

MACHINE LEARNING IN THE HOTEL INDUSTRY (word_count::664)

Because of the overproduction of information and communication technology, machine learning is being used in a variety of industries, including the hotel industry. Several studies have been conducted in the past that demonstrated the results of machine learning experiments in the hotel business.

Machine learning is used in the hospitality business to anticipate cancellations, utility use, pricing forecasting, demand forecasting, hotel site appraisal, forecast profitability, and financial and work efficiency. In terms of using machine learning methods in hospitality, the United States and China are ahead of the pack, and other nations should follow suit (1). Before starting a new hotel chain, it's critical to evaluate the site to ensure long-term growth and profitability.

Therefore, evidence from the researches supports that it is feasible to apply the machine learning techniques in assessing the best location for the opening of the new hotel.

TECHNIQUES USED

The classification machine learning prediction model will be used in this study to determine if the new hotel will be profitable or not. Because there are just two classes to forecast, binary classification is an appropriate choice. The binary classification was chosen since the two groups must be anticipated as profitable or not profitable, and we have access to past data. Classification is a type of supervised learning in which we have access to input data that is used to train the algorithm, and the data and results are anticipated and categorized into the appropriate classes based on the learned algorithm.

Previously, linear regression was primarily used to analyze and forecast profitable locations for the development of new hotel sites. However, linear regression has several limits, and it has a number of downsides, including low prediction accuracy owing to overfitting, non-linearity between variables, and poor comprehension of dependencies and similarity (3).

DATA NEEDED

Hotel ratings, transportation accessibility, longitude, latitude, room costs, customer walk-ins, and public service infrastructure have all been tested to determine which factors have a direct influence on where the hotel should build its new location (3).

Information about previously opened hotels' latitudes, longitudes, number of rooms, number of tourist attractions near hotel localities, access to public transportation, hotel rating, daily client walk-in, locality population size, number of offices in the area, number of universities in the area, airport access, and daily room occupation, among other things, is required to successfully predict the location for the opening of a new hotel.

LEARNING METHODOLOGIES

Because of its non-parametric character, the decision tree machine learning model will be employed in this study to forecast the profitability or non-profitability of a newly established hotel. According to Easton (4), there may be nonlinearities in the dataset. As a result, non-parametric forecasting can increase the model's accuracy. The distribution of data or mistakes is not assumed in such a model. And the number of parameters created is usually determined by the amount of data supplied for

training, thus more data will result in the development of more parameters, which will lead to better and more accurate predictions. Such a model offers a better fit of the data and can fit several functions. And they are highly dependent on the learning dataset for better understanding and learning of the model.

DIFFERENT APPROACHES FOR VALIDATION

Cross-validation with K-fold is one of the validation approaches that will be used to assess the model's accuracy. Where the data is separated into a number of folds, and each fold is compared to a model trained on the remaining folds. The purpose of utilizing such a technique is because it decreases data bias by training and testing each data point, allowing for more accurate predictions. Out-of-sample prediction accuracy is also known for models validated by K-fold. It will also assist in identifying the parameters that need to be fine-tuned, and it will use less processing resources.

REFERENCES

Application of Machine Learning in the Hotel Industry: A Critical Review. (JAAUTH) Vol. 18, No. 3, (2020), PP. 78-96.

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