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# PERSONALIZED TRAVEL PLANNING SYSTEM

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## ABSTRACT

Nowadays tourism transportation has become a hot topic of research, and the rapid development of Internet technology has overloaded information, which has made it impossible to provide services with different preferences for different users. Therefore, personalized tourism transportation has become the current mainstream trend. According to the different preferences of travelers for money and travel time, based on the analysis of mainstream tourism services, and combined with multi-source traffic data, this paper proposes a mathematical model for personalized travel planning. This paper proposes a two-stage spatiotemporal network solution algorithm. In the first stage, based on the set of travel attractions given by the traveler, the shortest path algorithm is used to plan an approximate optimal path that meets the traveler's preferences and to implement connection of multiple travel modes. The second stage is combined with the spatiotemporal network to achieve daily travel planning between multiple attractions. The two-stage spatiotemporal network algorithm is feasible for solving path planning problems, and can simplify route planning problems with time windows, which provides a useful reference for future personalized travel planning recommendations.

***Keywords: path algorithm, network, spatiotemporal network.***

## I INTRODUCTION

Tourism transportation is a central issue in various studies at present [1], and it involves many aspects such as tourism, multiple transportation modes, and travel decisions. Currently, mainstream tourism service providers have provided users with a large number of tourism transportation services, but it is indeed impossible to intelligently plan travel itineraries based on users' own needs. Custom travel services still need to be done manually. It takes a lot of manpower and time, so the problem of trip planning is a topic that travelers pay attention to, but it is a theoretical problem. Research shows that

personalized travel recommendation functions can be divided into three parts: (1) recommending a certain aspect of the travel itinerary, including living, eating, traveling, entertainment, shopping; (2) recommending travel routes; (3) recommend complete tourist itinerary [2]. Personalized tourism recommendation technology is the key technology to solve the current information redundancy in the tourism industry. When a traveler is planning a travel itinerary, they will find related travel information. However, the large amount of data makes it difficult for travelers to quickly and efficiently obtain valuable information from complex data. At present, some scholars have done some preliminary research on personalized tourism recommendation models [3], mostly use historical information provided by travelers to recommend travel information suitable for them. In 2017, Haqqani M., Li X., Yu X. proposed a preference estimation method, which combined implicit relevance feedback method into the journey planner and used the user's travel history data to estimate the corresponding preference model [4]; In 2018, Li Xiaoxu, Yu Yaxin, Zhang Wenchao in order to deal with large-scale social network trajectory data efficiently, MapReduce programming model with optimized clustering is used to mine the coterie group pattern [5]; In 2020, Liu Zelin ,Cao Jian, Tan Yudong, Xiao Quanwu proposed an effective method of air travel planning, which can find many air travel plans by calling the API provided by the airline [6]. At the same time, many scholars use space-time networks to conduct in-depth research in various fields. In 2017, Chen Jingwei, Liu Ming. proposed a time-space network model of the operational system of automated-vehicles. By using the technique of the time-space network, this paper described in detail the movements of the passengers and the automatedvehicles in the road network. The transformation of the original road network into a static space-time network reduced the complexity of the new model [7]; In 2018, Sai Qiuyue et al. designed a discrete space-time network construction algorithm for abnormal flights, and proposed a feasible path generation algorithm based on the constructed discrete-time network[8] ; In 2019, Zhang Zheming et al. built a spatiotemporal state

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network integrated with the crew rules to control the network size and simplify the complexity of mathematical models. It is proved that this method can not only effectively solve the problem of high-speed railway passenger traffic planning, but also has a certain effect when solving large-scale mixed time problems [9]; Cao Yang et al. extended the understanding of the itinerary planning problem from a spatial perspective to a tourist activity perspective. From the spatiotemporal coupling relationship and reconstruction mode of tourism nodes, the multidimensional attributes such as time, space, and topic involved in the travel were organically organized, and then the travel's spatiotemporal chain was proposed.

**Problem statement:**

Choosing a tourist destination from the information that is available on the Internet and through other sources is one of the most complex tasks for tourists when planning travel, both before and during travel. Previous Travel Recommendation Systems (TRSs) have attempted to solve this problem. However, some of the technical aspects such as system accuracy and the practical aspects such as usability and satisfaction have been neglected..

