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 travellers 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 traveller, the shortest path algorithm is used to plan an approximate optimal path that meets the traveller'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.

1. INTRODUCTION

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, travelling, equipment, shopping;

(2) Recommending travel routes;

(3) recommend complete tourist itinerary.

Personalized tourism recommendation technology is the key technology to solve the current information redundancy in the tourism industry.

When a traveller is planning a travel itinerary, they will find related travel information.

However, the large amount of data makes it difficult for travellers to quickly and efficiently obtain valuable information from complex data.

1.1 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 the tourist destinations that satisfy the tourists.

1.2 PROBLEM DEFINITION:

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.

1.3 OBJECTIVE OF PROJECT:

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. To address this issue, it requires a full understanding of the tourists' decision-making and novel models for their information search process.

2. LITERATURE SURVEY

Tourism is a popular leisure activity and an important industry, where the main task involves visiting unfamiliar Places-of-Interest (POI) in foreign cities. Recommending POIs and tour planning are challenging and time-consuming tasks for tourists due to:

(i) The need to identify and recommend captivating POIs in an unfamiliar city

(ii) Having to schedule POI visits as a connected itinerary that satisfies trip constraints such as starting/ending near a specific location (e.g., the tourist's hotel) and completing the itinerary within a limited touring destination and

(iii) Having to satisfy the diverse interest preferences of each unique tourist.

2.1 EXISTING SYSTEM

- Tourism transportation is a central issue in various studies at present 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**.**

2.1.1 DRAWBACKS IN EXISTING SYSTEM

- Custom travel services still need to be done manually.
- It takes a lot of man power and time.

2.2 PROPOSED SYSTEM

(1) 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 organised, and then the travel's spatiotemporal chain was proposed.

(2) The conceptual model and the method of space-time convergence of the stroke elements.

2.2.1 ADVANTAGES

- Planning will save your time.
- Planning can help ensure that you'll do exactly what you want.
- You can pick your perfect destination—and travel dates.
- It makes travel more affordable.

2.3 FEASIBILITY STUDY

The feasibility of the project is analyzed in this phase and business proposal is put forth with a very general plan for the project and some cost estimates. During system analysis the feasibility study of the proposed system is carried out. This is to ensure that the proposed system is not a burden to the company. For feasibility analysis, some understanding of the major

requirements for the system is essential. There are aspects in the feasibility study portion of the preliminary investigation:

- Technical Feasibility
- Operational Feasibility
- Economical Feasibility

1.Technical Feasibility:

Technical feasibility refers to the ability of the process to take advantage of the current state of the technology in pursuing further improvement. It was shown that currency images possess high quality. That also contributes to the efficiency of the system. By considering the technical capability of the personnel as well as the capability of the available technology, the proposed project is technically feasible.

2.Operational Feasibility:

Operational feasibility is a measure of how well a proposed system solves the problems, and takes advantage of the opportunities identified during scope definition and how it satisfies the requirements identified in the requirements analysis phase of system development. Using this system user can detect the trip is good or not. Considering these factors, the proposed project is operationally feasible.

3.Economical Feasibility:

This involves the feasibility of the proposed project to generate economic benefits. A cost-benefit analysis and a break-even analysis are important aspects for evaluating the economic feasibility of new industrial projects. The tangible and intangible aspects of a project should be translated into economic terms to facilitate a consistent basis for evaluation. The proposed system provides an environment to the users to test the trip is according to budget or not.

3.ANALYSIS

1. Trip characteristics: These variables are the most important variables when tourists select their destinations. This includes trip length, travel purpose, trip composition, and etc.

2. Tourist characteristics: These variables include psychological, cognitive and socioeconomic status variables that influence on the tourist destination choice process.

3. Travel motivations: Travel or tour motivation is one of the important factors we have found from literature reviews when tourists are selecting their destinations. This variable describes the reason that a tourist chooses to visit a destination.

4. Tourist sociodemograohic information: The individual demographics may influence the information seeking behaviour.

3.1 SOFTWARE REQUIREMENTS

- **Operating System:** Windows
- **Coding Language**: Python 3.7

3.2 HARDWARE REQUIREMENTS

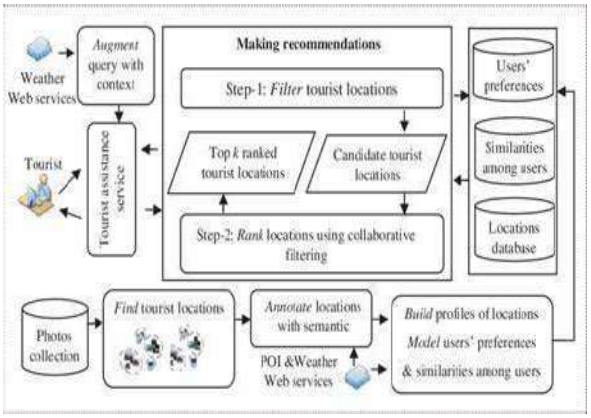
- **Processor** - Pentium–III
- **RAM** - 512 MB (min)
- **Hard Disk** - 20 GB
- **Floppy Drive** - 1.44MB

