



iJRASET

International Journal For Research in
Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 7 Issue: V Month of publication: May 2019

DOI: <https://doi.org/10.22214/ijraset.2019.5203>

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Recommendation System for Interest-Based Interactivity through Cross Platform using Big Data

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Abstract: Interest-based interactivity as a key component for enhancing user experience, given the ubiquity of social media. Interest based interactivity modeling in a crossplatform Big Data repository is extracted from user interaction. The purpose of this study is two things: first, addressing theoretical dilemmas of a crossplatform user experience; second, implementing a platform to provide user interest based recommendations across different social networks. Use case is based on interest based cross-platform navigation and filtering content across multiple streams of social content. The streams consisted of tags from content on social media through a process of discovery. The application was tested on a stream of social media content to create a Big Data scenario.

Keywords: Interactivity, interest based, cross platform, Big data repository, user experience.

I. INTRODUCTION

A large number of social media platforms emerged in recent years with services geared towards users through adds-on such as mobile texting, Facebook with increasing popularity of Twitter, Google+ and WhatsApp, especially in entertainment contexts. These social media platforms, predominantly consisting of social networking sites (SNSs), heavily rely on individual users for content creation, in contrast to professionally produced content. With forty-one percent of the US population finding photos and videos online, interest based content discovery became the driving force for new content generation and redistribution. Nowadays data have also become a torrent flowing into every area of the global economy. It has now swept into every industry and business function. Companies churn out a large volume of transactional data, by capturing information about their customers, suppliers, and operations. Also the online users, consumer devices including PCs and laptops, various new online applications, networked sensors embedded devices like automobiles and industrial machines, smart-phones, social media sites, etc, have increased explosively, thus increasing the amount of data on web. Such large amount of data is called as Big-data. Big-data refers to a dataset, immense in nature and difficult to capture, store, manage, process and analyze with the available current technology within the tolerable speed and time. The growing bulk of multimedia content has played a major role in the exponential growth in the amount of big data. This Big-data management is a serious problem to all the companies and IT industries and also poses a heavy impact on service recommender systems. Issues like scalability and inefficiency which comes along while managing and analyzing large amount of dataset, are of great problem for the service recommender systems. As social media spread throughout spheres of our lives and these applications generate considerable percentage of Internet traffic, content streams remain fragmented thus limiting to discover interest-based relevant content to their users. Consider interest as an individual experience, continuously stimulated by relevant content discovery. Single-platform access necessarily leaves a proportion of interest-based content underexposed. Single-platform SNSs, even historical ones, varied technologically and scope-wise, ranging from user demographics, geographical attributes, or mere maintenance of pre-existing relationships. Since 2003 specialized social networking sites became mainstream, focusing on specific interests such as travelling, activism, religion, photo-sharing, music listening, and video sharing to mention a few. Some of these limitations were addressed to overcome limited content access, platform interoperability issues and lack of relevant content segmentation across multiple platforms. Attempts to facilitate interest-based content access thus started to be modeled within a single platform. Some of the techniques included "like" feature on Facebook; Twitter content following and filtering were implemented by using "hashtags." Regardless of these attempts, interest-based content still can be searched solely within a single platform rather than across multiple platforms, not even considering user interaction with other users or content across through various platforms. Several social media cross-platform applications open up an area to account for single- platform content access limitations. Interest-based content redistribution was facilitated by "share" function; easier content access to multiple platforms was provided through a open identity; to account for increased content variety content aggregation tools, developed to combine functionalities from multiple external sources. In addition, for users, it takes time, effort, and cognitive capacity to follow multiple

platforms with equal dedication. However, all these cross-platform applications continue to have limitations. Although the "share" function allowed content to be broadcast or duplicated across various platforms, the downside of such approach was that the user could engage in one-to-many content distribution, but remained limited to receive contents from each separated platform individually. Open identity facilitated access to content by allowing users to sign in to multiple websites with a single identity (ID). Such an open ID remained limited to a targeted platform rather than to multiple parallel platforms. Content aggregation platforms in turn provided users with larger amounts of content access, yet did not support interaction and content discovery through other user experiences. To account for the above mentioned limitations, designed a unified access model to interest- based content modelling. Capitalized on existing SNSs to create a Big Data repository – term used to describe a large and complex collection of growing datasets that is difficult to manage and process using traditional database management tools – to model an interest-based content segmentation and content discovery through user interaction..

