IJARCCE ISSN (O) 2278-1021, ISSN (P) 2319-5940

International Journal of Advanced Research in Computer and Communication Engineering

ISO 3297:2007 Certified ⁜ Impact Factor 7.39 ⁜ Vol. 11, Issue 6, June 2022

DOI: 10.17148/IJARCCE.2022.11665

Hybrid Recommendation System for Tourism Based Social Network, and AI

Prof. Abhimanyu Dutonde, Riteshwari Ganjare, Riya Sahu, Pratidnya Kharate,

Vaishnavi Lohakare, Gomati Sharnagat

Department of Computer Science and Engineering, Abha Gaikwad Patil College of Engineering, Maharashtra, India

Abstract: In today's world most of the people use internet, technology, social networking and result in huge amount of tourist data like hotels, restaurants, transport, heritage, tourist event, etc. The main reason for production of large amount of tourist data is Online Travelling Agency. However, Web Search engine provide list of possibilities to tourist but it is very difficult to find best one. Web search engine slows down the selection of best place and create noise. The result of web search engine confused the tourist. There are various recommendation systems are developed to suggest or assist tourist to plane the trip and help to find the information they are looking for. We present a recommendation system which is the combination of various recommendation system used in the field of tourism. The main objective of this work is then to contribute to the design of tourism recommender systems by proposing a framework that clarifies how the hybrid recommendation process works. The proposed system goes beyond a list of recommended tourist attractions and can be seen as a planner that aims to build a complex and detailed program of a multiday visit.

Key words: recommender system, Content based filtering, Collaborative filtering, Demographic filtering, Social filtering.

INTRODUCTION

The recommender system is very helpful in planning a trip or for searching good services among many attractions, destinations and other activities. Hybrid systems work on information filtering and it gives the best services and offers to users, like when we buy any product and use it may already be bought and used by someone with the same taste. This recommendation will give the most relevant places and provide better experiences for users. The main objective of our system is to design a system which gives a clear idea of how the recommendation system works.

LITERATURE SURVEY

L. Sebastia, I. Garc´ıa, E. Onaindia, and C. Guzm´an Alvarez at [1] e-Tourism is a tourist recommendation and trip planning application to assist the users. A recommendation system offers the user a list of the different places that are likely of interest to the user. This list of places takes into account the user demographic classification, the user likes in former trips and the preferences for the current visit. A planning module schedules the list of recommended places according to their characteristics as well as the user restrictions that is the planning system determines how and when to realize the recommended activities. Having the list of recommended activities organized as an agenda, is a relevant characteristic that most recommender systems lack.

F. Ricci, L. Rokach, and B. Shapira at [2] Recommender Systems is a software and techniques which help in providing suggestions for items to be of use to a user. In this paper we have briefly discuss the basic Recommender system ideas and concepts. Our main goal is to delineate, in a coherent and structured way, the paper included in this handbook and to help the reader to navigate the extremely rich and detailed content that the handbook offers.

G. Adomavicius and A. Tuzhilin at [3] The paper presents an idea of the recommendation systems and describes the current generation of recommendation methods that are classified into the following different categories: content-based model, collaborative model, and hybrid recommendation approaches. This paper shows limitations of current recommendation methods and discusses possibilities in extensions that can improve the future recommendation capabilities and make recommendation systems applicable to an even broader range of applications. These extensions include, among others, an improvement of understanding of users and items, incorporation of the contextual information into the recommendation process, support for ratings, and a provision of flexible types of recommendations.

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M. de Gemmis, P. Lops, C. Musto, F. Narducci, and G.Semeraro at [4] this Recommender systems suggest items by exploiting the interactions of the users with the system. In this paper, content-based systems suggest items whose content is similar to that of the items which is evaluated by a user or customer. An emerging application in content-based recommender systems is represented by the consideration of the semantics behind an items description, in order to have a disambiguation of the words in the description and improve the recommendation accuracy. However, different method, like changes in the preferences of a user over time might affect the accuracy by considering items that do not reflect the actual user preferences. Starting from an analysis of the literature and of an architecture in a recent survey, in this paper we first highlight the current limits in this research area. then we propose design and an improved architecture to build semantics-aware content-based recommendation system.

