

RECOMMENDATION SYSTEM FOR TOURISTS

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ABSTRACT

This project uses statistics from previous tourism experiences to recommend travel areas to travelers. To recommend a traveling area, we use the C4.5 decision tree algorithm with some specific criteria. To promote new locations, all existing algorithms, such as collaboration algorithms and content filtering algorithms, employ the most recent user experience data. If the present user does not have any previous experience data, these algorithms will fail. Another solution to the problem is to utilize the C4.5 decision tree method to build the model based on prior users' experiences. When a new user enters a requirement the decision tree predicts the best and most accurate location. The decision tree does not require any additional user experience data. To use the decision tree model, you'll need a dataset. Pre-processing techniques can be used to eliminate empty or wrong values from this dataset, which can hurt the decision tree model. It is possible to remove the value. To predict or build the model, it may not be necessary to use all of the column values in the dataset. To remove unwanted features a feature selection algorithm is used. The MRMR feature selection algorithm is used to remove extraneous attributes, minimize the building model's execution time, and increase the system's correctness.

KEYWORDS:

C4.5 Decision tree, MRMR Feature Selection Algorithm

1. INTRODUCTION

Every day, many individuals go to e-commerce sites to get the information they need, including information about notable attractions all around the world. People carry personal electronic devices such as mobile phones and laptops. We may collect data or information. . So-called tourist recommender systems employ it to make recommendations for tourist destinations based on contextual criteria like location. The tourist recommendation system suggests a place to the visitor. The majority of earlier TRS concentrated on making an approximate selection of destinations and activities (restaurants, hotels, etc). They are sparse, adaptable, and inaccurate. This will necessitate a thorough study of tourist decision-making and the development of novel models for their information-gathering process. To start, we needed an east European dataset, feature selection methods, the Minimum Redundancy Maximum Relevance (MRMR) algorithm, and a supervised machine learning decision tree for classification. For translation, the C4.5 decision tree is used. The proposed RST contains three major innovations. To begin, two feature selection strategies are employed to reduce model complexity by removing unwanted (both unrelated and redundant) inputs from the system. The tourist attraction selection process is then recognized using the decision tree C4.5 as a classifier. As a result, our technology solves some of the present system's shortcomings and recommends the ideal site to visit based on your interests.

2. EXISTING SYSTEM

When we want to plan a tour for holidays or general visits, very first we take help from travel agencies then we need to plan according to travel agencies. However, we encounter some challenges as a result of this, such as the fact that our vacation begins, but the travel agency package date falls at the conclusion of our vacation or during our working hours. The existing system is generic, i.e. travel recommendations might be the same for some sightseers. Travel agencies often come up with plans that are not suitable for the sightseer's needs and interests. At some point, travel services guarantee great quality assistance to the vacationer, yet that doesn't occur really and travelers face numerous issues. The hotel recommendation system for tourists recommends hotels with the consideration of online reviews to make it easier to decide on the best hotel. It describes the hotel's related information such as Hotel address, Average score(ratings), Hotel name, Reviewer nationality, and Review (sentiments).

2.1 LIMITATIONS OF THE EXISTING SYSTEM

- Difficulties like our vacation get a start but the travel agency package date is at the end of our holiday or in our working time.
- It comes up with plans according to travel agencies, which is not matching with sightseer's needs and interests.

3. PROPOSED SYSTEM

This paper proposes a TRS that propose destinations to tourist to solve the mentioned challenges. The proposed TRS is processed offline utilizing the Data Mining (DM) measure. This includes variable selection by using feature selection methods, decision making by using decision tree C4.5, and translation of the decision tree. The proposed TRS has three main innovations. Firstly, two feature selection methods are used to remove the unnecessary (both irrelevant and redundant) inputs into the system and decrease model complexity. Secondly, the decision tree C4.5 is then utilized as a classifier to facilitate the tourist destination selection process. Lastly, the proposed system uses real-world data that have been collected by us from the crawled trip advisor of East Europe. C4.5 decision tree methods leverage past users' experience input to solve the problem mentioned above. And then build a decision tree model, if a new user enters his requirements then the decision tree will predict the best location based on his given input. Assume that users with similar interests should favorite similar things as one another. Based on the Decision tree, the recommendation process of tourist attractions can be partitioned into three stages.