II. LITERATURE SURVEY

A. Feature Selection

In [1] the detection and retrieval of media related to social events has gained increasing attention in the research community. Usually, researchers differentiate between known and unknown social events. Known social event detection is a retrieval task concerning the identification of a specific event using an exact query, such as "Find all music events that took place in Vienna in 2014." Unknown social event detection is a data mining task aimed at identifying all social events in a media collection without any prior knowledge of their amount, type, or characteristics. Media used to capture social events is highly heterogeneous, involving images, videos, and textual comments. Such media is commonly distributed across different online platforms. Each platform stores event-related data in a different way, because there is no generally accepted metadata standard. A major challenge in social event detection is to link heterogeneous media and metadata from different platforms to a given social event. Existing approaches in the context of cross-platform social event detection employ mainly supervised methods based on machine-learning algorithms. Such approaches require a training set with existing, known social event data to learn the properties of a retrieval model to identify unknown events. Investigates the detection of unknown social events across two popular sharing platforms, Flickr and YouTube, using available metadata only. The aim of the work is twofold. First, we propose an unsupervised method for social event detection that can be employed in both single-platform and crossplatform application scenarios. Second, we employ common metadata categories, such as user, time, and location information, and user generated textual descriptions. It has designed its system in a way that each metadata category can be evaluated individually.

In [2] they have explored the creation and distribution of knowledge in communities that have emerged through a shared interest or goal. The focus is on the technology used for supporting knowledge creation and distribution. It examines the problem area through three case studies: birdwatchers, virtual stables and ice-hockey fans. As a result, it presents an analysis of issues concerning knowledge creation and distribution from the viewpoints of interactivity, immersion, and connectivity. The first case study involved virtual stables, and it took place during the year 2002. The second study explored birdwatchers during the year 2003. The most recent study concerning ice-hockey fans was conducted in 2004. All three case studies were done by combining several data sources by the means of methodological triangulation. All case studies included two main steps: (1) analyzing the material related to the operation of the community available electronically in the Internet, and (2) observing, interviewing, using questionnaires and applying participatory design methods.

In [3] it provides huge potentials to solve many challenging problems which cannot be well explored in one single platform. It investigates into cross-platform social relation and behavior information to address the cold-start friend recommendation problem. In particular, it is used to conduct an in-depth data analysis to examine what information can better transfer from one platform to another and the result demonstrates a strong correlation for the bidirectional relation and common contact behavior between test platforms. Inspired by the observations, it has designed a random walk-based method to employ and integrate convinced social information to boost friend recommendation performance.

To validate the effectiveness of crossplatform social transfer learning, it has collected a crossplatform dataset including 3,000 users with recognized accounts in both Flickr and Twitter. It demonstrates the effectiveness of the proposed friend transfer methods by promising results. Extensive works have been conducted on analyzing social relations and recommending friends based on user's rich social context information in the same platform. It is proposed to learn an optimal linear combination of many different relations by leveraging multiple data types and social contexts. It recommends friends based on user's visual similarity and geographic similarity in online photo-sharing community. Investigates the relationship between semantic similarity of user profile entries and the social network topology and finds the consistency between the user keyword profile and their social relation. These

methods work well when the target user already have a stable network and closely related friends or rich social context information is available. However, in the situation of entering into a totally new social network, no user information is known except for little noisy registration profile, where the above methods tend to fail.

The goal of [4] paper is to educate about two aspects: First, to address the dilemmas of cross platform user experience theoretically. Second, By using an android based mobile application and an cloud architecture is designed for an account of theoretical parameters of big data user centric approach and interactivity. To address the challenges gone through the study of cross platform big data, they depended on cloud computing for intensive operations such as data mining and data processing at large scale. The work is based on two main streams they are cross platform interest based navigation and content filtering across multiple radio content stream .According to this paper they developed a unified access model to interest-based content modeling. We capitalized on existing SNSs to create a Big Data repository ,to model an interest-based content segmentation and content discovery through user interaction. In this paper users not only passively consume content but also actively engage with content. Users thus became key actors in content consumption and production yet posing new challenges to Big Data repositories to create meaningful streams that could be constantly modeled through content discovery and interaction. This paper proposed a mobile-oriented framework to leverage on mobile device's ubiquity.

