MODEL FOR RECOMMENDING TRAVEL DIRECTIONS BASED ON USER NETWORK PROFILE PHOTOS

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ABSTRACT

This study introduces a novel approach for recommending travel directions by analyzing user network profile photos. Traditional travel recommendation systems often rely on text-based input or user historical behavior, which can be limiting in capturing users' real-time preferences and context. In contrast, our proposed model utilizes visual data from social network profile photos to infer users' current interests and potential travel needs.The model operates in three key phases: image analysis, interest inference, and recommendation generation. In the image analysis phase, profile photos are processed using advanced computer vision techniques, including facial recognition, object detection, and scene understanding, to extract relevant features.

Keywords: advanced computer vision techniques

1. INTRODUCTION

According to various statistical studies around the world, many people missed out on travelling during the pandemic situation. Therefore, when the situation of COVID improves and various restrictions have disappeared, people start to travel again. It is one of the activities that people like the most at different ages, so for business it is not only a lucrative field but also a competitive market. Therefore, to increase the success of travel operators in finding potential customers, targeted advertising is very effective. This happens because a potential user is automatically selected for a trip that may be of interest to him. Predicting the most accurate travel destination for a particular user can be difficult. However, research has shown that there are similarities between user groups that determine what type of travel a user group may like [1]. Nonetheless, to implement a recommendation system qualitatively, the data used for such a system are crucial. Recommendation systems are widely used in different areas [2], [3], [4], but travel recommendation systems face the problem of the need and accuracy of labeled data [5]. Although many travel recommendation systems currently rely on data provided by social networks and other platforms for user hobbies and travel [6], [7], [8]. Some of the systems incorporate data from a wide variety of systems and even smart devices from the Internet of Things [9]. There is always the possibility that the consumer was not impressed or even disappointed with his or her travel, but the data do not show it. Therefore, an attempt is made to address this problem by integrating as much data as possible [10] or including interactive user surveys as additional information [11], [12Currently, one of the most popular social networks, Instagram, has over a billion users world wide. The main advantage of Instagram over other social networks is the predominance of posting photos. Photos are related to hobbies, travel, etc. Therefore, the analysis

of publicly available consumer photos can provide travel agencies with the necessary information to enable them to offer the appropriate type of travel to the consumer. The fact that photos reflect the user's opinion rather than the responses to questionnaires or even similarities with other users is also observed in the research by Linaza et al. [13].

The main objective of this article is to reduce uncertainty to the extent that modern data analysis methods, such as data classification and clustering, are appropriate for recommending different types of travel to users based on photos published on their social networks. The goal of the experimental investigation would be to examine existing solutions, compare them with each other, and propose the most promising model, adopting different results of the analyzed methods. The idea of a travel recommendation should be based on the objects identified in the user's Instagram profile photos rather than post metadata only.

2. LITERATURE SURVEY

This survey explores the emerging field of image-based travel recommendation systems, focusing on how user profile photos from social networks can be utilized to suggest personalized travel directions. It delves into various methodologies for analyzing visual content, including feature extraction, image classification, and deep learning techniques. The paper also examines case studies where user photos were successfully employed to recommend destinations, highlighting challenges such as privacy concerns and the need for robust image analysis algorithms. By consolidating current research, this survey provides insights into the potential and limitations of using user images in travel recommendation systems. This comprehensive review covers the integration of visual content analysis in personalized travel recommendation systems. It specifically addresses how user network profile photos can be leveraged to infer user preferences and suggest relevant travel directions. The survey discusses various techniques for extracting meaningful features from images, such as object recognition and scene classification, and their application in understanding user interests. Additionally, it explores the implications of using personal photos in recommendations, including the balance between personalization This paper surveys the emerging field of travel recommendation systems that utilize social network profile pictures to predict user preferences. The study examines the methodologies for extracting meaningful insights from images, such as object detection, sentiment analysis, and style recognition. It also discusses the integration of these insights with traditional recommendation algorithms. The survey highlights the benefits of using profile pictures, including personalized suggestions and improved user engagement, and identifies the technical challenges, such as privacy concerns and the need for robust image processing techniques.

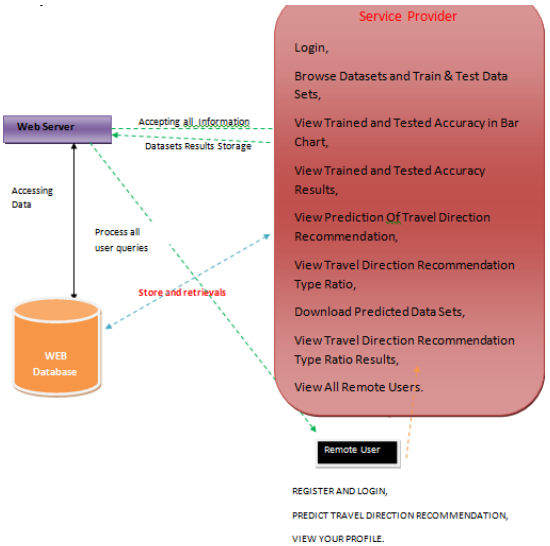

Fig. 1. Proposed Architecture

2.1 Existing Model

The development of a recommendation system based on users' published photos and recommending a travel destination accordingly requires the interoperability of different technologies and methods. A review of recommendation systems in the field of tourism shows that an increasing proportion of them rely on big data processing and artificial intelligence solutions [15]. Solutions to many existing user based travel recommendation systems are based on finding a specific location on a photo or a specific user found on a photo [16]. However, in our research, we investigated the extent to which photographs depict common objects, such as animals, notes, food, and more. This is because photographs may reflect the user's profile and interface with the country of interest to the user. Today, the problem of object detection in photographs is also a highly analyzed field. The main key is to

