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HYBRID RECOMMENDER SYSTEM FOR TOURISM BASED ON BIG DATA AND AI:A CONCEPTUAL FRAMEWORK

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Abstract: Nowadays due to development of the internet a lot of things has changed in the world. The tourism recommenter system gives the aim to develop a personalized travel planning system that simultaneously considers all categories of user requirements and provides users with a travel schedule planning service. This will enable the user in finding what they are looking for, easily without spending time and effort. In this project we have to build recommender system which recommends tourist travel locations based on his previous rated venues. Recommended enginr is build on an observation that tourist always try to explore places which are nearby first. Let's consider an for simplifying things. Bob arrived in Toronto and wants to visit top places in Toronto, If h starts exploring a particular neighborhood, he wants to finish exploring all good places in that neighbourhood before moving to other neighborhood. Keeping this in mind we have to recommend tourist a neighborhood, with venues where he can visit. We will be using location data to get best spots in neighbourhood. The project provides a travel itinerary for users using their travel details like destination, budget ,start and end dates of travel and their preferences of attraction categories, hotel amenities and cuisine type. Our project significantly reduces the time spent on planning for a satisfactory vacation. Hindi proposed system a recommender system is based on big data technologies, artificial intelligence

Keywords: recommender system ; user profiling content-based filtering ; collaborative filtering ; hybrid recommender system ; e-tourism ; trip planning

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1. Introduction

Recommender systems are software tools and techniques providing suggestions for items to be of use to a user. In this introductory chapter we briefly discuss basic RS ideas and concepts. Our main goal is to delineate , in a coherent and structured way, the chapters included in this hand book and to help the reader navigate the extremely rich and detailed content that the hand book offers. This paper presents an overview of the field of recommender systems and describes the current generation of recommendation methods that are usually classified into the following three main categories; content – based, coillaborative , and hybrid recommendation approaches . this paper also describes various limitations of current recommendation methods and discusses possible extensions that can improve recommendation capabilities and make recommender system applicable to an even broder 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 multi criteria rating, and a provision of more flexible and less intrusive types of recommendations. The proposed system enhances user experience by providing a recommendation in travel domain more specifically for food , hotel and travel places to provide user with various sets of options like time based , near by places , rating based, user personalized suggestions , etc. The principle is to use the interests of a user collected during his navigation has inputs , to predict the degree of interests that this user may have for a given item the approaches used to estimate this degrees of appreciation are numerous . They are traditionally classified by the literature into several categories according to the source of information used . One of these approaches is based on ratings given by a setn of users on a set of items . It consists in recommending to a given users the items that have been highly evaluated in the past by the users who have similar preferences , we speak here collaborative. In the field of tourism, recommender systems could be a great help when planning a trip or searching for a service among many destinations, attractions, and activities. Strictly speaking, these systems are defined as information filtering systems that make recommendations of the most suitable offers (products, services,) to customers, for example, products that are similar to other products they have already bought and enjoyed or products that have already been enjoyed by other customers with similar tastes.

II. RELATED WORK

E-Tourism: A tourist recommendation and planning application

E-Tourism is a tourist recommendation and planning application to assist users on the organization of a leisure and tourist agenda. First, a recommender system offers the user a list of the city places that are likely of interest to the user. This list takes into account the user demographic classification, the user likes in former trips and the preferences for the current visit. Second, a planning module schedules the list of recommended places according to their temporal 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 (i.e. an executable plan), is a relevant characteristic that most recommender systems lack.

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Introduction to recommender systems handbook

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Method

To assist tourists in trip planning and help them to find the information they are looking for, many recommender systems have been developed. In this article, we present an overview of the various recommendation approaches used in the field of tourism. From this study, architecture and a conceptual framework for tourism recommender system are proposed, based on a hybrid recommendation approach. The proposed system goes beyond the recommendation of a list of tourist attractions, tailored to tourist preferences. It can be seen as a trip planner that designs a detailed program, including heterogeneous tourism resources, for specific visit duration. The ultimate goal is to develop a recommender system based on big data technologies, artificial intelligence, and machine learning techniques . This project aims to provide intelligent tools to target and recommend the most suitable tourist offer according to the user profile, and to track and analyze their opinions to improve the customer experience and forecast the tourist demand.

Proposal of Hybrid Tourism Recommender System Architecture

Our research work consists of proposing a new architecture for tourist recommendation systems. This architecture is based on a hybrid recommendation approach, which aims to improve user access to tourism resources in information retrieval systems, such as tourism portals and service providers' documentary Extranets.