**Motivation:**

To address this issue, it requires a full understanding of the tourists' decision-making and novel models for their information search process. This paper proposes a novel human-centric TRS that recommends destinations to tourists in an unfamiliar city. It considers both technical and practical aspects using a real world data set we collected. The system is developed using a two-steps feature selection method to reduce number of inputs to the system and recommendations are provided by decision tree C4.5. The experimental results show that the proposed TRS can provide personalized recommendation on tourist destinations that satisfy the tourists.

**Objective:**

a tourist destination from the information that is available on the Internet and through other sources is one of the most complex tasks for tourists when planning travel, both before and during travel. Previous Travel Recommendation Systems (TRSs) have attempted to solve this problem. However, some of the

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technical aspects such as system accuracy and the practical aspects such as usability and satisfaction have been neglected. To address this issue, it requires a full understanding of the tourists' decision-making and novel models for their information search process.

**ProposedSystem:**

The proposed DM framework consists of four phases including data acquisition, data pre- processing, data analysis, and result interpretation. (1) For data acquisition, the designed questionnaire, which has four parts, is distributed and collected from Chiang Mai, Thailand. (2) The collected data is pre-processed using several data pre-processing techniques involving data cleaning, data transformation, and feature selection methods. (3) The third phase involves the data analysis processes using a decision tree C4.5 as classifier. The aim of the third phase is to identify suitable features and find personalized systems have not been a focus of RS research.

To overcome from above problem author is asking to use C4.5 decision tree algorithms which take experiences of previous users and then build a model and if new user enter his requirements then decision tree will predict best location based on his given input. Decision tree don't need new users past experience data.

To implement decision tree model, we need to have dataset and this dataset sometime will have empty or garbage values and this values will put bad effect on decision tree model so we can remove such empty or garbage values by applying pre-process techniques.

Sometime to predict or build model no need to use all columns (attributes) values from dataset and these unnecessary attributes can be remove by apply features selection algorithms and here we are using MRMR features selection algorithms to remove unnecessary attributes to reduce execution time of building model and to increase system accuracy.

