadath.

YEAR : 2021.

DESCRIPTION :

The usage of big data analytics is booming today, with its ability to be used to draw useful insights from past data research. Its uses in the aviation industry have a wide array of applications ranging from predicting flight delays to detecting faults in airplane parts. In this paper, we conducted exploratory data analysis on flight dataset to draw inferences on arrival and departure delays and to identify relationships between flight timings and delays. Using the flight delay data, we identified which flight is mostly prone to delays. The arrived upon conclusions are useful for selecting flights in the future.

PROS:

- Data collected from customer profiles, social behavior, etc. can be efficiently used by airlines to provide personalized services to customers.
- They can also be used to analyze passenger flow, cost reduction and to enhance revenue.

CONS:

- When the number of flight arrivals and departures is very high, there can be an disparity between the capacity of the flight to handle the demands and its capacity, leading to many delays.
- Bad weather such as floods, hurricanes could also be the cause.

TITLE **:** Forecast and analysis of aircraft passenger satisfaction.

AUTHORS **:** Xuchu Jiang , Ying Zhang , Ying Li , Biao Zhang**.**

YEAR **:** 2022.

DESCRIPTION : Due to coronavirus epidemic in 2020, the civil aviation industry has encountered severe challenges. Predicting aircraft passenger satisfaction and excavating the main influencing factors can help airlines improve their services and gain advantages in difficult situations and competition. This paper proposes a RF-RFE-Logistic feature selection model to extract the influencing factors of passenger satisfaction by recursive feature elimination based on random forest (RF-RFE). Second on different classification models, KNN, logistic regression prediction model with the best classification performance is selected. Finally, based on the RF-RFE feature,combined with the logistic model, the factors affecting customer satisfaction are further extracted. The experimental results show that the RF-RFE model selects a feature subset containing 17 variables. In the classification prediction model, the random forest after RF-RFE feature selection shows the best classification performance. Finally, combined with the four important variables extracted by RF-RFE and logistic regression, further discussion is carried out, and suggestions are given for airlines to improve passenger satisfaction.

PRONS:

- found a positive relationship between customer satisfaction and a range of financial performance indicators by using the American Consumer Satisfaction Index.
- using flight data or text reviews to predict passenger satisfaction.

CONS:

- The evaluation indicators of passenger satisfaction surveys in the data set used in this study are not sufficient.
- used the default parameters in the prediction model and did not consider the prediction results of different parameters.