Another innovative aspect of this architecture is that 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. The client will thus be offered a diversified list of tourist resources (monuments, activities, hotels, shows, : : :) that exactly meet their specific needs and preferences.

We propose to decompose the proposed system architecture into five main modules (Fig. 1):

(1) Visitor profiles contain in particular information that can be used to determine user preferences in terms of items (ratings, social information, etc.).

(2) Services repository contains information on tourist services (such as accommodation, restaurants, tourist sites, transport, : : :) as well as associated multimedia content.

(3) A contextual meta-model takes into account multiple factors involved in manipulating context, such as time, space, location, the distance between two place

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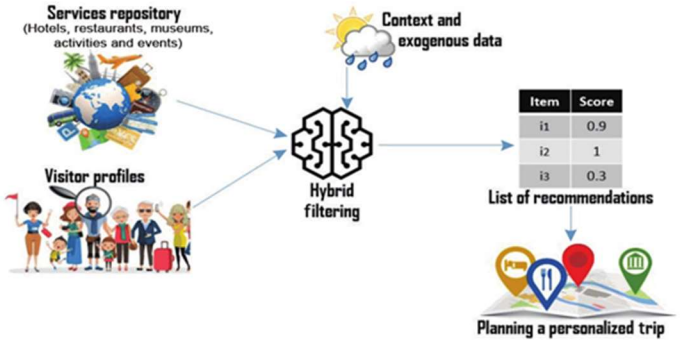
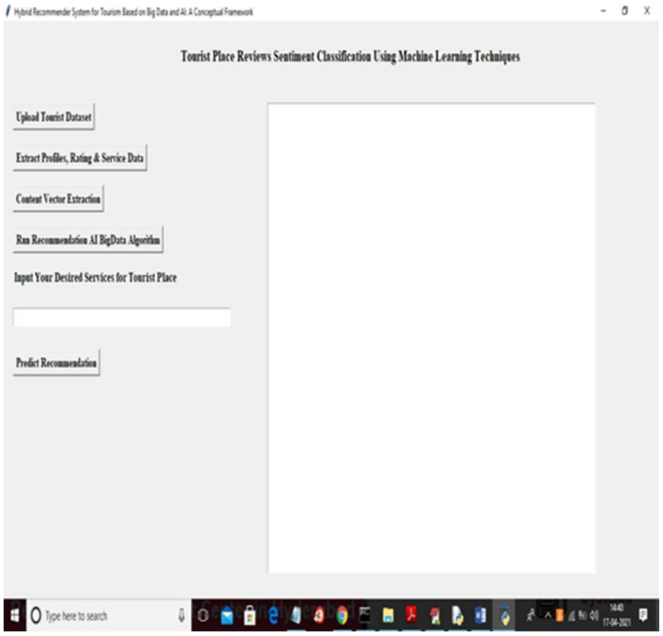


Fig .Proposed architecture for tourism recommender system

4. Results And Analysis

In our project hybrid tourism recommendation system we used the both content and collaborative techniques by combining the both the techniques to get the accurate information to get the correct information at a time by checking in a single web server the user will get whole information. Hence this information helps the for a good trip planning

To run project double click on 'run.bat' file to get below



In above screen you can scroll down text area to view all reviews and in each review first line you can see username, location name and ratings. Now dataset is ready and now convert above dataset to content based vector by clicking on 'Content vector Extraction' button