- The rendering of user (tourist) information. The prior user review of the appeal's visit history should be researched and illustrated.
- The emergence of nearby users (tourists). The similarity of sightseers can be evaluated using information about previous visits and the MRMR technique that we have described. Based on defined similarities, a neighbor tourist list can be created.
- The creation of attraction suggestions. A top appeal would advise o the traveler based on his neighbor's visiting history.

Advantages

- Users can choose their free time to travel - instead of waiting for the decision of a travel agency, they can choose their decision.
- This system will help for getting more information based on the people’s reviews who visited the places.
- Saves time.

3.1 PROPOSED ARCHITECTURE

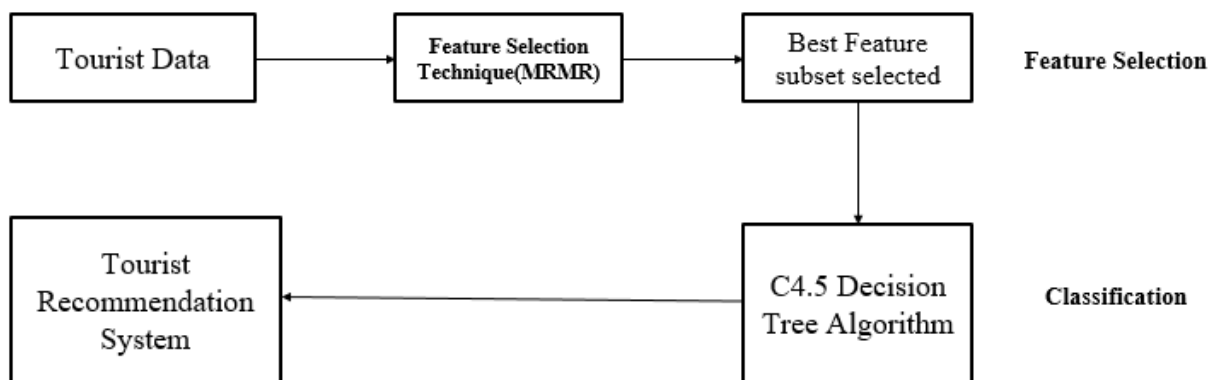


Fig: System Architecture

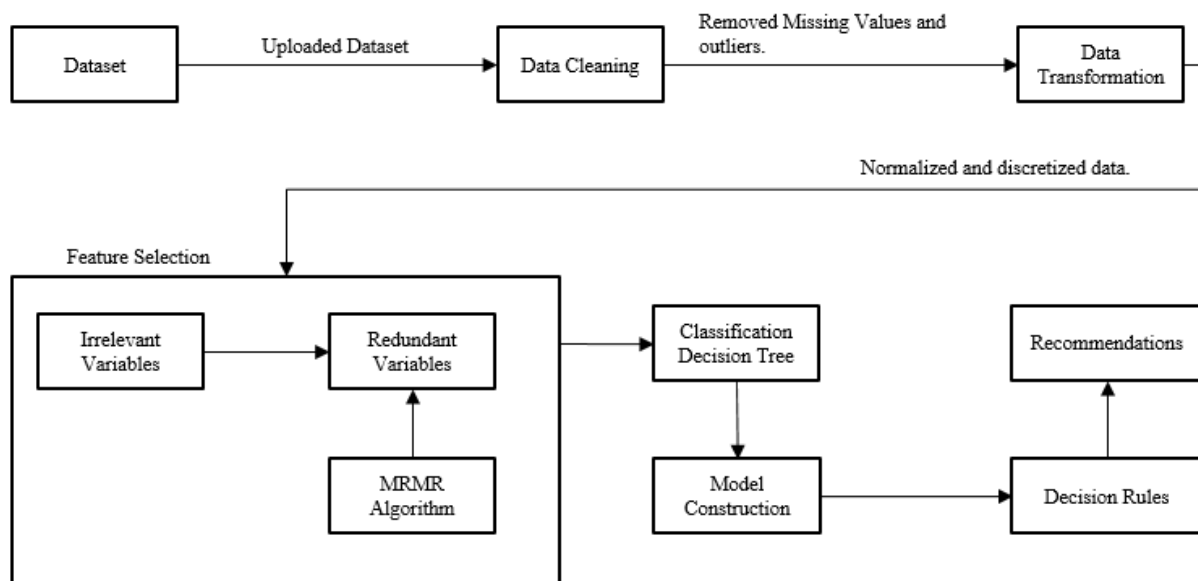


Fig: Flow Diagram

4. IMPLEMENTATION

Uploading a dataset to our system is the first step in the execution. The dataset is now evaluated by the MRMR algorithm, which selects the best characteristics. The C4.5 decision tree classifier algorithm is then used by the compiler to construct a decision tree based on the same data. This algorithm also helps in deciding to recommend a tourist place for the user. Then, according to the user's requirements, test data will be provided. A location is predicted and presented as the result based on the user's criteria. The user will plan a tour based on the recommended output whenever they wish. In the end, a feature selection graph is displayed for the user to understand the features which are selected from the entire features.

Python:

- The Python programming language is an Open Source, cross-platform, high-level, dynamic, interpreted language.
- Python is a very flexible language. It's commonly utilized for a variety of reasons.

