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# Prediction System for Flight Fares and Hotel Prices using Ensemble Machine Learning Algorithm

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**Abstract:** *As domestic air travel is getting more and more popular these days in India with various air ticket booking channels coming up online, travellers are trying to understand how these airline companies make decisions regarding ticket prices over time. Also, knowing the best time to travel and the best place to stay in appropriate amount is necessary. Unfortunately, the dynamic pricing strategy is usually carried out programmatically and is based on certain hidden parameters (e.g., number of days left till flight departure, or number of seats left). The paper works on mining the previous airfare data and developing data modelling technique to predict the price variation over time so that the consumer could benefit from it. This paper document study conducted to understand the airfare dependency over many hidden variables of which oil price, week day of departure, number of stops still have not received much attention from the research community. Also, this paper extends the research on hotel room prices using traditional and non-traditional statistical models following the analysis by Ka Athanasopoulos and Shehhi (2018), which discusses how hotel prices can be easily predicted. Research data were obtained from Smith Travel Research. In this study, we apply advanced forecasting models based on machine learning and artificial intelligence to the hospitality sector. Some of the models used in this study, such as the ANFIS model, contribute to the research conducted in the GCC region. The goal of the research was to contribute to the academic literature and assist hotel operators and decision-makers in setting appropriate strategies. It also describes the two different methodologies adopted to model this price change, comparative analysis of algorithms under these two methodologies, applied on real world data has also been performed. The comparative analysis thus helped us to find out the most effective algorithm for the prediction of the airfare variations and appropriate hotel prices. The study suggests that mining historical airfare data and hotel fare data, and modelling using machine learning algorithms can help predict the price trend and save consumer's substantial sum. Lately, we have acknowledged that in this era Mathematical terminologies and Scientific Equations has provided solutions to many of the problems. Moreover, the existence of Artificial Intelligence and its subset viz. Machine Learning has made tasks convenient. The power that Machine Learning carries is surely terrible. With various available tools and equipment that these terminologies are providing, the prediction of fares by considering all the components will lead to better understanding of travelling costs and will be helpful for the users to manage their entire travelling cost.*

**Keywords:** Machine Learning, Artificial Intelligence, Modelling, comparative analysis

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