ISSN: 0974-5823 Vol. 7 No. 6 June, 2022

International Journal of Mechanical Engineering

A Tourist Recommendation System Using a Decision Tree

[1]Mr. Shaik Imam Saheb, [2]Mohammed Fahad Qureshi, [3]Mohammed Adnan Khan, [4]Mohammed Faisal, [5]Mohammed Shoaib Abdul Raoof

[1]Associate Professor, Department of Computer Science and Engineering, Lords Institute of Engineering and Technology, Hyderabad.

[2,3,4,5]Research Scholar, Department of Computer Science and Engineering, Lords Institute of Engineering and Technology, Hyderabad.

ABSTRACT— One of the most difficult aspects of organising a trip is deciding where to go based on all of the information that is accessible online and through other sources. It's a problem that previous TRSs have attempted to address. The practical and usability aspects of the project, as well as some of the more technical ones, such as accuracy of the system, have both had been overlooked. To solve this problem, a complete understanding of tourists' decision-making and new designs enabling their information search is needed. An innovative human-centred TRS is proposed in this research to assist travellers in a new city in choosing what to see and do. A real-world data set is used for both professional and operational considerations. In order to limit the amount of inputs into the system, the system is constructed utilising a two-steps feature selection technique, and suggestions are provided using decision tree C4.5. Experimental evidence indicates that the financial TRS can offer tourist places that are tailored to the preferences of the users.

Index Terms— Decision Trees are used to classify and filter data in order to help users find the best places to visit.

I.INTRODUCTION

The tourist business is a huge contributor to the global economy, accounting for 9.5% of global GDP in 2013. In 2023, tourism is predicted to account for 10.3% of GDP. South And east Asia is predicted to expand at the quickest rate in terms of GDP contribution from travel and tourism. According to a report published in 2013, Thailand, Indonesia, Singapore, and Myanmar were the most popular destinations for tourists in 2013.

Over the previous nine years, international visitor visits in Thailand have more than doubled (See Fig 1). Thailand was the tenth most popular tourist destination in the world in 2013[1]. The number of foreign tourists that visit the country each year has increased by 18.76 percent since 2012 [2]. The Thai government's principal goal is to increase the number of tourists (both domestic and international) and the benefits that come from tourism. Thailand's tourism industry brought approximately $55.49 billion in revenue in 2013[2]. Tourists' major source of product and service information has shifted to the Internet [3]. With so much information out there, it's easy for travellers to become overwhelmed when trying to find a place. There are numerous variables to consider when establishing a vacation plan, such as the attractiveness of the attractions, routes to take, hotels to book, the number of people travelling, the quantity of things to do, the weather, etc.[4]. Tourism has recently reaped significant benefits from ICT, particularly the Internet [5]. It has never been easier for international tourist providers to browse, choosing, start comparing, and make decisions due to advancement of decision support systems recognised as Recommender System (RS). The majority of previous TRSs have focused on estimating the user's preferences and interests when selecting a destination, activities, attractions, and visitor attractions (e.g. fast food places, hotels, and transportation). Technically, these TRSs only give basic techniques for filtering, sorting, and matching objects with the tight constraints of the user. In terms of specifics, they fall short in terms of both technical (e.g. sparsity and scalability) and practical elements (accuracy of the system, personalization theories, etc). (e.g. user satisfaction, usability, etc.). Making tourists' decision-making process easier is one of the most difficult aspects of establishing a TRS with tailored recommendations of tourism spots. It takes a comprehensive understanding of tourists' decision-making and

the development of unique algorithms for their search and purchase organization in order to ensure this. Additionally, tourists' information-gathering uncertainties must be 0 5,000,000 10,000,000 15,000,000 20,000,000 25,000,000 30,000,000 in order to be considered reasonable. The Proceedings of the 21st World Congress on Automated & Computation, Universities of Strathclyde, Ayrshire, G1 1XJ, UK, [11-12] September 2015, have been deleted. The model's complexity could be reduced by eliminating or simplifying additional system parameters. As a result, both the effectiveness of the recommendation system and the degree of customer happiness can be improved. In order to address the aforementioned issues, this research suggests a brand-new, human-centered TRS for making travel destination recommendations to tourists. Offline data mining (DM) is used to process the suggested TRS. In this process, data is collected, variables are chosen utilizing feature selection methods, decisions are made utilising the decision tree C4.5, and the decision tree is then interpreted. Among the TRS's primary innovations are three. As a first step, two feature selection approaches are employed to remove the unwanted inputs (both irrelevant as well as redundant) from the system and to reduce the model complexity [6]. Classifier C4.5 is used to determine the major tourist selection process in the second place. Finally, the suggested method makes use of data that we have gathered from Chiang Mai, Thailand, for our own research purposes. The following sections make up the bulk of the paper. Tourism-related recommendation systems are discussed in Section 2. Section 3 explains how the information in this paper was gathered. The TRS framework based on the DM approach is shown in Section 4. Section 5 demonstrates the experimental setup for this study. For the proposed TRS, Section 6 provides results and an evaluative analysis. In the concluding section, we give some rough conclusions and our plans for the future.

