

Social Profile Based Gift Recommendation System

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Abstract - More and more people are into online shopping these days. One of the aspects of shopping is giving gifts on special occasions. People make decisions every day. "Which movie should I see?", "Which city should I visit?", and "What should I eat?", "What should I gift to a friend on his birthday?"... There are too many choices and a little time to explore them all. To recommend gifts we need to design a system that suggests something fitting interest and likes of the user's friend. What we want to achieve is a system that retrieves the important information about the user's friend without asking the user to remember or provide his friends' interests. Our project is based on building a system that will generate gift recommendations for a specific user based on his activities on social networking website. Among social networking websites, we have chosen Facebook because of its large user database, easy to use API and colossus of information pertaining to an individual.

Keywords— Gift Recommendation, Recommendation Systems, Facebook Graph API, Apache Mahout, Myrrix

I. INTRODUCTION

Recommendation systems help people make decisions in the complex information spaces. You see them everywhere around you from Google ads recommendation to Facebook friend suggestion system. They are a type of information filtering that presents lists of items (films, songs, books, videos, images, products, web pages, gifts...) which are likely of user interest. The proliferation of social networking in today's world has provided us with colossal amounts of data. The field of recommender systems has seen a lot of innovation, and research is actively moving in the direction of leveraging social content.

Currently active recommendation systems target TV shows, Movies, Food items and Music. We focus on the question "What should I gift to a friend on his birthday?" in the scope of this Project. Our aim is to combine these recommendations in the form of gift suggestions that can range from movie DVD to match tickets to electronic items. Once implemented, our system will minimize the user's effort to search for appropriate gifts and thus justifying the rationale behind it.

Giftkart illustrates the working of our gift recommendation engine, the technical challenges underlying the engine and the critical role of social networking in making the engine work. Subsequent sections will describe our gift recommendation engine in detail.

II. INSTALLATION AND PERMISSION

A Facebook user can discover the application either by searching for it or by getting invited by a friend to use Giftkart. Currently, Giftkart is running as a web-app managed by the user's Facebook account. The user cannot access the app's data unless he/she authorize the app with their active Facebook account. The app starts with a welcome page as shown below.



Figure 1.1: Welcome Screen

The signup is shown if the user is not logged in or hasn't authorized the app to access his/her personal data as mentioned in the dialog appears that appear right after on clicking the signup button. The reason for requesting these permission is to enable the application to pre-calculate the gift recommendations for the user and its friends.

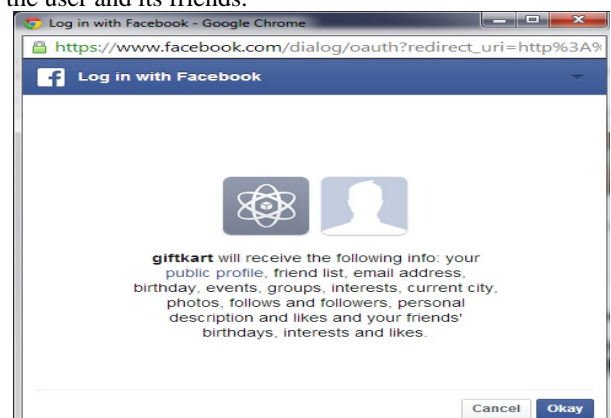


Figure 1.2 Permission Dialog

The signup is shown if the user is not logged in or hasn't authorized the app to access his/her personal data as mentioned in the dialog appears that appear right after on clicking the signup button. The dialogue box clearly describe the kind of the information the application require to perform its functions. Such functions includes user's profile (email, birthday, friend list, location, events and photos), user's activities and interests. The application also requests similar information about user's friends. The reason for requesting these permission is to enable the application to pre-calculate the gift recommendations for the user and his friends.

As a result of installation, the application return the access token. This access token contains the encoded permissions granted by the user to Giftkart. After successful login and authorization, the user will be redirected to the main dashboard of the application.

