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Integrating Machine Learning Algorithms For Personalized Motel Recommendations

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ABSTRACT

Earlier we have seen a eloquent rise in the use of recommendation systems in many different businesses, including the entertainment and tourist sectors. This abstract explores the integration of machine learning algorithms to enhance personalized hotel recommendations. They can perform the function of information filters by processing essential data from a variety of networks to provide consumer ideas that are relevant to their needs. When choosing hotels in cities all over the globe, many visitors and travelers often depend on written reviews, numerical ratings, and specific areas of interest. User preferences have a big impact on hotel recommendations. The most effective recommendations may be made by recommendation systems by utilizing historical user preference data.To solve this problem, recommender systems have suggested content-based filtering methods.

Keywords: *Hotel Rating, Data Balancing, Recursive Feature Elimination (RFE), Review Analysis, Customer Satisfaction, Machine Learning Algorithm (SVM, Naïve Bayes, KNN).*

1. INTRODUCTION

Systems for recommendations are a crucial component. They are employed to forecast the output based on user preferences and to filter information originating from various networks. Separating the user's choice of a suggested hotel or resort from their other options is the aim of a motel recommendation system. The main goal of a hotel recommendation system is to make the user's preferred hotel or resort stand out from the other possible choices. For instance, if you want to travel for work, the hotel recommendation system need to provide the accommodations that other users have deemed to be the greatest for business travel.

MOTEL RECOMMENDATION OBJECTIVES

The goal of this project is to increase the efficiency of online hotel recommendation systems in the travel sector. The research intends to overcome the difficulties involved in making hotel recommendations based on crowdsourced data by doing a thorough literature review and investigating cutting-edge recommendation algorithms including SVM, Naïve Bayes, and KNN. The ultimate objective is to create a model that, by utilizing user feedback and enhancing hotel prediction accuracy, enables users to make well-informed hotel selections that are in line with their interests.

DATA FLOW DIAGRAM

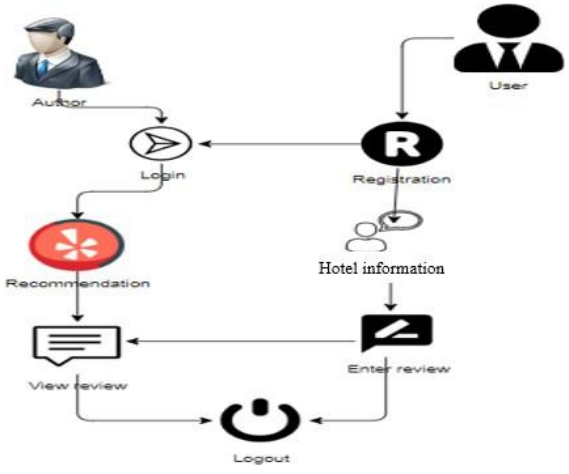

Fig -1: Data Flow Diagram

The data flow diagram shows the path of data from multiple sources to the recommendation engine and back to the user interface when integrating machine learning methods for customized lodging recommendations. It starts with gathering user and hotel data, then moves on to preprocessing and feature extraction. Following processing, the data enters the machine learning model for inference and training, producing tailored suggestions. Lastly, the feedback loop for ongoing learning and improvement is completed when the recommendations are shown to users via the interface.

