

Mobile Application Recommendation System

for Mobile Data Plan Research in progress

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Abstract—This paper presents a research in progress mobile application recommendation system for mobile data plan. With the vast amount of mobile data plan available, students must put a lot of effort in finding a mobile data plan that is the best value for money or the best for their heavy usage needs. Thus, paper proposes a recommendation system to aid students in the selection process of a mobile data plan. Further, hybrid filtering will be applied in the development process of this system to recommend a few suitable mobile data plans.

Keywords—*Recommendation System, Hybrid Filtering, Mobile Data Plan, MDLC*

I. INTRODUCTION

In recent years, telecommunication using mobile phones are entangling to everyone's daily life. The use of mobile phone is not mainly used for telephone conversation, but it has also been used mainly: (1) for text messaging and (2) surfing the net via the use of mobile data provided by the mobile telco operators. The demand for a better use of mobile data is increasing enormously as the usage of a more stable and fast mobile data is increasing due to various use and complex usage the mobile devices among users. Among the usage of mobile phone via the use of the mobile data are internet surfing, video streaming, downloading, and mobile learning mainly among students. Mobile learning is a learning process using various mobile gadgets, and it is transforming the learning environment by allowing students to participate in an asynchronous, and ubiquitous mode [1]. The extensive implementation of mobile learning has resulted in students relying on the usage of their personal mobile data in order to gain access to extensive learning materials[2]. Thus the demand for students in getting the best mobile data plan is vital [3].

The structure of this paper is as follows. The following section will highlight previous studies on the topic of interest. Following that, the recommendation technique relating to the topic of interest will be presented. Next the

methodology and system architecture of the project will be presented. Finally, future works of this project will be presented.

II. LITERATURE REVIEW

Previous studies has highlighted that: (1) the use of mobile phone in learning enables student to communicate easily and better with their fellow lecturers, and (2) it also helps students to exchange information and study materials [4-7]. However, other related studies on mobile learning has highlighted that this kind of learning creates financial strains on students as they stressed the need of having a better mobile data plan in order to fully utilize the purpose of mobile learning [8].

The demand for the usage mobile data plan has risen over the years and are driven by several factors, among which: (1) mobile data fixed rates, (2) how easily it connects to laptops (3) online gaming (4) the ability to watch videos while on the go and (5) educational purposes [5, 9]. As for a student, the demand for a good and reliable mobile data plan from a mobile telco provider is vital, as students use extensive mobile data in for their mobile learning process [10]. Furthermore, every student needs: (1) the lowest mobile call rate, (2) uninterrupted mobile service, and (3) mobile data plan at the best price [11].

Over the years, there has been a great amount of mobile data plan available, and students have to put a lot of effort in finding the most suitable mobile data plan. Furthermore, is has also been suggested the implementation of a recommendation mobile data plan system in order to help users (i.e. students) to choose the best available mobile data plan [12, 13]. As such by creating a recommendation system, it would help minimize the information overload in a personalized way (i.e., for students) thus it would be also beneficial not only for the end user, but for the mobile telco provider as the would get more information about the users need. A recommendation system is a specific information

filtering system which ranks the existing information base on specific user conditions. Further, the outcomes from a recommendation system would rank the information based on specific filtering technique.

III. FILTERING TECHNIQUE

Recommender systems are software applications which is designed to provide suggestions that could be of interest a User [14, 15]. Further, each recommender application is base on certain technique. The following sub section will highlight and briefly explain three main filtering technique which are widely highlighted in previous research, mainly the: (1) content base, (2) collaborative filtering (CF), and (3) hybrid.

A. Content base filtering

Content base filtering is a technique base on the assumption of a user and several users personal interests. If a user interest in a particular topic of interest remains the same for a few days, thus it can be said that the user's topic of interest will remain the same for the near future. In a web surfing scenario, a user will tend to search the same topic of interest. Thus, the content base filtering technique will only show those information related to a user's topic of interest and similar users with the same topic of interest. [16-18]. Figure 1 below refers to content base filtering.

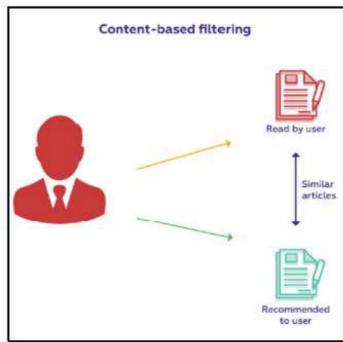


Fig. 1. The content base filtering technique

B. Collaborative filtering

This technique uses the idea of spreading news, word of mouth, people's option, and reviews [11, 15]. This filtering technique then filters and sorts based on similarity them accordingly to help users make decisions[13, 16]

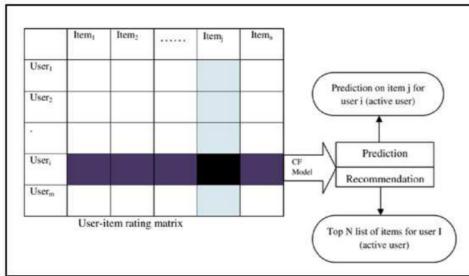


Fig. 2. Collaborative filtering

C. Hybrid filtering

This technique (Figure 3) combines both filtering techniques mention in the above sub sections. The outcome of this

technique is based on the users topic of interest combined with other information such as previous reviews, option and spreading news [17].