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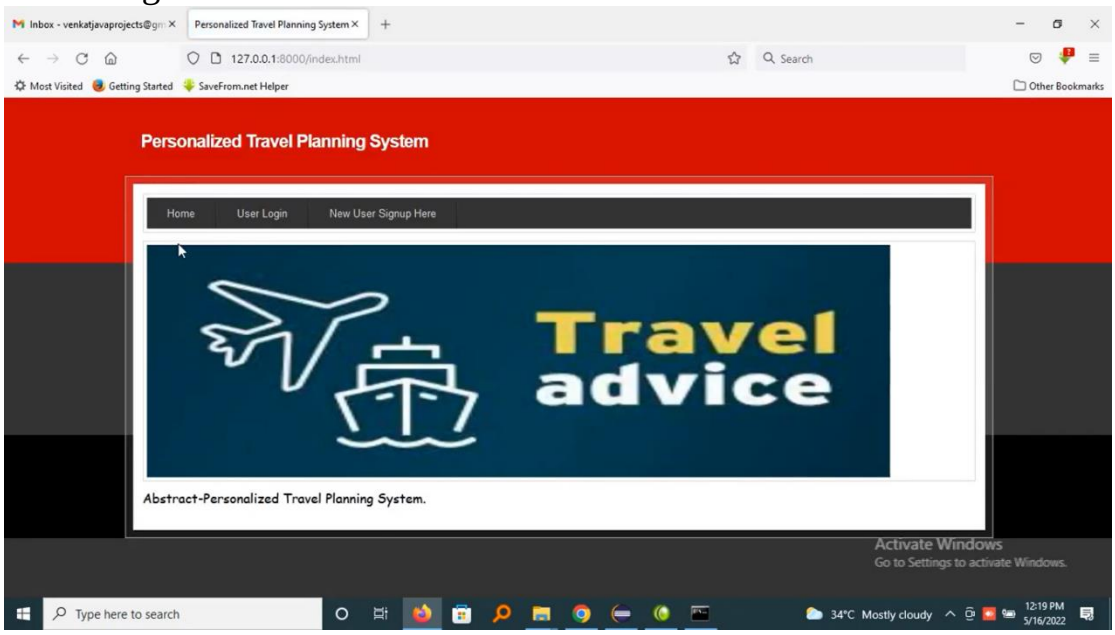
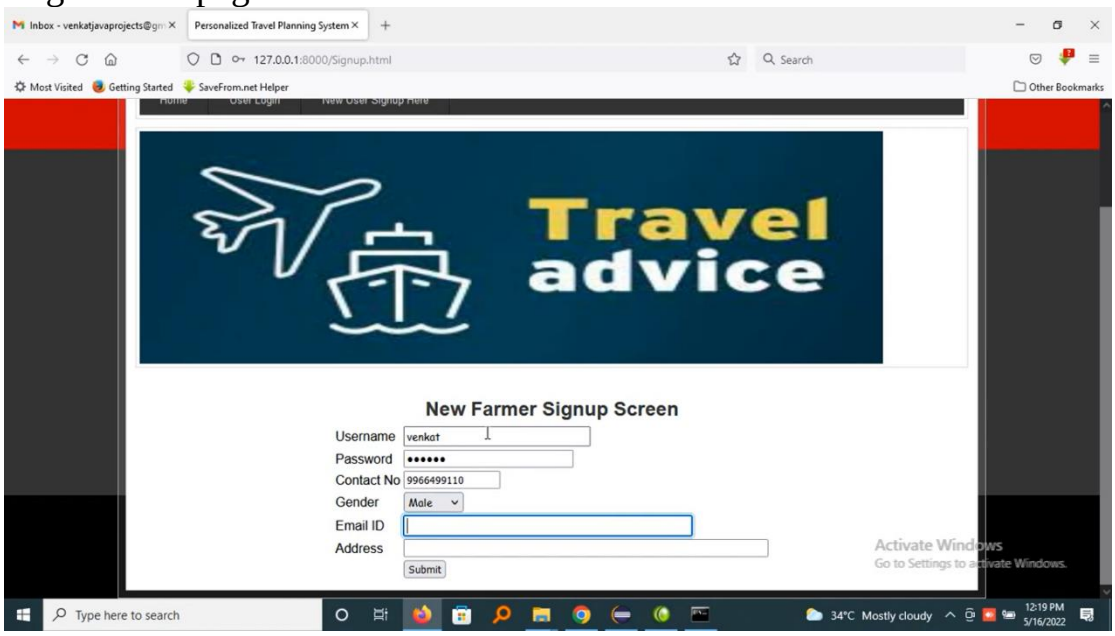
Home Page