4. DESIGN

The application's design phase is covered in this chapter. We created this application with the goal of making it simple enough for anyone to use. This system comprises of various image processing methods, and each method

is thoroughly illustrated using UML diagrams. The Unified Modelling Language (UML) is a general- purpose, developmental, modelling language in the field of software engineering that is intended to provide a standard way to visualize the design of a system.

4.1 SYSTEM ARCHITECTURE



4.2 UML DIAGRAMS

UML is an acronym that stands for Unified Modelling Language. Simple put, UML is a modern approach to modelling and documentation software. In fact, it's one of the most popular business process modelling techniques. UML was created as a result of the chaos revolving around software development and documentation. In the 1990s, there were several different ways to represents and document software systems.

GOALS:

The Primary goals in the design of the UML are as follows:

1. Provide users a ready-to-use, expressive visual modeling Language so that they can develop and exchange meaningful models.
2. Provide extendibility and specialization mechanisms to extend the core concepts.

3. Be independent of particular programming languages and development process.
4. Provide a formal basis for understanding the modeling language.
5. Encourage the growth of OO tools market.
6. Support higher level development concepts such as collaborations, frameworks, patterns and components.
7. Integrate best practices.

4.2.1 Use Case Diagram

The main functionality of usecase diagram is to present a graphical overview of the functionality provided by the system in terms of actors, their goals(represented as use cases), and any dependencies between those use cases.

For this system, we design 6 use cases that contain almost all of its functions

- Upload dataset
- Preprocess dataset
- Build collaborative and clustering model
- Train KNN algorithm
- Input your requirements
- Predict recommendations

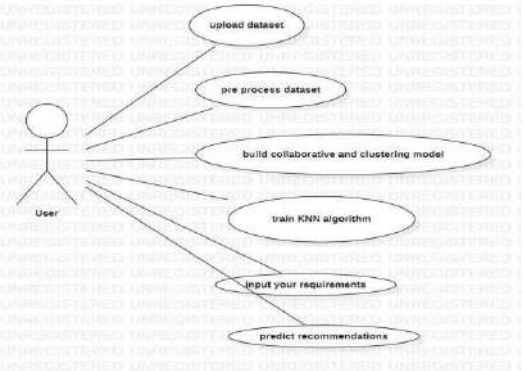


Fig 4.2.1: Use case diagram

4.2.2 Class Diagram

In software engineering, a class diagram is a type of diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among objects.

Attributes are piece of data containing values that describe each instance of the class. Methods are also called as Operations. These allow you to specific any behavioral feature of a class. Attributes starts with(colon) visibility v & lower case letters.

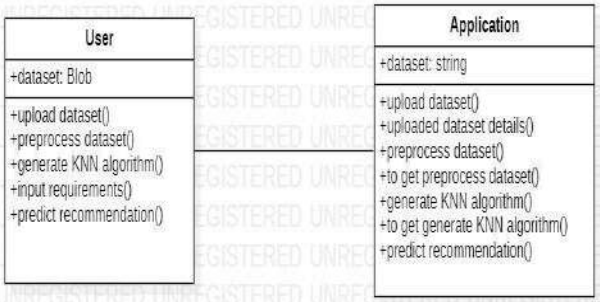


Fig 4.2.2 Class diagram

4.2.3 Sequence Diagram

UML Sequence Diagrams are interaction diagrams that detail how operations are carried out. They capture the interaction between objects in the context of a collaboration. Sequence Diagrams are time focus and they show the order of the interaction visually by using the vertical axis of the diagram to represent time what messages are sent and when

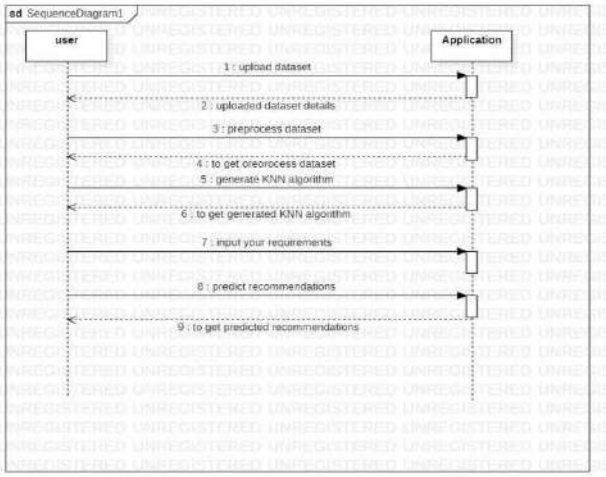


Fig 4.2.3: Sequence diagram

5. IMPLEMENTATION MODULES

1) Upload Dataset Module

2) Pre-Process Module

Upload Dataset Module:

In this module, we have to upload the datasets.