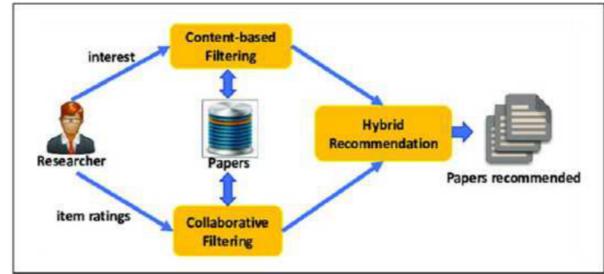


Fig. 3. Hybrid Filtering

IV. METHODOLOGY

The proof of concept of the proposed system in this project will be using the Multimedia Development Life Cycle (MDLC) methodology [19] (figure 4). A well-developed methodology plan will save time, money, and multiple modifications. The MDLC activities concentrate on technological aspects of the product development [20]. The MDLC consists of: (1) conceptualization phase, (2) development plan phase, (3) preproduction phase, (4) production phase, (5) postproduction phase and (6) documentation phase. Each of this phase will be briefly explained in the following sub sections.

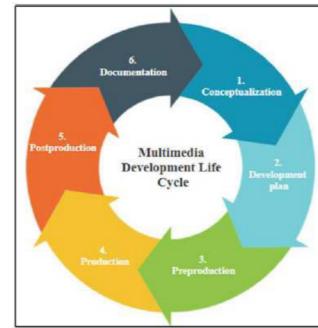


Fig. 4. Multimedia Development Life Cycle (MDLC)

A. Conceptualization

This phase constitutes of the categorization of domain stage. This project will be categorized into three main domain: (1) information – to be given to the users, (2) filtering – base on certain criteria, and (3) outcome – providing the best recommendation to the user.

B. Development

This phase constitutes the development of the system architecture for the mobile application. The system architecture for this system will be explained in the next section.

C. Preproduction

In this phase, the mobile application is coded. This application will be using several tools such as jquery, mobile-1.0 as the platform, Adobe Dreamweaver CS5, and XMAP control panel v.3.1.0

D. Production

In this phase, all the functional requirements of the prototype mobile application will be analyzed and tested to obtain user feedback.

E. Postproduction

In this phase, further testing will be conducted, using scenario base testing and black box testing.

F. Documentations

In this phase, proper documentation and deployment of the mobile application will be conducted.

V. PROPOSED SYSTEM ARCHITECTURE

The system architecture (figure 5) is the conceptual model that describes a system's structure, behaviors, and more opinions [21]. In the Multimedia Development Life Cycle process, serves as the key milestone. The goal of the activities of system architecture is to define a comprehensive solution based on logically connected and compatible principles, concepts, and properties. Further, the system architecture has features and properties that satisfy, the problem or opportunity expressed by the system specifications and principles of the development life cycle which is then implemented by technology.

The activities presented in Figure 5 defines a thorough project outcome solution based on the logically associated and compatible standards of the proposed project. The outcome of this data plan recommendation system implementation comes from several data plans from any telecommunication company that users would choose to access the internet connection. This project would be using the website's triplet and metadata files as a database in the data plan recommendation system. This data plan recommendation system would be using the hybrid filtering technique. This proposed project implements hybrid filtering technique. This technique combines the user topic of interest and other similar reviews focusing on the same topic of interest. Furthermore, the hybrid technique also utilizes other users reviews to provide the best possible recommendation [17, 21].

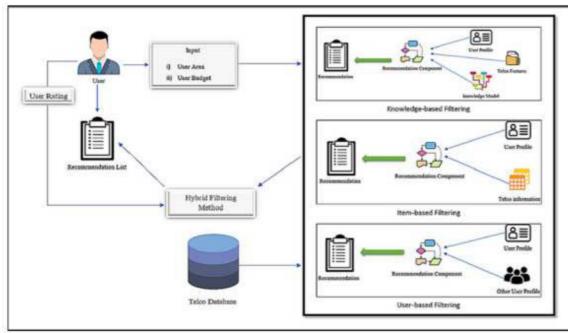


Fig. 5. System architecture

The system architecture will also help to prioritize conflicting goals. In the early stages of a research project system, the system architecture ensures that a design strategy can create an appropriate framework. Furthermore, the design risks and several mitigation plan can also be

recognized early especially in the construction process by designing efficient architecture. Functional requirements, including software coding standards, instruments, and platforms, are also determine in the system architecture. Hence, it will ensure success in proposed project and it also gives the right technological solutions.

VI. FUTURE WORKS

Numerous telco providers offer affordable and reasonable data plans which best suits students. However, for students the selection of a good data plan is vital, as students mostly uses extensive mobile data in their daily usage especially for their mobile learning.

The propose recommendation system opens new ways for customized knowledge and information to be retrieved from the Internet. It also aids to mitigate the issue of information overload, by using the recommendation systems. This is because users (i.e., students) are only interested in those information that are necessary for their usage.

Further, this work in progress paper has highlighted several filtering techniques which can used by the recommendation system. The proposed mobile data plan recommendation system will be using the hybrid filtering technique, as this technique is a complete technique focusing on a user's interest and other users' reviews. It is hope that this project will inspire and serve as a guide to develop other recommendation system.

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