Matplotlib Library:

- Matplotlib is a plotting library for the Python programming language and its numerical mathematics extension NumPy.
- matplotlib.pyplot is a collection of methods that make matplotlib act like MATLAB. Each pyplot function alters a figure in some way, such as constructing a figure, a plotting area in a figure, charting specified lines in a plotting area, and so on.

Tkinter Library:

- Tkinter is **the standard GUI library for Python**. Python when combined with Tkinter provides a fast and easy way to create GUI applications.
- Tkinter provides a powerful object-oriented interface to the Tk GUI toolkit. Creating a GUI application using Tkinter is an easy task.
- MessageBox – Displays the message boxes
- Filedialog – It will help to open, and save files or directories.

NumPy Library:

- Contains a multidimensional array and matrix OS.
- It is used to perform various operations on arrays so it contains many transformation functions.

pandas Library:

- **Pandas** are used to analyze data. It runs on top of NumPy. It has a higher level of Interface
- It is useful in cleaning, transforming, manipulating, and analyzing data.

sklearn Library:

- Scikit-learn (Sklearn) is **the most useful and robust library for machine learning in Python**.
- It provides a selection of efficient tools for machine learning and statistical modeling including classification, regression, clustering, and dimensionality reduction via a consistency interface in Python.
- Accessible to everybody, and reusable in various contexts · Built on NumPy, SciPy, and matplotlib.
- **RFE – Recursive Feature Elimination**

It is easy to use and configure. It is effective at selecting features. An efficient approach for eliminating features. This algorithm provides a way to calculate important scores such as a decision tree.

