

Task Performed: Feature Engineering

Feature engineering plays a critical role in machine learning models for predicting air ticket prices. In order to accurately predict air ticket prices, it is important to carefully select and engineer the right set of features that capture the important factors influencing ticket prices.

The initial set of features used for air ticket price prediction typically includes departure date, arrival date, departure airport, arrival airport, flight duration, number of stops, and airline. However, the selection of features depends on the specific problem and may require additional data sources or feature extraction techniques to be considered.

One approach to feature engineering for flight fare prediction is to consider the impact of external factors such as weather conditions, economic indicators, and holidays. For example, weather conditions such as snow, rain, or fog can affect flight operations and result in delays or cancellations, which can impact ticket prices. Similarly, economic indicators such as GDP, inflation, or exchange rates can impact air travel demand and ticket prices. Additionally, holidays and events can affect air travel demand and result in price fluctuations.

To incorporate these external factors into the model, additional data sources may be required, such as weather data, economic data, and event calendars. Feature extraction techniques such as text mining, sentiment analysis, and topic modeling may also be used to extract relevant information from unstructured data sources such as social media, news articles, and customer reviews.

Another approach to feature engineering for flight fare prediction is to consider the interaction between different features. For example, the interaction between departure date and airline can be an important factor in predicting ticket prices. Some airlines may offer discounted fares during off-peak travel periods, while others may increase prices during peak travel periods. Similarly, the interaction between departure airport and number of stops can affect ticket prices, as airlines may offer different fare options for direct flights versus flights with layovers.

To capture these interactions, feature engineering techniques such as feature crossing, polynomial expansion, and feature selection can be used. Feature crossing involves combining two or more features into a new feature that captures their interaction. Polynomial expansion involves creating new features by raising existing features to a certain power. Feature selection involves selecting the most important features based on their contribution to the model's performance.