button to upload dataset

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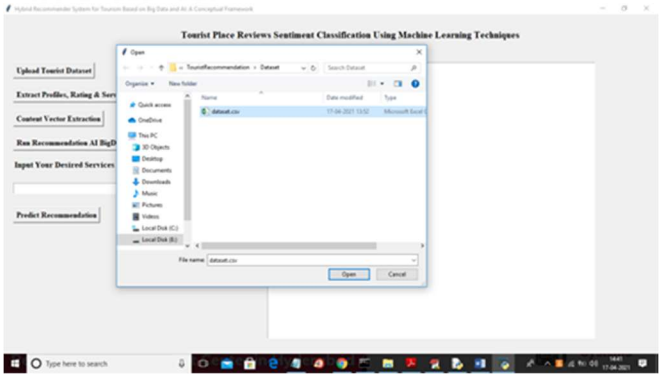
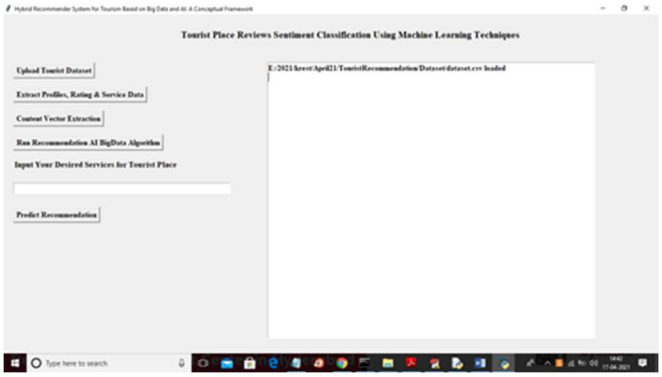
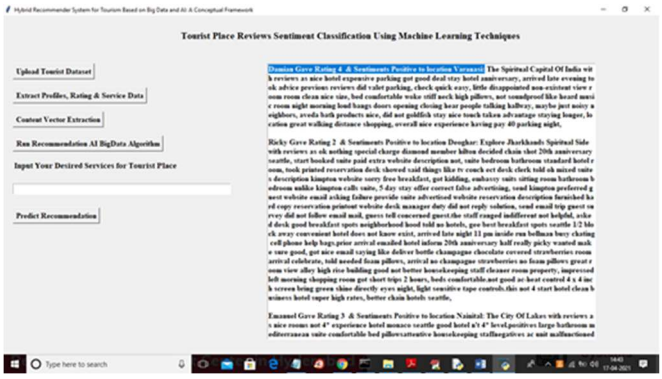


In above screen selecting and uploading 'dataset.csv' file and then click on 'Open' button to load dataset and to get below screen



In above screen dataset loaded and now click on 'Extract Profiles, Ratings & Service Data' button to extract all details from dataset and then calculate sentiments from each review as positive, negative or neutral



In above screen we extract all details from dataset and in above screen in selected text you can read username with given ratings and his sentiment on location and then displaying his review

In above screen you can scroll down text area to view all reviews and in each review first line you can see username, location name and ratings. Now dataset is ready and now convert above dataset to content based vector by clicking on 'Content vector Extraction' button

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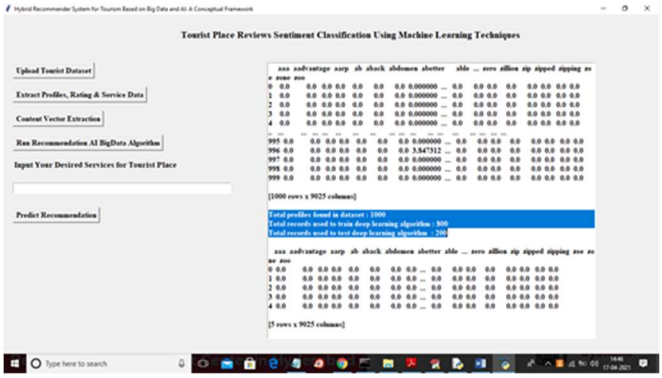
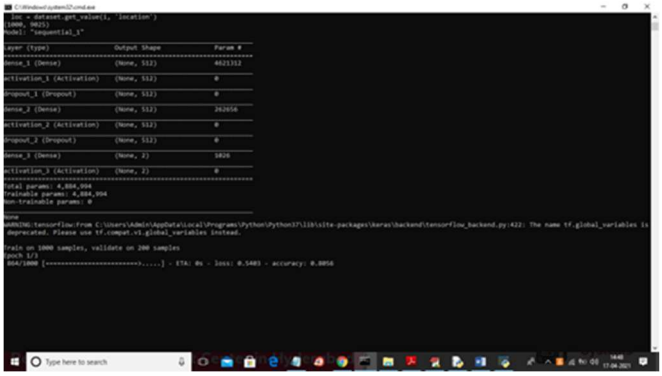
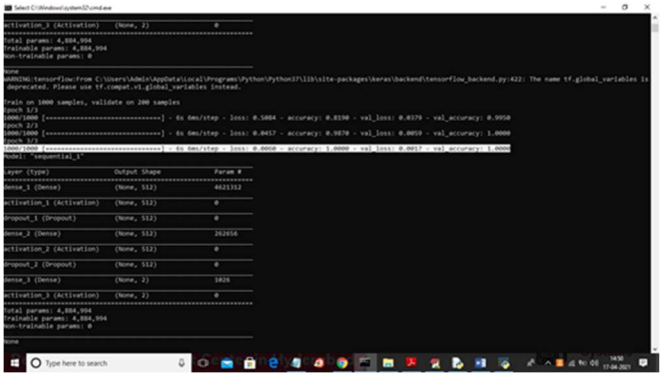