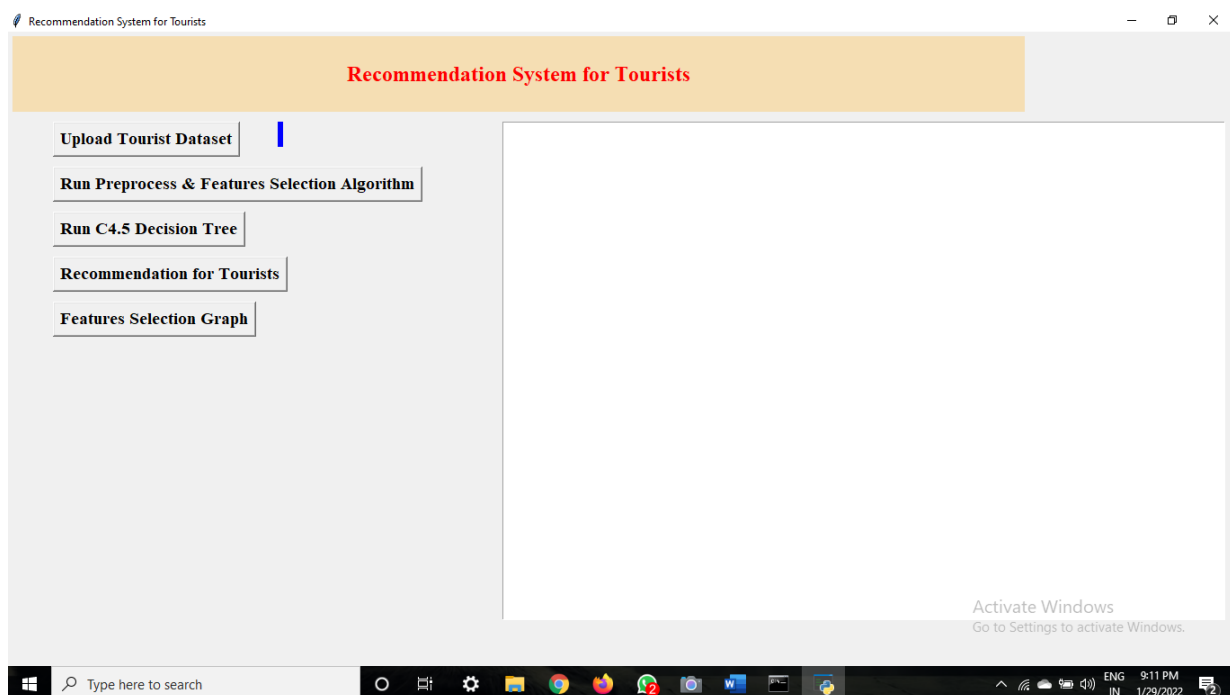


Figure: Screen when we run the program

5. RESULTS

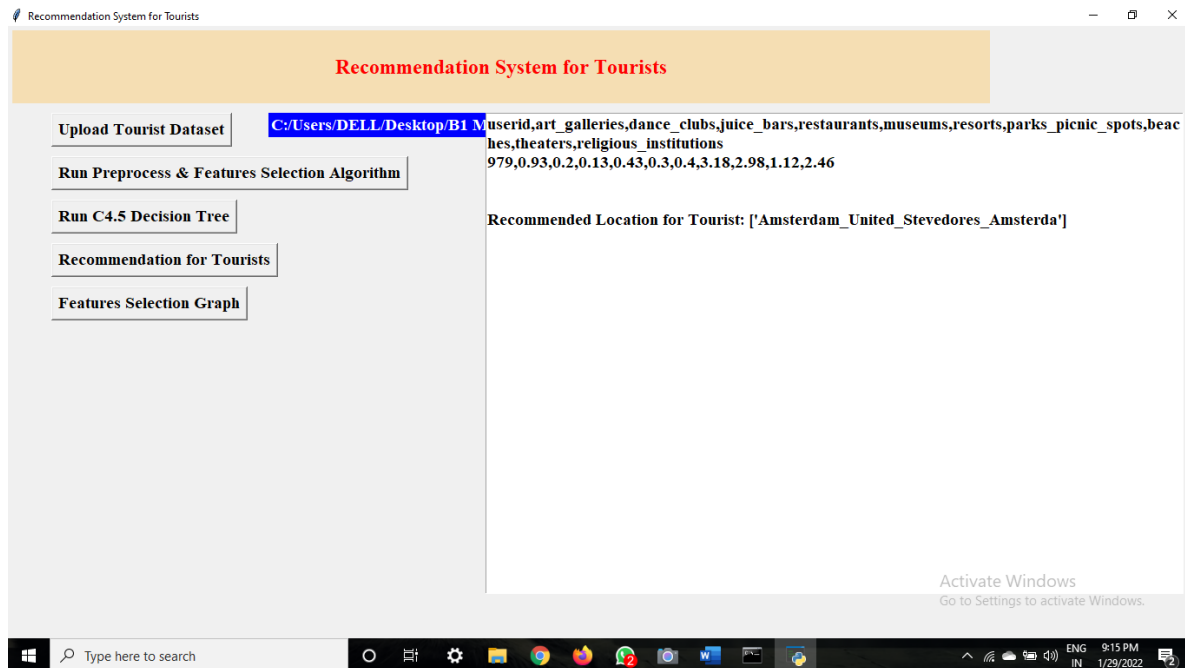


Figure: Screen to “Recommend a place for Tourists”.