Registration page



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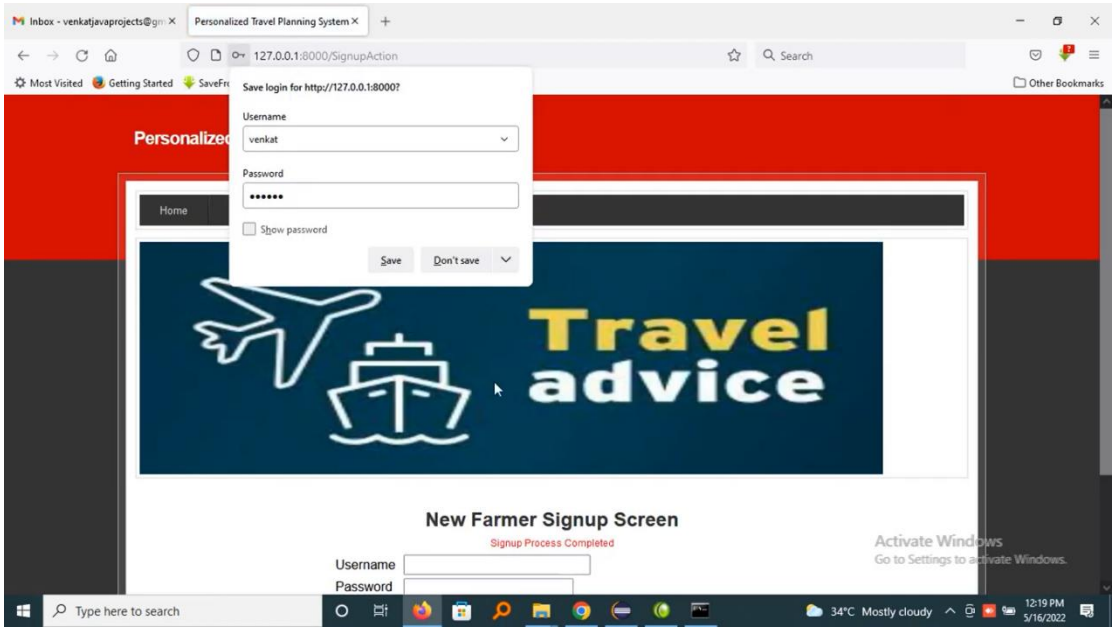
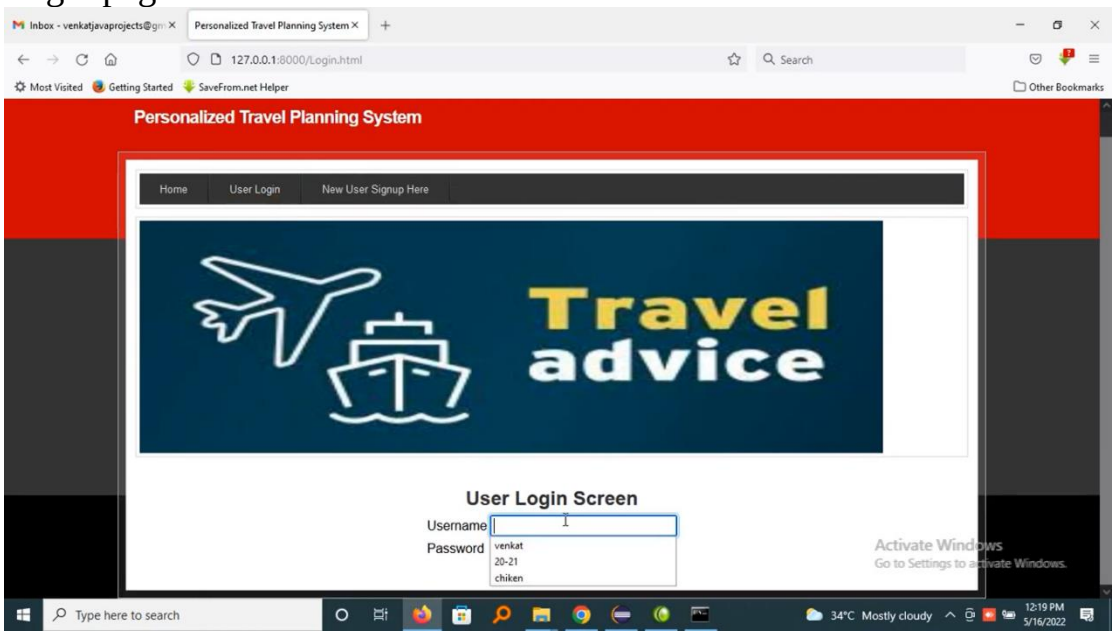