In above screen we build vector from dataset and we took each word from dataset and put in vector header and if word appear in any row then its count will be put in row else 0 will be put in vector. Each count average will be calculated and added to vector and after building vector we are displaying total profiles and the total profiles used to train artificial intelligence algorithm and total profile used to test algorithm and now vector is ready. Now click on 'Run Recommendation AI BIgData Algorithm' button to build AI model



In above console we can see AI machine learning In above screen we can see list of recommended places with different ratings and similarly you can enter any services then application will match with other user details to make collaborative recommendation and if desire services not found then application will give error result.

algorithm start building model and after completing all epoch will get model prediction accuracy, there are still numerous challenges correlated to these systems.



In above screen we can see AI took 3 epoch and at 3rd epoch we got validation accuracy as 100 and now in below screen we can see AI model final accuracy

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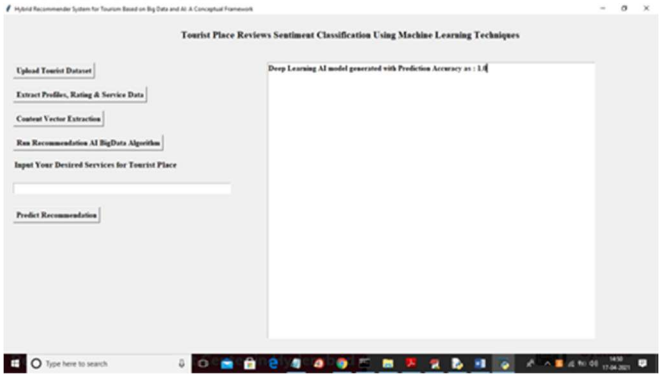
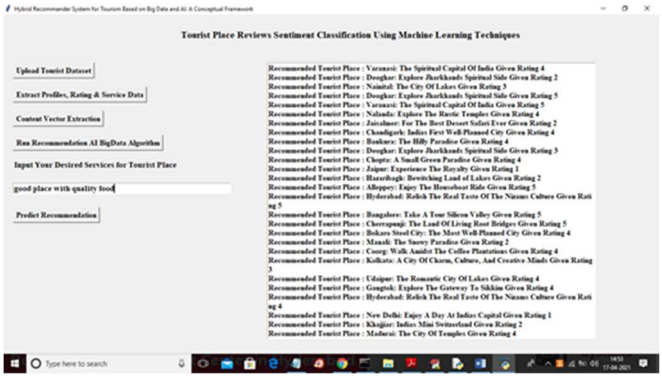


In above screen in text field I entered desired services as 'good place with quality food' and now click on 'Predict Recommendation' button to recommend places to new user based on given desired services



CONCLUSIONS:

In this present work, design, and implementation Given that the model induction time is not a problem in model- based collaborative filtering and the superior behavior of the CBA associative classification algorithm with sparse data, we argue that CBA is very appropriate to be employed in recommender systems as well as its extension for encompassing fuzzy sets' features. The proposed CBA-Fuzzy algorithm includes this extension keep- ing the foundations of CBA original algorithm. In that way, the sparsity problem affecting seriously to recommender systems is addressed since associative classification methods, specially CBA, are less sensitive to sparsiy than traditional classification algo- rithms. In addition, taking into account that accuracy of classifica- tion based on association methods has a straight correlation to characteristics of data attributes, we may say that the CBA-Fuzzy algorithm provides some advances for a recommendation scenario. It includes the discretization process and the definition of the de- grees of membership to the generated intervals and, hence, it brings more significance and value to data. Since the method employs collaborative filtering and content-based approaches, it may be seen as a hybrid method and it can benefit from advantages of both categories of methods in order to minimize common drawbacks of recommender systems. Firstly, as it employs historical data from other users, the characterization of the groups and the classification model may be seen as a collaborative filtering approach. On the other hand, as our method con- siders active user's past behavior to determine which group he belongs to, it can be viewed as a content-based method too. Bymeans of the analysis made by means of the

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simulations of real critical situations in we were able to confirm that it was possible to minimize significantly some effects of recommender systems limitations as first-rater and gray sheep problems. In spite of the efforts addressed to improve recommender sys- tems and the advances reached in order to deal with their main drawbacks, there are still numerous challenges correlated to these systems.

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