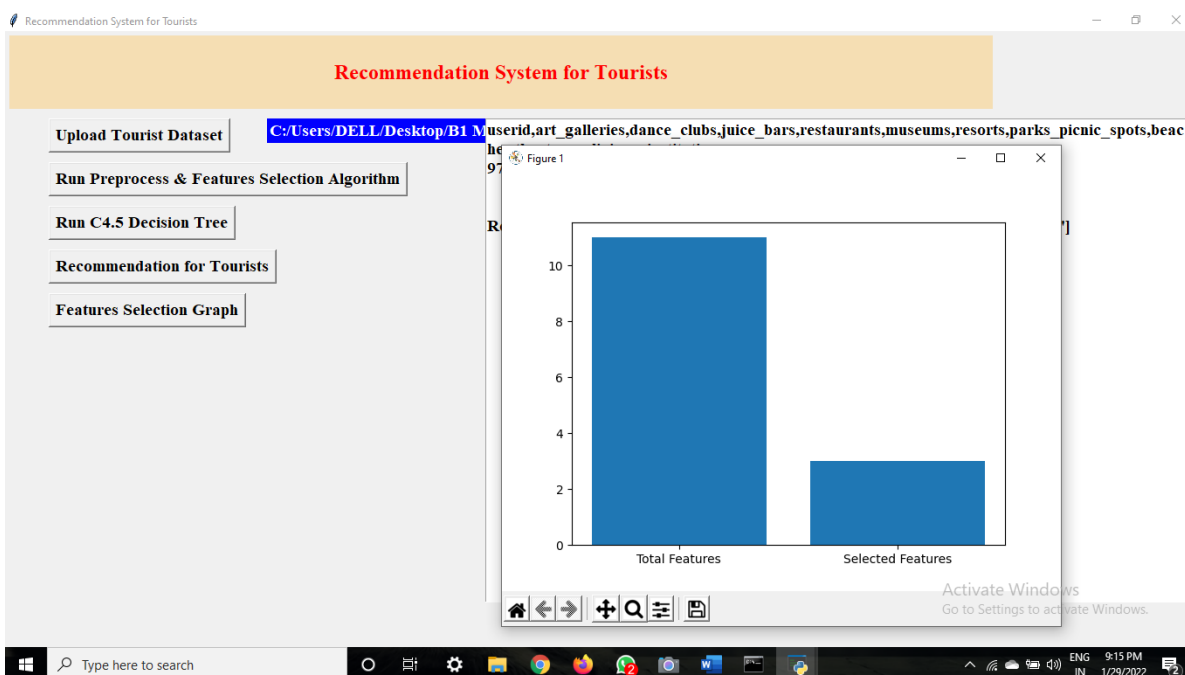


Figure: Screen when the ”Features Selection Graph” Button is pressed

6. CONCLUSION

- A decision tree-based tourist recommendation system has been implemented in this project to address the existing difficulty of the site Tourist Recommendation System.
- The proposed TRS satisfies the tourist’s requirements who plan to visit the city of Europe.
- This project classifies the data based on the interest, if a new user enters his requirements then the decision tree will predict the best location based on his given input.
- By this vacationers can plan their trip based upon their interests in their holidays.

7. FUTURE SCOPE

- For future work, you can consider different classifiers to improve the accuracy of data set classification.
- Furthermore, interactive and customizable user interfaces, as well as front-end web applications, can be designed and executed.

8. REFERENCES

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