Login page



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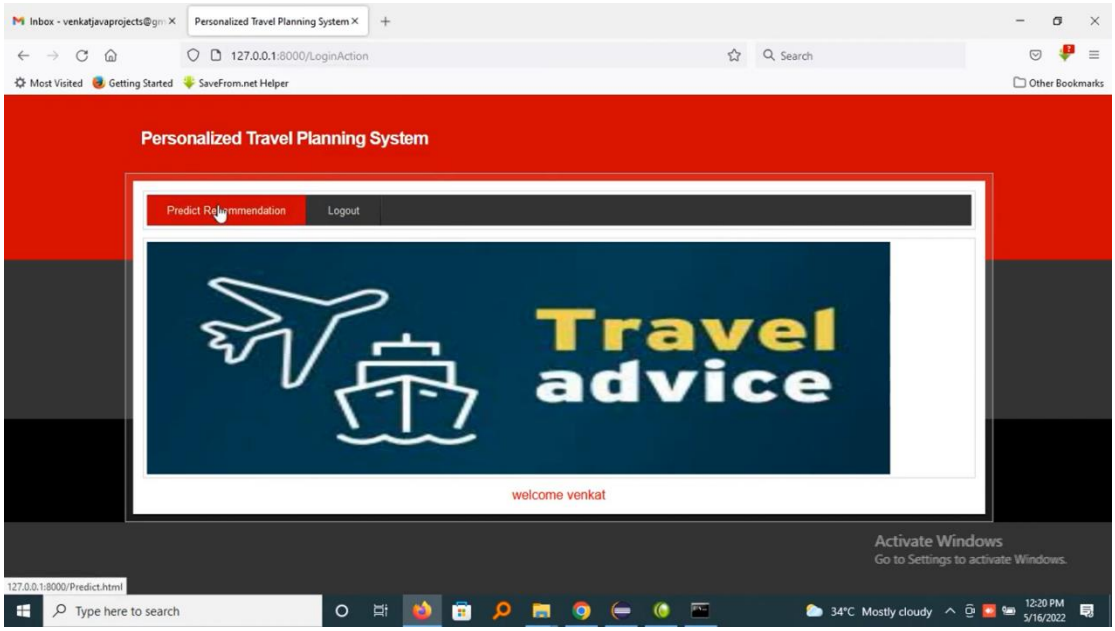
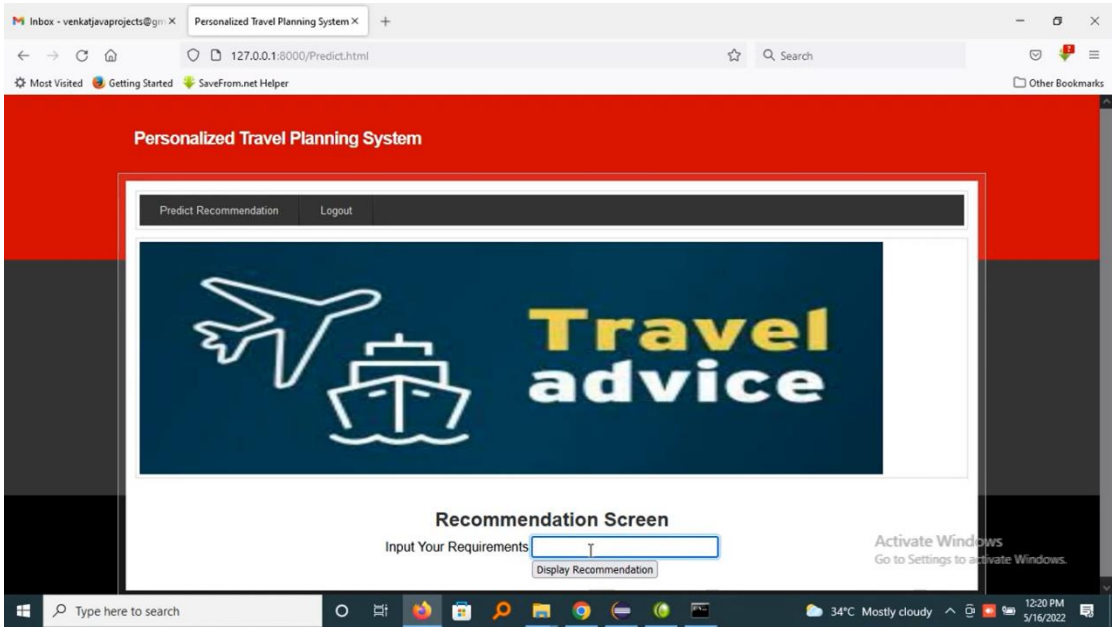