S. Loh, F. Lorenzi, R. Salda˜na, and D. Lichtnow at [5] This work presents a recommender system that helps travel agents in discovering options for customers , especially those who do not know where to go and what to do. The system analyzes messages exchanged between a travel agent and a users through a private chat. Text mining technique help to discover interesting areas in the messages. After that, the system searches a database and retrieves tourist classified in these interesting areas like cities and attractions. The system makes use of a tourism ontology, containing themes and a controlled vocabulary, to identify themes in the text messages. The system acts as a decision support because it does not make recommendations directly to the users.

PROPOSED SYSTEM

OSN System Construction Module

❖ In the first module, we develop the Online Social Networking (OSN) system module. We made the system with the feature of Online Social Networking System like Twitter. Where, this module is used for new user for registrations and use the system after registrations the users can login with their authentication and use with ease.

❖ Where after the existing users can send messages to privately and publicly, options are built. Users are able to share post and tweets with others. The user can able to search the user profiles, recommendations and public posts. In this module users can also accept and send friend requests and do the messages.

❖ With all the basic feature of Online Social Networking System modules is build up in the initial module, to prove and evaluate our system features.

❖ We present the proposed framework for the Hybrid Recommender System for Tourism. For example, in artificial intelligence, the profiling process can be expressed as a learning problem that uses users' past knowledge for analysis purpose. Often, the system should learn the user's profile rather than requiring the user to provide it.

User profiling process

❖ User data collection or user profiling is a very important step in the proposed framework. This process includes Ratings on the items consulted indicating the degree of appreciation of an item by this user; and Demographic attributes about the user, such as age, gender, socio-professional category, geographical location, personal status, etc.

❖ Although these attributes do not provide information on the ratings, they allow us to refine the user profile and adapt the recommendations. Furthermore, demographic data can be used to calculate recommendations for various new users, the demographic approach is first used to solve the new start problem.

Filtering process

❖ The adaptation of recommendation techniques is entirely based on the result of the profiling process. The process takes as input all the modules that constitute the target user's profile: The content-based module describes the characteristics of tourist sites/activities that the user has consulted in the past in the form of key-word vectors that are generated after an indexing phase. The collaborative/social module contains the rating data of the consulted items. Demographic module contains the user's demographic attributes. These various attributes can either be entered by the user himself by filling in the registration form information.

Recommender Module

❖ Once the degrees of appreciation are estimated, the system selects the items considered relevant for the user (exceeding a given threshold, for example), taking into account his context, and uses operational research techniques to correlate these recommendations in the form of a trip.

❖ Feedback data are usually transformed, through visualization and Business Intelligence (BI) technologies, into graphical representations that are simple and easy to understand. These graphical representations will allow tourism professionals to have a clear view to make the right decisions, and improve their strategies. They will thus be able to identify the basic needs of tourists, predict their todaysand future behavior, and propose the resources which is best