II.RELATED WORK

Emerging concerns from bad online reviews of tourists: from e-tourism to f-tourism

One of the most difficult aspects of organising a trip is deciding on a place based on the information accessible online and through other sources. This is a problem that previous travel recommendation systems have tried to address. In this research, we provide a unique Travel Recommendation System that recommends venues to tourists based on the travellers dataset. A real-world data set is used for both professional and operational considerations. Decision tree C4.5 makes suggestions based on a two-step feature selection process for the system's development. Experiments have shown that the suggested Travel Recommendation System is capable of making recommendations on the most popular tourist attractions.

Semantics of Online Tourism and Travel Information Search

This paper examines Internet usability for travel searching for information using semantic network analysis. Internet usability is the level of match between information producers' and consumers' mental representations of Internet structure and content. Mismatched mental models between tourism marketers and travellers hampered the Internet's utility as a travel resource. Semantic network analysis can show differences between these two mental models and provide advice for optimal Internet information providing. The authors explore travel information providers' mental models through semantics network theory when marketing their destinations online and present a preliminary semantic network result.

E-Tourism: Internet and ICT in Tourism: Peripheral Hotel Units

E-tourism digitalizes the tourism sector and infrastructure. E-tourism reduces seasonality and increases reservations and sales. Internet use has revolutionised the tourism industry's structure and fundamentals. Consumers-tourists may choose their destination, compare pricing, and manage their finances. If used effectively, ICT and the Internet may help tourism operators improve their facilities. The study aims to examine the usage of ICT by non-coastal Greek touristic units. Outrace Paellas is the research area. In October 2012, researchers used personal interviews to create structured questionnaires. 16 Pozar hotels participated. The questionnaires have five open and closed units.

Conclusions: Even in small towns, Greek tourist firms use ICT. Most units use the internet reservation system, and it's predicted to double in five years. E-marketing utilisation is satisfactory, and most respondents believe it's essential for an enterprise's success. Most tourism units seem unfamiliar with eCRM systems (E-CRM). Digital travel agencies and social networking sites let tourist units communicate with potential customers. Online reservations have helped increase customer arrivals, giving the tourism industry guarded hope despite the financial crisis.

The Impacts of Interaction Decision Support on Consumer Decision - making process in Online Shopping Environments

Consumers' use of interactive entertainment (such as the Internet) for pre-purchase communication search and online purchasing has increased rapidly, but little is known about the how consumers in making purchasing intention in such settings notwithstanding the the exploding growth of electronic commercial transactions and the rapidly growing amount. Online shopping environments allow suppliers to design highly interactive retail interfaces that can be used by customers. As a customer, it is desirable to adopt sophisticated technologies that help shoppers make purchasing decisions by tailoring the e commerce environment to their unique interests. Interactive decision aids, as they're known, might have a significant impact on how consumers gather products information and make purchasing decisions. It is the major goal of this paper to investigate how interactive decision aids could influence customer information processing in online buying environments.

III.METHODOLOGY

The author of this research uses a dataset culled from previous trips taken by tourists to develop the C4.5 decision tree technique with MRMR feature selection. Algorithms currently in use, such as collaboration or information screening algorithms, rely on the past experiences of the user to make suggestions for new areas [9]. Unless the present user has some prior history, these algorithms will fail.

Author asks the use of C4.5 decision tree techniques to tackle the aforesaid challenge, which take prior user experiences and construct a model and then forecast the optimum position depending on current user's given input. For new users, historical experience data isn't necessary.

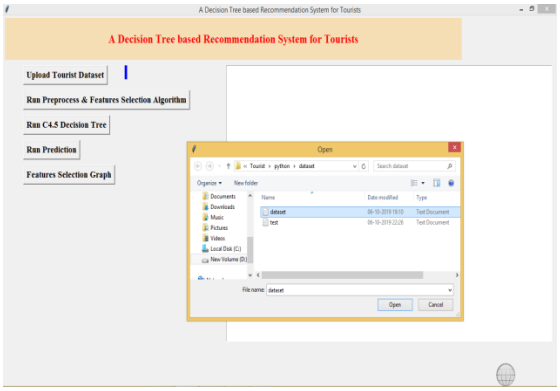
We need a dataset to implement a decision tree model, and this dataset will occasionally contain empty or garbage values, which will have a negative impact on the decision tree model if they are not removed using pre-processing techniques.