Recommendation Screen



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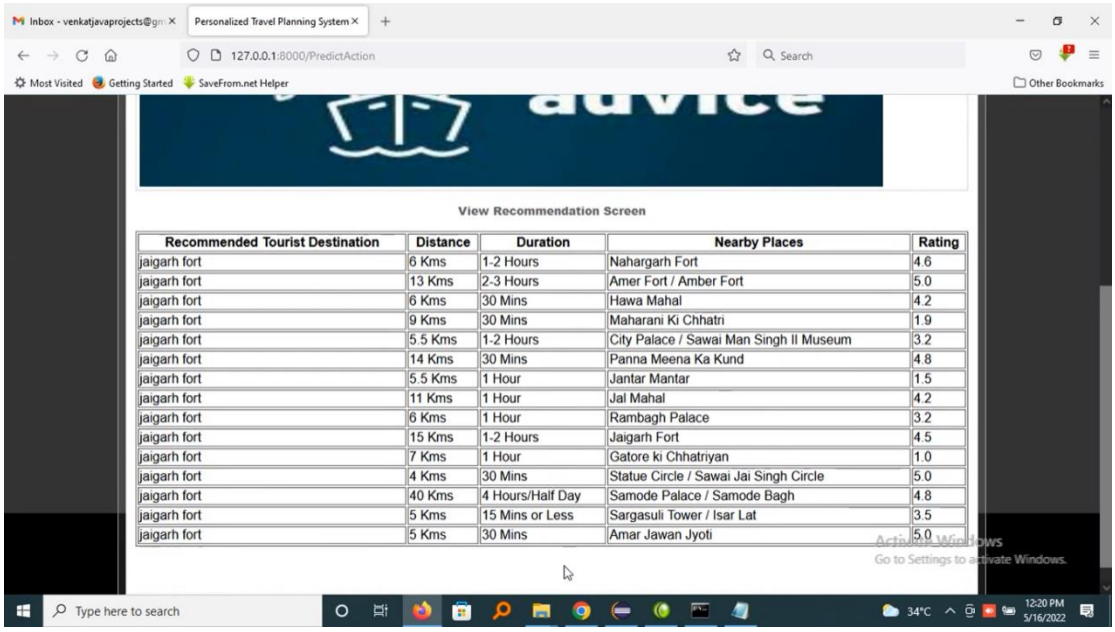


| Recommended Tourist Destination | Distance | Duration | Nearby Places | Rating |
|---|---|---|---|---|
| jaigarh fort | 6 Kms | 1-2 Hours | Nahargarh Fort | 4.6 |
| jaigarh fort | 13 Kms | 2-3 Hours | Amer Fort / Amber Fort | 5.0 |
| jaigarh fort | 6 Kms | 30 Mins | Hawa Mahal | 4.2 |
| jaigarh fort | 9 Kms | 30 Mins | Maharani Ki Chhatri | 1.9 |
| jaigarh fort | 5.5 Kms | 1-2 Hours | City Palace / Sawai Man Singh II Museum | 3.2 |
| jaigarh fort | 14 Kms | 30 Mins | Panna Meena Ka Kund | 4.8 |
| jaigarh fort | 5.5 Kms | 1 Hour | Jantar Mantar | 1.5 |
| jaigarh fort | 11 Kms | 1 Hour | Jal Mahal | 4.2 |
| jaigarh fort | 6 Kms | 1 Hour | Rambagh Palace | 3.2 |
| jaigarh fort | 15 Kms | 1-2 Hours | Jaigarh Fort | 4.5 |
| jaigarh fort | 7 Kms | 1 Hour | Gatore ki Chhatriyan | 1.0 |
| jaigarh fort | 4 Kms | 30 Mins | Statue Circle / Sawai Jai Singh Circle | 5.0 |
| jaigarh fort | 40 Kms | 4 Hours/Half Day | Samode Palace / Samode Bagh | 4.8 |
| jaigarh fort | 5 Kms | 15 Mins or Less | Sargasuli Tower / Isar Lat | 3.5 |
| jaigarh fort | 5 Kms | 30 Mins | Amar Jawan Jyoti | 5.0 |

## CONCLUSION

a decision tree based tourist recommendation system has been presented in attempt of solving the current challenge of the destination TRS. The data set has been decomposed into two sub data sets using relevant tourism domain knowledge. This was done to increase classification accuracy rate and to reduce the complexity of the decision tree. The optimal decision trees from NMIFS with the highest accuracy rate and simplicity (i.e. less number of leaf and tree size) have been constructed for destination choice. The decision rules from decision trees were extracted. It can be seen that NMIFS is the optimum method because it uses fewer number of feature than MRMR for both of the data sets. Finally, the experimental results confirm applicable of the proposed a TRS. The proposed TRS satisfies the tourists' requirements who plan to visit or during their visit the city of Chiang Mai.

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