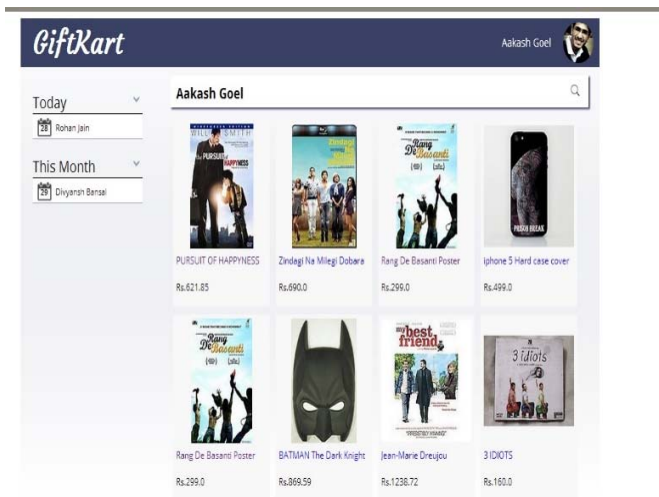


Figure 1.3 Main Dashboard

III. HOME

After the login, whenever the user use Giftkart he/she will be directed to the main dashboard. The dashboard shown is the interactive section of the application where the user can exploit the various features provided by the app. At the top right corner is the profile picture of the currently logged in user. One of the feature is most popular gifts. . Gifts visible on the main screen are most popular gifts. These are the gifts that are most popular from disparate categories.

From the home screen user has four options. First one is to click on one of the friends to see their gift recommendations. Second one is to click on the right hand side icon to visit their profile. Third one is to write "Happy Birthday" on user's friend timeline. And the last one is autocomplete customized search.



Figure 1.4 Timeline message

IV. FRIENDS

When the user clicks on a friend from the upper portion on the left hand side he/she will land for the gift recommendations. Lower portion contain list of the upcoming birthdays.

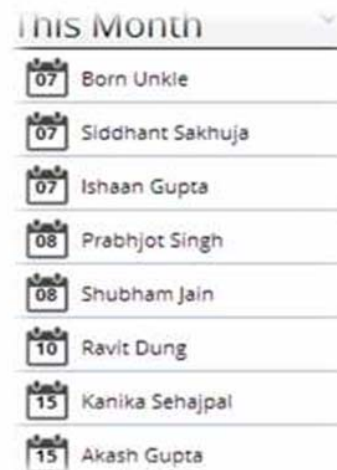


Figure 1.5 Upcoming Birthday List

At the center of the screen, the user can see disparate gifts which includes photo frames, pillow, phone covers and many more. Each gift tile contain gift's title, image and price. Currently, the reason for recommending a gift and associating it to an interest is because the user or friends "likes" a particular Facebook page associated with interest or activities.



Figure 1.6 Gifts for Akash Gupta

The other functionality of application is autocomplete customized search. Autocomplete search involves predicting a word or phrase that the user wants to type in without the user actually typing it in completely.

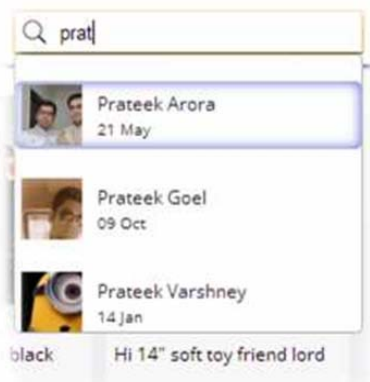


Figure 1.7 Autocomplete search

Next to friend's icon, the user can see an icon for writing a message to the friend's timeline. Also there is availability of going to the friend's Facebook profile. The user can also get recommendations for him/her as well.

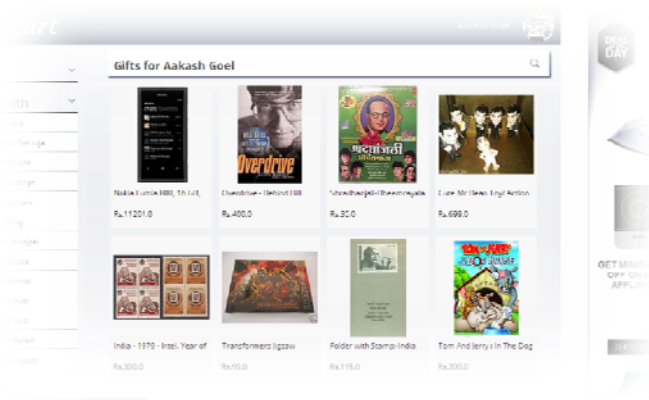


Figure 1.8 Gift recommendations

V. ANATOMY OF RECOMMENDATION ENGINE

Myrix. That is the crux of how we are generating recommendation. Myrix is a complete, real-time, scalable recommender system, evolved from Apache Mahout.[3] The process of generating recommendations is done in following steps:

