**Literature Survey**

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**Big Data Analytics on Aviation data for the prediction of Airline Trends in Seasonal Delay**

The direction of the worldwide carrier industry is basically similar to that of a flying machine. Now and again it takes off for the high skies and on occasion, it plunges to ground levels. In the middle of these highs and lows, lies the tale of the business – of its survival, of the new and rising patterns that fuel its development. The issue of carrier deferrals, as measured by the quantity generally landings as a percent of aggregate operations, has been of expanding significance as of late as a large portion of the populace picks air go as a favored method of transportation. This paper provides the result about the total flight delay for a specific period of time caused due to climate, security, carrier, NAS, arrival and departure based on total number of flights getting delayed over the past few years (2006, 2007 and 2008). The historic data which is to be analysed is stored on the databases such as MongoDB and Hive. The usage of time series analysis along with the integration of heterogeneous database helps to achieve the Airline Seasonal Delay which is implemented and visualized in R. The reports are generated by using time series modelling to provide the insights for the aviation industry to take future measures to avoid delays and manage them

**Applying Machine Learning to Aviation Big Data for Flight Delay Prediction**

Flight delay has been a serious and widespread problem that needs to be solved. One promising solution is the flight delay prediction. Although big data analytics and machine learning have been applied successfully in many domains, their applications in aviation are limited. This paper presents a comprehensive study of flight delay spanning data pre-processing, data visualization and data mining, in which we develop several machine learning models to predict flight arrival delays. Two data sets were used, namely Airline OnTime Performance (AOTP) Data and Quality Controlled Local Climatological Data (QCLCD). This paper aims to recognize useful patterns of the flight delay from aviation data and perform accurate delay prediction. 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.

**Airline Route Profitability Analysis and Optimization Using BIG DATA Analyticson Aviation Data Sets under Heuristic Techniques**

Applying vital decisions for new airline routes and aircraft utilization are important factors for airline decision-making. For data driven analysis key points such as airliners route distance, availability on seats/freight/mails and fuel are considered. The airline route profitability optimization model is proposed based on performing Big data analytics over large scale aviation data under multiple heuristic methods, based on which practical problemsareanalysed. Analysis should be done based on key criteria, identified by operational needs and load revenues from operational systems e.g. passenger, cargo, freights, airport, country, aircraft, seat class etc., The result shows that the analysis is simple and convenient with concrete decision.

**Big data and smart aviation information management system**

Aviation industry is facing two major challenges of safety and performance improvement. They will be expected to be resolved in the context of big data. This paper focuses on the impact of big data on aviation industry and the construction of aviation big data platform and its information systems. Firstly, paper analyzes the relationship between big data and the development of smart aviation industry. Then, paper argues the basic ideas and framework for the construction of aviation big data platform and information system. Finally, paper proposes a multilayer network correlation analysis method and applies it to analyze the spectrum and coupling degree of aviation big data information system. The research finds that aviation big data plays a very important role in the development of smart aviation industry, and the safety and performance of aircraft can be significantly improved through the construction of aviation big data information platform and information system, as well as the use of multilayer network correlation analysis methods. This paper provides ideas and countermeasures for the planning and construction of national aviation big data platform and information system, the construction of global aviation big data cooperation mechanism and the development of aviation big data technology.

**Project Description**

The airport codes may refer to either the IATA airport code, a three-letter code that is used in passenger reservation, ticketing and baggage-handling systems, or the ICAO airport code which is a four-letter code used by ATC systems and for airports that do not have an IATA airport code.

**Goal of the Project**

To provide better Airline and AirPort services and to avoid delays in Air Travel across different locations at Municipality level. The aim is to provide airports, airlines, and the travelling public with a neutral, third-party view of which airlines are delivering on their promise to get passengers from Point A to Point B on-time

**Technical Architecture**

