

ABSTRACT

This research investigates the effectiveness of machine learning (ML) for predicting hotel cancellations, providing valuable insights for optimizing hotel management strategies. ML algorithms, including LightGBM, Histogram-based Gradient Boosting, AdaBoost Classifier, and XGBoost Classifier, consistently achieve exceptional accuracy and recall, making them robust choices for cancellation prediction. While KNeighbors Classifier demonstrates commendable performance with a 97% accuracy rate, the study underscores the importance of precision and recall metrics for effective decision-making in the hospitality sector. Additionally, the deployment of the model using Streamlit and thorough Exploratory Data Analysis (EDA) further enhance the understanding and usability of the predictions. These findings guide decision-makers in the hotel industry towards informed choices in ML algorithms, emphasizing the nuanced trade-offs between precision, recall, and computational efficiency. The research significantly contributes to advancing predictive modeling in the hospitality sector, laying the groundwork for enhanced reservation systems and customer service practices in the hotel industry.

Keywords: machine learning, boosting models, predictive modelling