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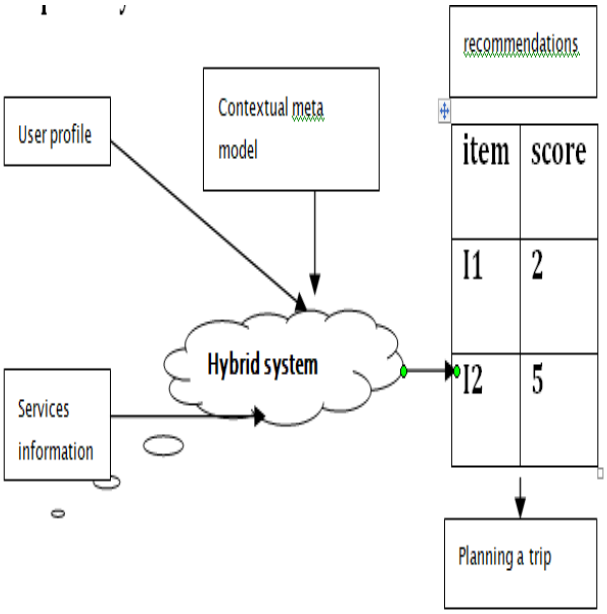
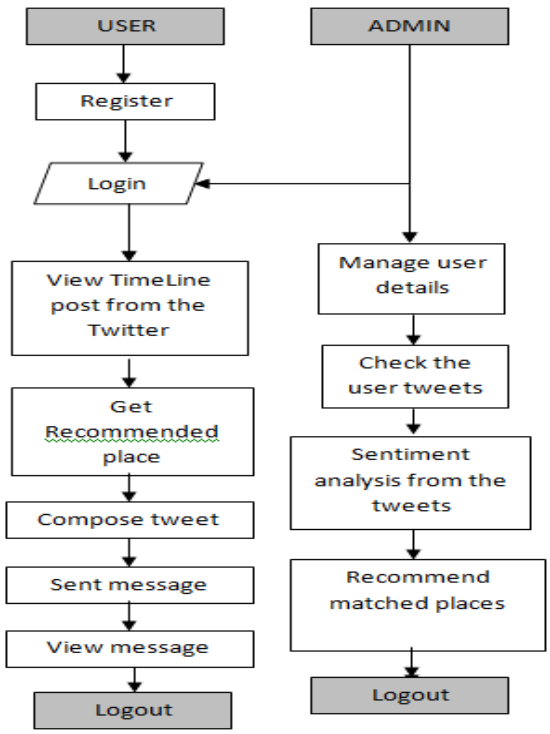
suited to each profile. The proposed recommender system architecture will then be implemented, using new big data and AI technologies.

Proposed System Architecture



Flowchart



METHODOLOGY

The integration of big data and AI for the implementation of the proposed recommender system is one of the main axes of a project which aims to build a big data solution based on hybrid recommendation, sentiments, and opinions analysis using machine and deep learning techniques[13]. The main aim of this project is to provide excellent machine to find and analyze the opinions of users and improve the experience of user.

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To achieve the goal of project, a fourlayer methodology will be given which describes the approach of integrating big data and AI in the proposed system.

1. Tourist data collection layer. This layer consists of a very wide range of digital machines to increase the visibility and attractiveness of the tourist They offer the visitor a real "immersion" in the destination, thus contributing to the reputation of the destination and the intensity of the tourist experience. In this sense, many projects have already been launched to conserve and enhance the region's cultural and natural heritage[29]. Tourism data are often larger and heterogeneous, which leads to the use of big data to store this large volume of data, and to support and manipulate this wide variety of data. For that, a wide range of innovative technological solutions, such as NoSQL database management systems (Cassandra, MongoDB, : : :) and distributed file systems (Hadoop HDFS), are adopted. Other researches[30, 31] .

2. Recommendation layer. The whole work designed and developed in this paper is part of this layer. the main aim is to identify the user profile in terms of preferences, by determining modules (demographic, contextual, preferences, ratings, etc.) that compose it, and choose the appropriate recommendation approach to develop the appropriate algorithm to be executed to take advantage of large datasets. In this big data technology offer a large-scale implementation of several machine learning and deep learning techniques, including classification, clustering, association rules, regression, collaborative filtering, recurrent neural network, etc. using this techniques, we can process and analyze in real-time the different tourist information, exploit the results obtained to predict the next actions of tourists, and recommend appropriate offers.

3. Results visualization layer. This layer will helps the tourist during all phases of his trip, from preparation to online sharing.

4. Layer for validating the proposed solution. This layer consists of monitoring and analyzing the expectation of user and sentiments of visitors presented and social media, by tourism companies, to understand what changes in their expectations and share the information that influences their decisions These representation give tourism professionals to have a clear view to make the good decisions, and improve their strategy.

CONCLUSION

Recommender systems were mainly developed To overcome the information overload and suggesting tourist in selecting best place for tour. In this paper we have introduced a literature review of the current tourism recommender systems and then we have presented a new hybrid framework to implement tourism recommender systems. The main aim of our hybrid recommendation system is to improve the visitors experience and recommend most relevant items and helping them to personalize trip. .

Once the sets of relevant elements are selected by tourist , our system will plan an appropriate trip by combining these items using different research technics .

This system will be implemented, through advanced technologies, such as big data tools, machine learning technics , and the Internet of things.

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