We don't need all of the column values in the dataset every time we predict or build a model because features selection algorithms can remove those that aren't needed. In this case, we're using MRMR feature extraction methodologies [10] to remove those that aren't needed in order to speed up the modelling process and improve system accuracy.

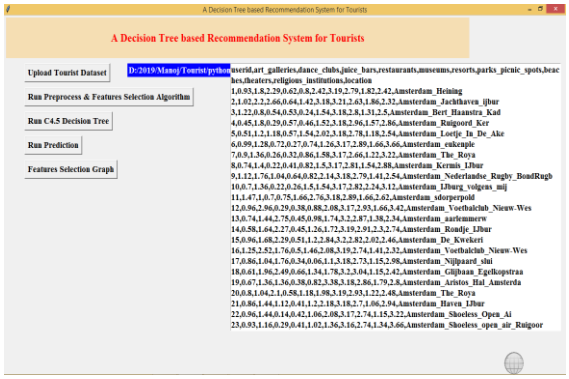
IV.RESULT AND DISCUSSION

To run the project to get below result

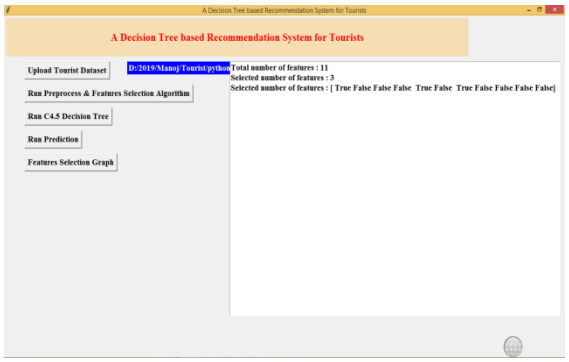
Click on the 'Upload Tourist Dataset' tab in the above result and then upload the dataset file.



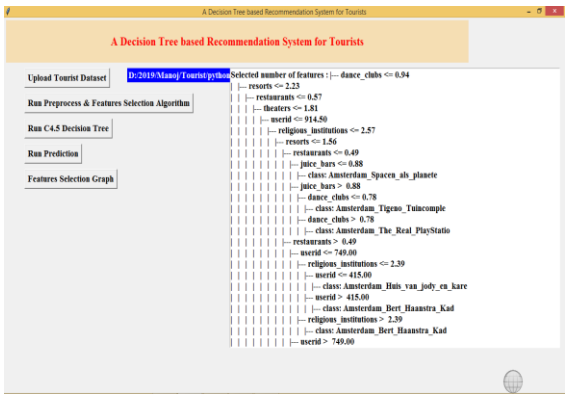
All dataset information is displayed on the previous example after uploading a file.



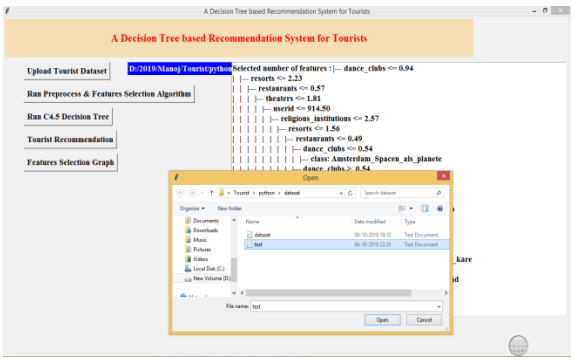
There are a total of 12 attributes in the dataset, which includes all of the user's previous experience. In order to remove empty values and reduce the size of the attributes, click on the option labelled "Run Pre-process & Feature Selection Algorithm".



After applying MRMR features, the size of the table is reduced to three and only those attributes that have a TRUE or FALSE column are used. To create a model, click 'Generate C4.5 Decision Tree Model.'