provide a list of recognized objects and the probability of their identification [17]. Having a list of objects that have been detected in the photo, the list could be used in classification tasks. This list could be used to determine a country similar to the data item. The object detection results are influenced by various factors, such as the algorithm selected and the way in which it has been trained.Scientific literature analysis showed that there is no publicly available dataset that could be used to prepare a recommendation model based on objects detected in the images. Usually, all datasets are focused on different aspects and therefore aren't applicable. Compiling a dataset and preparing the data for research is not a trivial task. This is because the accuracy of modern artificial intelligence solutions is highly dependent on the data used for training and their preparation. Sometimes, including too much context in a decision does not increase the accuracy of the decision but reduces it [18]. Therefore, it is necessary to find a balance between the completeness of the data and redundancy. The classification of multiple levels in travel recommendation systems helps to solve the problem of data redundancy [19].

2.2. Proposed Methodology:

In this paper, a recommendation model based on a combination of supervised and unsupervised methods results has been proposed. First, Instagram user data has been collected and pre-processed using Microsoft Azure to identify objects in photos [14]. The final pre-processed data consist of 4683 attributes, where four attributes are metadata and the rest are object detection in the photos results. The data collected will be used in the future to train some components of the recommendation model. These components will be able to identify countries that users have already visited and suggest new countries to visit. When the data item fed to the recommendation model does not have any metadata or the visited country list has not been determined, similarity distance and self-organizing maps have been applied to identify possible countries based on object detection results. The results of the proposed model have been concluded by combining the results of similarity distance and clustering into a final recommendation model. The model incorporates different aspects of the similarity distance and clustering results to determine the final travel destination recommendation list based on the user's previous travelling photos.Amore detailed description of the proposed recommendation model is presented in the proposed system.The novelty of the proposed recommendation model is that it is fully automated and does not require any manual changes.Artificial intelligence methods allow us to retrain the model over time, improving its accuracy. Unlike most other recommended models, the recommendation is performed by extracting data from photos, and if appropriate, the metadata of each photo has been included and analyzed too. Such

input data for travel direction, country recommendation was not presented before. The scientific novelty of the manuscript is the combination of a few well-known methods to perform recommendations using not only the well-known similarity distance, but also self-organizing maps. Usually, the self organizing maps are used to cluster or visualize the data in a general form, but going deeper into the structure of the self-organizing maps the neighbouring rank can be modified and adapted to find out the most related data items in the self-organizing maps.

3. IMPLIMENTATION

Service Provider

In this module, the Service Provider has to login by using valid user name and password. After login successful he can do some operations such as Browse Datasets and Train & Test Data Sets, View Trained and Tested Accuracy in Bar Chart, View Trained and Tested Accuracy Results, View Prediction Of Travel Direction Recommendation, View Travel Direction Recommendation Type Ratio, Download Predicted Data Sets, View Travel Direction Recommendation Type Ratio Results, View All Remote Users.

View and Authorize Users

In this module, the admin can view the list of users who all registered. In this, the admin can view the user's details such as, user name, email, address and admin authorizes the users.

Remote User

In this module, there are n numbers of users are present. User should register before doing any operations. Once user registers, their details will be stored to the database. After registration successful, he has to login by using authorized user name and password. Once Login is successful user will do some operations like REGISTER AND LOGIN, PREDICT TRAVEL,DIRECTION RECOMMENDATION, VIEW YOUR PROFILE.

4. RESULT

Creating a model for recommending travel directions based on user network profile photos involves a unique blend of image recognition and contextual analysis. The model would begin by analyzing profile photos for visual cues such as landmarks, natural environments, cultural attire, and aesthetic preferences. For example, if a user's photo shows them in a mountainous region, the model might suggest destinations known for hiking or scenic landscapes. Advanced image recognition algorithms would identify these features, while machine learning techniques could learn user preferences over time, integrating data from past travel history and similar user profiles.The next step involves mapping these visual preferences to potential travel destinations. This requires a comprehensive database of locations tagged with visual and experiential attributes. The model would then cross-reference these tags with the user's identified interests. Additionally, leveraging social network data and user-generated content could enhance the model's recommendations by understanding trending destinations and user engagement patterns.In summary, the model offers personalized travel recommendations by analyzing user photos for aesthetic and contextual clues, matching them with destinations that align with detected preferences, and incorporating broader social trends for an enriched travel experience.

5. CONCLUSIONS

Developing a model that recommends travel directions based on user network profile photos involves leveraging computer vision and machine learning techniques to analyze and interpret visual content. By examining elements in profile

photos such as landscapes, landmarks, activities, and aesthetic preferences, the model can infer users' interests and travel inclinations. It can then match these insights with relevant travel destinations or routes. The model's accuracy can be enhanced by integrating additional contextual data from user profiles, such as demographic information and past travel history. This approach personalizes travel recommendations, creating a more engaging and tailored user experience by connecting their visual preferences to potential travel adventures.

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