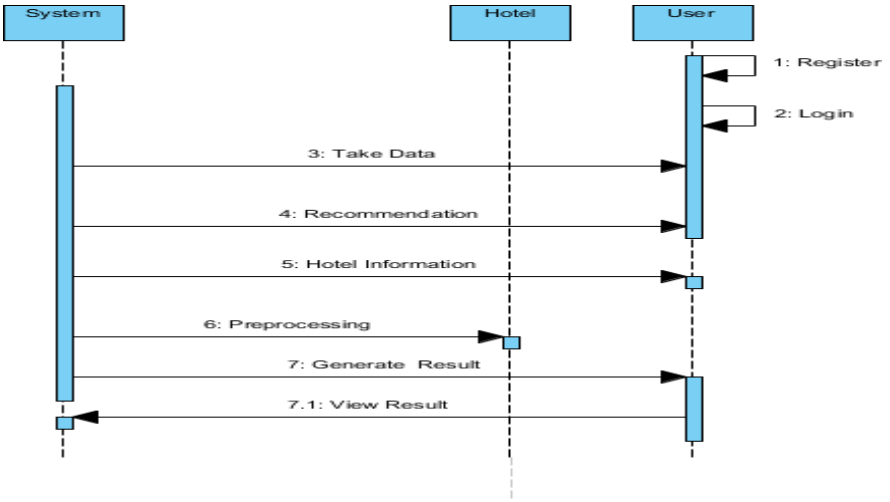

Fig: UML Sequence Diagram

2. ARCHITECTURE

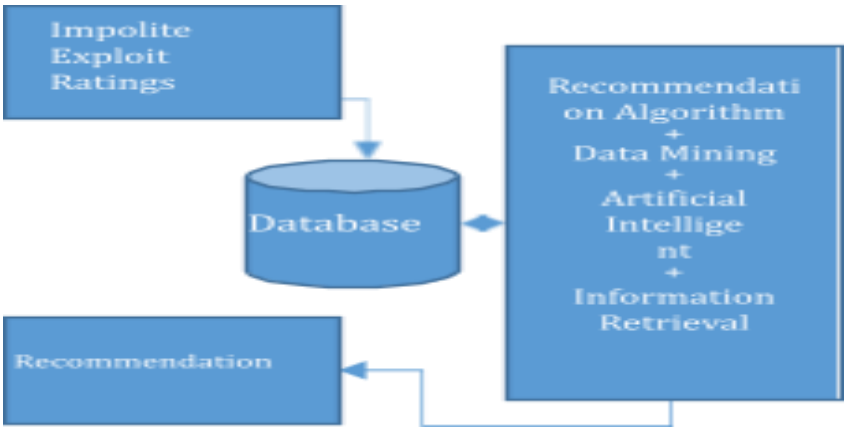

Fig -4: Architecture for Motel Recommendations

Data intake from user interactions and motel facts is a common component of the architecture used to integrate machine learning algorithms for tailored motel suggestions. Before being fed into the recommendation engine, this data passes through preprocessing and feature engineering steps. The engine creates tailored suggestions based on user preferences and lodging characteristics, frequently using collaborative filtering or content-based techniques. The loop is then completed by delivering these suggestions to users via an interface. Scalability, flexibility, and efficiency are given top priority in the architecture in order to successfully manage a variety of data sources and changing user preferences.

3. MODULES

3.1 User Module

Load Data: Input relevant data for analysis.

View Data: User-friendly interface to visualize and explore input data.

Select Module: Choose a machine learning algorithm for predictive analysis.

Input Values: Specify parameters or variables for the selected model.

View Result: Display predictive results based on the chosen model and input values.

3.2 System Module

Take Data: Ingest and collect data for analysis.

Preprocessing: Clean and prepare data for model training.

Model Building: Utilize machine learning algorithms to create a predictive model. Generate Results: Present predictive analysis results,predicting the recommended hotel URL.

4. FUTURE ENHANCEMENT

The integration of user feedback and ethical issues to guarantee equity should be given top priority in advancements. To strengthen theoretical underpinnings, research should concentrate on new algorithms, explain ability tools, and multidisciplinary cooperation. The effectiveness and inclusivity of recommendation systems will be strengthened by ongoing investigation of changing user preferences, cultural quirks, and varied datasets, opening the door for more complex and user-focused strategies in the ever-changing hotel industry.

5. CONCLUSION

Our study takes a novel approach by using the K-Nearest Neighbors (KNN) algorithm in content-based filtering to theoretically evaluate hotel recommendation systems. Setting a new standard, we thoroughly examine the theoretical underpinnings of KNN's use, revealing its subtleties in the hotel industry. In addition to improving theoretical knowledge, this innovative combination of KNN and content-based filtering enhances the usefulness of hotel recommendations, representing a major advancement in individualized hospitality services.

REFERENCES

[1] . Calero-Sanz, A. Orea-Giner, T. Villace-Molinero, A. Munoz-Mazon, and L. Fuentes-Moraleda, “Predicting A New Hotel Rating System by Analysing UGC Content from Tripadvisor: Machine Learning Application to Analyse Service Robots Influence,” Procedia Comput. Sci., vol. 200, no. 2019, pp. 1078–1083, 2022, doi: 10.1016/j.procs.2022.01.307.

[2] N. Cumlievski, M. Brkic Bakaric, and M. Matetic, “A Smart Tourism Case Study: Classification of Accommodation Using Machine Learning Models Based on Accommodation Characteristics and Online Guest sReviews,” Electron., vol. 11, no. 6, 2022, doi: 10.3390/electronics11060913.

[3] J. Wu, C. Liu, Y. Wu, M. Cao, and Y. Liu, “A Novel Hotel Selection Decision Support Model Based on the Online Reviews from Opinion Leaders by Best Worst Method,” Int. J. Comput. Intell. Syst., vol. 15, no. 1, 2022, doi: 10.1007/s44196-022-00073-w.

[4] Y. J. Kim and H. S. Kim, “The Impact of Hotel Customer Experience on Customer Satisfaction through Online Reviews,” Sustain., vol. 14, no. 2, pp. 1–13, 2022, doi: 10.3390/su14020848