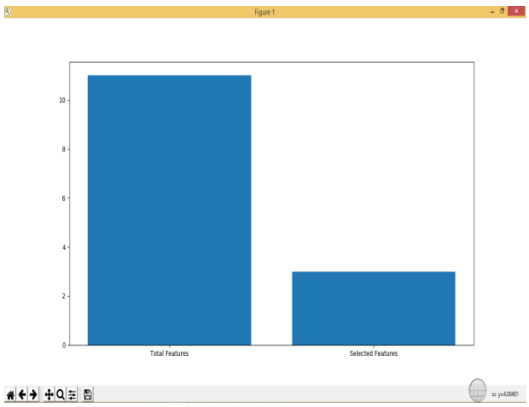


The above result shows that a model was constructed utilising an IF/ELSE statement decision tree. If > it makes a decision, if it makes a decision, it will take some action. Upload a test file with no place name by clicking on the 'Tourist Recommendation' tab.



Uploading a sample file yields the following result: click open to view the suggested or predicted location. An error message will be displayed if the test file path name is missing.

We could see all values in the test data in the above result, but the location name is missing, even though the programme anticipated or recommended the location name based on the test values. To see the graph below, click on the Features Selection Graph tab.



The x-axis shows the total number of features, while the y-axis shows the number of features selected using the MRMR technique. As can be seen in the graph, the number of features selected using the MRMR technique is reduced to three.

V.CONCLUSION

To address the existing problem of destination TRS, a decision tree-based tourist recommendations system was proposed in this work. The Two sub-data sets have been created from this data set. Utilising in-depth understanding of the tourism industry. These were carried out as a result improves classification accuracy and reduce the number of false positives decision-making process's level of difficulty. This is the best choice.

NMIFS trees with the highest degree of correctness simplicity (i.e. fewer leaves and smaller trees) have a positive effect been designed to allow users to pick their own travel destination. Making choice retrieved rules from decision trees It's plain to see due to the fact that NMIFS consumes fewer resources, Both datasets have a greater number of features than MRMR. As a final point, the findings from this study show that A TRS has been proposed. The TRS that is being considered will meet the needs of tourists. That who plan to travel or are in the process of visiting Chiang Mai is a city in northern Thailand. Different kinds of classifications could be used in the future seen as a way to improve the precision with which A collection of information. In addition, a front-end web app and a There will be an interactive and adaptable user interface created and put into practise.

VI.REFERENCES

[1] "Economic Impact of Travel & Tourism 2014 Annual Update: Summary." World travel & tourism council.

[2] "Thailand Annual Report 2013."

[3] E. Pantano and L. D. Pietro, "From e-tourism to f-tourism: emerging issues from negative tourists' online reviews," J. Hosp. Tour. Technol., vol. 4, no. 3, pp. 211–227, 2013.

[4] B. Pan and D. R. Fesenmaier, "Semantics of Online Tourism and Travel Information Search on the Internet: A Preliminary Study," Inf. Commun. Technol. Tour. 2002 Proc. Int. Conf. Innsbr. Austria 2002, pp. 320–328, Jan. 2002.

[5] E. Pitoska, "E-Tourism: The Use of Internet and Information and Communication Technologies in Tourism: The Case of Hotel Units in Peripheral Areas," Tour. South East Eur., vol. 2, pp. 335–344, Dec. 2013.

[6] G. Häubl and V. Trifts, "Consumer Decision Making in Online Shopping Environments: The Effects of Interactive Decision Aids," Mark. Sci., vol. 19, no. 1, p. 4, Winter 2000.

[7] F. Ricci, L. Rokach, and B. Shapira, "Introduction to Recommender Systems Handbook," in Recommender Systems Handbook, F. Ricci, L. Rokach, B. Shapira, and P. B. Kantor, Eds. Springer US, 2011, pp. 1–35.

[8] P. Resnick and H. R. Varian, "Recommender Systems," Commun ACM, vol. 40, no. 3, pp. 56–58, Mar. 1997.

[9] G. I. Alptekin and G. Buyukozkan, "An integrated case-based reasoning and MCDM system for Web based tourism destination planning," EXPERT Syst. Appl., vol. 38, pp. 2125– 2132, 2011.

[10] R. Anacleto, L. Figueiredo, A. Almeida, and P. Novais, "Mobile application to provide personalized sightseeing tours," J. Netw. Comput. Appl., vol. 41, pp. 56–64, May 2014.

[11] L. Sebastia, I. Garcia, E. Onaindia, and C. Guzman, "eTOURISM:: A TOURIST RECOMMENDATION AND PLANNING APPLICATION," Int. J. Artif. Intell. Tools, vol. 18, no. 5, pp. 717–738, Oct. 2009.

[12] J. B. Schafer, J. A. Konstan, and J. Riedl, "E-Commerce Recommendation Applications," in Applications of Data Mining to Electronic Commerce, R. Kohavi and F. Provost, Eds. Springer US, 2001, pp. 115–153.