1. *Generating preference CSV:* This step involves collection of data for training purposes. We used facebook's graph API to collect pages that users liked.[5] A simple GET request to graph.facebook.com returns the desired JSON response. Using this response we generated a CSV file that contained data in the format < Userid, Pageid >. Thus, this CSV contained all our training users and corresponding pages that they liked.
2. *Data Refining:* Now, once we gathered the data, we found that Facebook contained many pages that represented same item in essence. Each of these pages had unique id. So for the recommendation engine, they appeared as two separate products. Thus for the algorithm to work correctly, we needed to cluster the similar pages together. For this we used Open Refine's implementation of Key Collision Clustering algorithm.[4] We used fingerprint method as it is fast and most simple to work with.
3. *Pages to Products mapping:* Having made the clusters, we chose the smallest string of the cluster as its representative. This representative would replace all the occurrences of the members of this cluster in the CSV file. In order to get out of the limited domain of Facebook pages, we needed to convert them to corresponding products at this stage only. For this, the representative page name was searched on popular e-commerce sites such as Flipkart, Junglee etc. and the corresponding search results were stored. We used MongoDB for storing them. So till now we have userid and corresponding **product id** that the user likes.
4. *Recommending:* Now this CSV is fed into myrix which implements Collaborative Filtering algorithms for generating recommendations. The output of this step is a **model** file. This model file contains all the rules and associations that could be derived out of the training data. Now our engine is ready to produce recommendations.

Additional Feature: Apart from recommending the gift products from our catalog, we also provide a personalized gift items section. This contains personalized gifts for our friends such as mugs, clocks, photo frames, pillow and many more. We will take all the photos of the user, sort them in descending order of the likes and will extract top 5 photos of the person.

VI. FUTURE WORK

Although the application works as intended and produces good enough gift suggestions. One area it falls short is number of gift items in the catalog. Although this was more because of time constraints, one way to expand our catalog is

to search each recommended product further on any e-commerce site.

One site that provides extremely well written API for this purpose is eBay's finding API.[6] The Finding API provides programmatic access to the next generation search capabilities on the eBay platform. It lets user search and browse for items listed on eBay, and provides useful metadata to refine searches and enhance the search experience. The Finding API has several calls to help buyers and sellers find items on eBay.

VII. RELATED WORK

There are several solutions available on the Social Web that attempt to alleviate the stress of gifting. Each solution takes a slightly different approach. Giftly.com provides an easy way to gift any type of "personalized" gift card to a business. Etsy.com uses its unique product catalog to offer highly delightful gift recommendations based on the likes of a user's and user's friends on Facebook. Gifts.com focuses on curated lists of products that target particular occasions such as birthdays. In addition, it offers a gift recipient personality profiler that comprises of a set of playful questions. Wantful.com takes a similar approach by asking a set of simple questions about the gift recipient to recommend the most delightful gifts. Finally, Karma.me provides a mobile application that offers quirky and

delightful products based on moments, events, occasions and moods (i.e. cheer up/tough days).

VIII. CONCLUSION

Social commerce is emerging as a powerful commerce. Recommending gift products using social activities is a compelling example of social commerce. In this paper we have described a gift recommendation engine that is directly link with the Facebook. Our gift recommendation engine is unique in that it is the only engine that will directly takes the interest and likes of user from the Facebook. There is no need for the user to manually enter the details of the person to whom he want to send a gift. Building such an engine also raises challenges, in inferring the user's interest and likes, in determining the giftable products and in processing the big and fast data associated with Facebook. In this paper we have briefly describe all of these challenges.

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