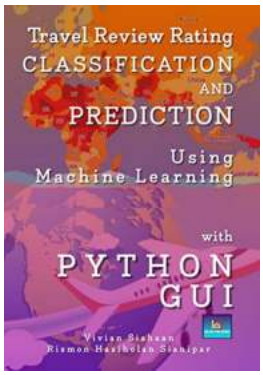
Travel Review Rating Classification And Prediction Using Machine Learning With

Travel is a delightful experience that allows us to explore new places and create memories. With the rise of online platforms and digital transformation, travel reviews have become a crucial aspect of decision-making for potential travelers.

Machine Learning algorithms offer a powerful tool to analyze vast amounts of data and make predictions. In the realm of travel, ML can be utilized to classify and predict travel review ratings, providing valuable insights for both travelers and businesses in the industry.



TRAVEL REVIEW RATING CLASSIFICATION AND PREDICTION USING MACHINE LEARNING WITH PYTHON GUI by Vivian Siahaan (Kindle Edition)

4.3 out of 5

Language	: English
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Screen Reader	: Supported
Enhanced typesetting	: Enabled
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Understanding Travel Review Rating Classification

Travel review rating classification involves the categorization of reviews into different rating levels, such as 1 to 5 stars. The goal is to develop a model that can accurately predict the rating based on the review content.

Machine Learning algorithms can be trained using a dataset of labeled travel reviews, where each review is associated with a specific rating. Features are extracted from the textual content of these reviews, taking into account factors like sentiment analysis, keywords, and grammatical patterns.

The ML model then learns patterns within the dataset and creates a predictive model capable of assigning ratings to new, unseen reviews. By doing so, businesses can gain insights into customer satisfaction, identify areas for improvement, and make better-informed decisions.

Benefits of Travel Review Rating Classification and Prediction

1. **Improving user experience:** By accurately predicting travel review ratings, travel platforms can tailor their recommendations to match users' preferences, enhancing their overall experience.
2. **Enhancing marketing strategies:** Understanding the sentiment behind travel reviews can assist businesses in shaping their marketing campaigns to target specific customer segments more effectively.
3. **Identifying areas for improvement:** By analyzing the reviews, businesses can identify recurring issues and take necessary actions to enhance their services.
4. **Competitive advantage:** Companies that utilize ML for travel review rating classification gain a competitive edge by offering personalized recommendations and addressing customer concerns promptly.
5. **Time and cost savings:** With ML algorithms, the process of analyzing travel reviews can be automated, saving valuable time and resources that can be invested elsewhere in the business.

Machine Learning Algorithms for Travel Review Rating Classification

A variety of Machine Learning algorithms can be applied for travel review rating classification, each with its own strengths and weaknesses. Some popular algorithms include:

- **Naive Bayes Classifier:** This algorithm is based on Bayes' theorem and assumes that features are independent of each other. Naive Bayes works well with large datasets.
- **Support Vector Machines (SVM):** SVMs are effective for text classification tasks. They separate data points using hyperplanes, maximizing the margin between them.
- **Random Forest Classifier:** This algorithm constructs multiple decision trees and combines their outputs. It performs well with high-dimensional datasets and avoids overfitting.
- **Gradient Boosting Classifier:** Gradient boosting combines weak models sequentially, building upon their strengths. It is often used for diverse structured or unstructured data.

Predicting Travel Review Ratings

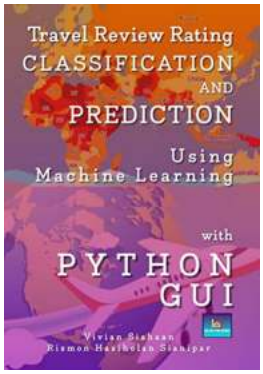
To predict travel review ratings, an ML model needs to be trained on a labeled dataset. The dataset should consist of travel reviews and their corresponding ratings.

Preprocessing the data is crucial to ensure accurate predictions. This process involves cleaning the text by removing irrelevant characters and punctuation, converting the text to lowercase, and removing stopwords.

Once the data is preprocessed, features can be extracted, such as bag-of-words or TF-IDF (Term Frequency-Inverse Document Frequency) representations. These features capture the essence of the review text and are used to train the ML model.

After training, the model can be evaluated using metrics such as accuracy, precision, recall, and F1-score. It is important to validate the model on unseen data to assess its generalization capabilities.

In today's digital era, travel review rating classification and prediction using Machine Learning provide invaluable insights for both travelers and businesses. By effectively utilizing ML algorithms, travel platforms can enhance user experience, tailor marketing strategies, identify areas for improvement, and gain a competitive edge. With the continuous advancement of ML, the accuracy and efficiency of travel review rating prediction will only improve, contributing to better-informed decision-making in the travel industry.