Pre-process Module:

In this module, the uploaded datasets are pre-processed.

6. TESTING

The purpose of testing is to discover errors. Testing is the process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the functionality of components, subassemblies, assemblies and/or a finished product It is the process of exercising software with the intent of ensuring that the Software system meets its requirements and user expectations and does not fail in an unacceptable manner. There are various types of test. Each test type addresses a specific testing requirement.

Principles of Testing:

(i) All the tests should meet the customer requirements.

(ii) To make our software testing should be performed by a third party.

(iii) Exhaustive testing is not possible. As we need the optimal amount of testing based on the risk assessment of the application.

(iv) All the tests to be conducted should be planned before implementing it.

(v) It follows the Pareto rule(80/20 rule) which states that 80% of errors come from 20% of program components.

(vi) Start testing with small parts and extend it to large parts.

TYPES OF TESTS

Unit testing

Unit testing involves the design of test cases that validate that the internal program logic is functioning properly, and that program inputs produce valid outputs. All decision branches and internal code flow should be validated. It is the testing of individual software units of the application

.it is done after the completion of an individual unit before integration. This is a structural testing, that relies on knowledge of its construction and is invasive. Unit tests perform basic tests at component level and test a specific business process, application, and/or system configuration. Unit tests ensure that each unique path of a business process performs accurately to the documented specifications and contains clearly defined inputs and expected results.

Integration testing

Integration tests are designed to test integrated software components to determine if they actually run as one program. Testing is event driven and is more concerned with the basic outcome of screens or fields. Integration tests demonstrate that although the components were individually satisfaction, as shown by successfully unit testing, the combination of components is correct and consistent. Integration testing is specifically aimed at exposing the problems that arise from the combination of components.

Functional testing

Functional tests provide systematic demonstrations that functions tested are available as specified by the business and technical requirements, system documentation, and user manuals.

Functional testing is centered on the following items:

Valid Input : identified classes of valid input must be accepted. Invalid Input: identified classes of invalid input must be rejected. Functions : identified functions must be exercised.
Output : identified classes of application

outputs must be exercised. Systems/Procedures: interfacing systems or procedures must be invoked.
Organization and preparation of functional

tests is focused on requirements, key functions, or special test cases. In addition, systematic coverage pertaining to identify Business process flows; data fields, predefined processes, and successive processes must be considered for testing. Before functional testing is complete, additional tests are identified and the effective value of current tests is determined.

System Testing

System testing ensures that the entire integrated software system meets requirements. It tests a configuration to ensure known and predictable results. An example of system testing is the configuration oriented system integration test. System testing is based on process descriptions and flows, emphasizing pre-driven process links and integration points.

White Box Testing

White Box Testing is a testing in which in which the software tester has knowledge of the inner workings, structure and language of the software, or at least its

purpose. It is purpose. It is used to test areas that cannot be reached from a black box level.

Black Box Testing

Black Box Testing is testing the software without any knowledge of the inner workings, structure or language of the module being tested. Black box tests, as most other kinds of tests, must be written from a definitive source document, such as specification or requirements document, such as specification or requirements document. It is a testing in which the software under test is treated, as a black box. You can not see in to it. The test provides inputs and responds to outputs without considering how the software works.

7.CONCLUSION

It proposes a two-stage space time network solution algorithm based on the set of alternative attractions , known trip origins and destinations , and traveler preferences . The purposes is to simplify the approximate travelling and overcome time constraints for multi day trip planning. At the same time , the study of multi day trip planning in this paper proves that the spatiotemporal network model is feasible in multi day trip planning research.

7.1 FUTURE ENHANCEMENT

Personalizing recommendation adds value in terms of saving time and effort to optimize opportunities. Social media provides a platform for mining data that can be used to make personalization’s since users exhibit their positive, negative

or even neutral opinions on various topics . Recently , the internet has made a lot of services and products appear online provided by many tourism sectors . By this way , many information such as timetables , routes, accommodations , and restaurants are easily available to help travellers plan their travels .However , how to plan the most appropriate travel schedule under simultaneously considering several factors such as tourist attractions visiting , local hotels selecting , and travel budget calculation is a challenge . In addition , comparing with other travel recommendation systems , our systems had better performance on the schedule adjustment , personalization , and feedback giving .

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