In [5] Asta Zelenkauskaitė , Bruno Simõespropose have proposed a model to enhance user experience. Their adaptive user-centric model capitalizes on fluidity of online and offline realms and autonomous environments that are sensitive to the changing data fluxes. This model is based on a prototype of an ad hoc media company which for a more than a decade has been using social media to enhance user experience. Here they have proposed a prototype that expands an existing vision of Big Data by interlinking fluctuating social media streams and external web information with the media company's data. Theoretically they have focused on the veracity and value as the Big Data constructs being the most pertinent to argue for a user- centric perspective. We can easily infer from initial glance of their study that the concept of Big Data has challenged the notion of data and its relevance to huge number of new opportunities. With the explosion of social media outlets in particular, Big Data conceptualizes a new vision on media and entertainment that is primarily driven by the increasing amounts of user- generated content (UGC), which is contrasted with the professionally-produced content. Social media, promoting a greater user-created content visibility provides an emerging, yet underresearched area of studies. Changing mass media landscape emphasizes the hope for new opportunities of user-generated content, yet presents us with uncertainties.

In [6] S. Shyam Sundar & Sampada S. Marathe have emphasized the importance of customization. According to them customization is so appealing because the content is tailored or because the user feels greater agency. They have conducted number of tests to check the preferences of different types of users . In study 1 they came to a conclusion that power users rated content quality higher when it had a customizable interface, whereas nonpower users preferred personalized content. In Study 2,they told half the participants that their browsing information may be used for providing requested services while the other half was told that it would not be used. They observed the interaction found in Study 1 only under conditions of low privacy, with the pattern being reversed under high privacy. Significant three-way interactions were found for sense of control and perceived convenience.In this study they have mentioned the importance of customization in the simplest of the simplest aspects like the background color of our computer desktops to the extreme level like the faceplates on our cell phones and that we are now able to individualize a wide variety of products and services. They have also mentioned about various video games that allow users to define the look of their avatar and customize different aspects of game play such as difficulty levels. Talking about wide varieties of opportunities on the Internet, they have mentioned how we can customize the kinds of information we receive by actively or passively specifying preferred sources as well as content categories.

In [7] they have specified the importance of cross platform which is a solution to a challenge to deploy in different platforms using a single SDK tool and maintaining the same performance as the native application because nowadays, the use of mobile technologies is rising at an alarming scale. Due to this, more powerful and efficient mobile applications are needed in order to keep up with this trend. Since there exists several mobile platforms (iOS, Android, etc...), each one with different SDK (Software Development Kit) tools and specific development capabilities, application development becomes more complicated and expensive. They have concluded that a suitable solution is cross- platform. In this paper, they have presented a survey of cross-platform creation approaches with an emphasis on the MDA (Model Driven Architecture) approach as it is one of the most promising cross platform approaches. They have also identified and discussed the main desirable requirements of any cross-platform technology.

In [8] the have mentioned the objective of an information search system based on interest center and the user profile is to return , the elements that are relevant to specific user needs from a collection of documents. They are selecting only the documents interesting a user is done on the basis of interest center, calculated from the information about the user named user profile.The information

retrieval systems here converge towards a semantic representation of the user profiles. In contrast, it does not take into account the semantic links in defining the center of interest. So, they have used a graphical representation of the user profile based on a domain ontology. Hence they have been able to use the mathematical power graphs to infer the user's center of interest.

In [9] they have mentioned that it is important to understand the variation in how users reveal themselves across multiple platforms to assess the predictive value of different social media platforms. Most social media platforms allow users to interact in multiple ways: by posting content to the platform, liking other's posts, or building a user profile. While prior studies offer insights into how language use differs across platforms, differences in image usage is less well understood. In this study, they have analyzed variation in image content with user personality across three interaction types (posts, likes and profile images) and two platforms, using a unique data set of users who are active on both Twitter and Flickr. Usage patterns on these two social media platforms revealed different aspects of user's personality. Hence they have inferred that cross-platform data fusion is thus shown to improve personality prediction performance.

III. CONCLUSION

To provide a cross-platform based on user experience. Implement an application which contains information retrieval, information filtering and rank filtering processes. Design virtual cloud to account for theoretical parameters of Big Data user-centric approach and interactivity. Provide user friendly data based on the user history and profile.

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