**Flight Ticket Price Predictor Using Machine Learning**

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# Abstract

This paper introduces a machine learning-based approach to predict flight ticket prices. Traditional methods systems that process past travel data with standard rules have limited success in understanding how airlines set ticket prices. The proposed machine learning system explores multiple flight ticket influencing factors by reviewing departure locations, chosen airline services, route frequencies, travel dates, and seasonal trends. The system learns from extensive archives of flight price records and brings in dynamic data to enhance the model's performance.

# Objectives:

* To design a machine learning application to determine future flight ticket prices by studying various elements that affect prices.
* To improve forecasts, emerge when it includes current market situations and customer behavior in the system.
* To evaluate several machine learning methods to see which one works best for flight price forecasting.
* To build an accessible platform that shows travellers when to book and how to save on tickets.

# Dataset Description and Link:

The dataset contains flight price records along with airline routes and departure information. The data source consists of major flight booking websites and airlines.

# Models / Algorithms

The proposed system uses following machine learning algorithms:

**Linear Regression:** It uses this model to forecast flight rates through multiple contributing elements (Manibalan and Jothi, 2024).

**Random Forest:** Random Forest examines how different features affect each other and shows connections between data points that are not linear.

**XGBoost:** It achieves stronger predictive outcomes when dealing with challenging data sets.

**Support Vector Machines (SVM):** The system divides prices into categories to create more reliable forecasting results.

**Neural Networks:** The deep learning system finds difficult data connections to boost the predictions about price trends.

# Expected Outcomes

The system produces fast and reliable flight price estimates through detailed examination of market demand trends and additional impact factors (Guan, 2024). The system adapts to current market changes so predictions remain accurate. The interface enables users to select the best booking moments while managing their travel expenses.

# References

Manibalan, B. and Jothi, J.A.A., 2024, April. Airline Customer Reviews Analysis and Booking Completion Prediction using Data Visualization and Machine Learning for British Airways. In *2024 International Conference on Emerging Technologies in Computer Science for Interdisciplinary Applications (ICETCS)* (pp. 1-6). IEEE.

Guan, Y., 2024. Flight Price Prediction Web-Based Platform: Leveraging Generative AI for Real-Time Airfare Forecasting. *Journal of Web Engineering*, *23*(2), pp.299-314.