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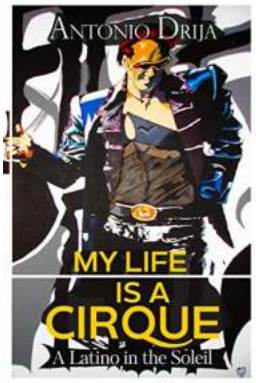
The dataset used in this project has been sourced from the Machine Learning Repository of University of California, Irvine (UC Irvine): Travel Review Ratings Data Set. This dataset is populated by capturing user ratings from Google

reviews. Reviews on attractions from 24 categories across Europe are considered. Google user rating ranges from 1 to 5 and average user rating per category is calculated.

The attributes in the dataset are as follows: Attribute 1 : Unique user id; Attribute 2 : Average ratings on churches; Attribute 3 : Average ratings on resorts; Attribute 4 : Average ratings on beaches; Attribute 5 : Average ratings on parks; Attribute 6 : Average ratings on theatres; Attribute 7 : Average ratings on museums; Attribute 8 : Average ratings on malls; Attribute 9 : Average ratings on zoo; Attribute 10 : Average ratings on restaurants; Attribute 11 : Average ratings on pubs/bars; Attribute 12 : Average ratings on local services; Attribute 13 : Average ratings on burger/pizza shops; Attribute 14 : Average ratings on hotels/other lodgings; Attribute 15 : Average ratings on juice bars; Attribute 16 : Average ratings on art galleries; Attribute 17 : Average ratings on dance clubs; Attribute 18 : Average ratings on swimming pools; Attribute 19 : Average ratings on gyms; Attribute 20 : Average ratings on bakeries; Attribute 21 : Average ratings on beauty & spas; Attribute 22 : Average ratings on cafes; Attribute 23 : Average ratings on view points; Attribute 24 : Average ratings on monuments; and Attribute 25 : Average ratings on gardens.

The models used in this project are K-Nearest Neighbor, Random Forest, Naive Bayes, Logistic Regression, Decision Tree, Support Vector Machine, Adaboost, LGBM classifier, Gradient Boosting, XGB classifier, and MLP classifier. Three feature scaling used in machine learning are raw, minmax scaler, and standard scaler. Finally, you will develop a GUI using PyQt5 to plot cross validation score, predicted values versus true values, confusion matrix, learning curve, decision boundaries, performance of the model, scalability of the model, training loss, and training accuracy.



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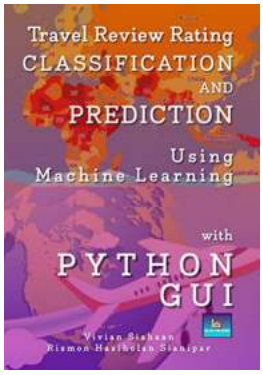

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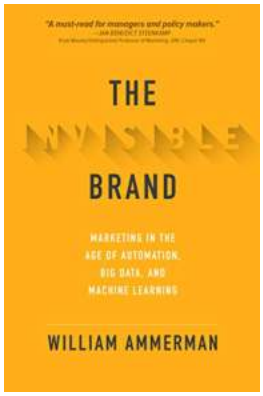

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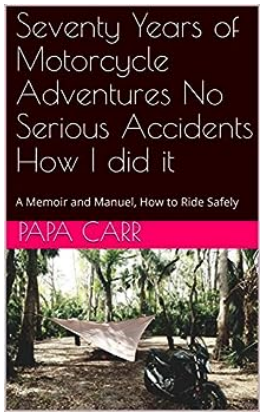

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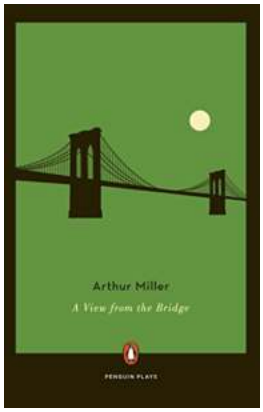

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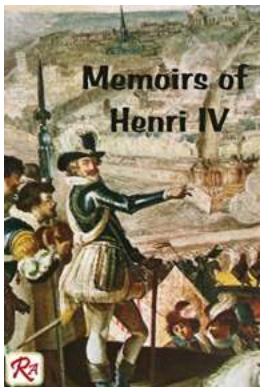

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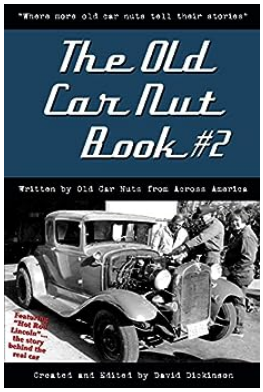

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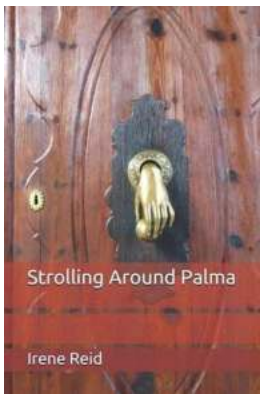

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