INFO290 Social Computing Class Project Facebook Movie Recommender System

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Abstract

According to a paper by Herlocker, Konstan and Riedl (2000), Automated Collaborative Filtering (ACF) content-based algorithms can serve as an alternative in predicting users' preferences. Unlike other recommender algorithms this kind of algorithms tend to be less error-prone and automated collaborative filtering algorithms have the ability to filter on concepts like taste and quality. According to Iyengar and Lepper (2000), people have a hard time making a decision when confronted with a large choice set. For Social Computing INFO 290, our group aims to help users in making better decisions when picking a movie to watch. Our group will try to achieve this by building a Facebook application in which a collaborative filtering algorithm is used to recommend movies to users.

Introduction and Background

With so many choices these days, we have a hard time making decisions. Iyengar and Lepper (2000) have demonstrated that users' marginal utility decreases when confronted with too many choices. Several websites employs ACF technology in order to help users make decisions by narrowing users' options based on personal interests, including GroupLens, RIngo, VideoRecommender, MovieLens, Amazon.com, CDNow.com, MovieFinder.com and Launch.com. Our focus attempts to help users make better choices about which TV shows and movies to consume.

IMDB, the online database of movies, houses thousands of movies (IMDB Database Statistics, 2011). The sheer number of movies makes it difficult for a user to randomly pick a movie they may be interested in from the list of all possible options. Netflix is a good example of this. Netflix's business model allows people to rent movies for a monthly fee.

Depending on the subscription plan, users receive the DVDs from their queue by mail at home, and when finished, send the DVDs back to Netflix in order to receive the next set of DVDs. Netflix recommends movies based on existing user preferences, continually improving its recommendations as users add more movies to their queue. To better their recommendation system, Netflix tried to incentivize researchers and developers with a $1M prize, given to the best algorithm for predicting user movie preferences. The winning prize was awarded to a *content-based* recommendation system that recommends movies based on user rated associated features of similar movies. A content-based recommender system recommends products according to how a user rated associated features of other products (Burke, 2002; Degemmis et al., 2004, as cited by Ochi et al, 2009). For example, if a user has rated The Godfather highly and Titanic poorly, such a content-based recommender system could employ characteristics of these movies to recommend similar ones, such as The Departed and Twilight.

Proposed Solution

Herlocker et al. (2000) have shown that instead the content-based algorithms employed by Netflix, a Automated Collaborative Filtering recommendation system, can serve as an alternative in predicting users' preferences. As an alternative to IR/AI algorithms, which are prone to error, ACF has the ability to filter based on concepts like taste and quality and recommends based on the preferences of an individual in the context of a larger community.

Nowadays everybody is using social networking sites, and they are becoming more and more important in people's lives. Recently, a lot of research has been done on this topic of social networking sites and online communities in general, but there is still a lot of work that needs to be done. For this project, we want to use the knowledge we have about recommender systems, and incorporate that into a social networking site. Facebook, via APIs, encourages programmers to develop Facebook applications. Via permission, the developer gains to access the movie preferences of Facebook users and their friends. Currently, Facebook apps recommend using content-based algorithms. For our group project, we will develop a Facebook app using the ACF algorithm to better recommend movies to Facebook users. Unlike content-based recommendation systems, which do not

take into account others' preferences as in the case of Netflix, movies will be Facebook users based on individual *and* communal interests. For example, if the user has 100 friends who are fans of the movie Scarface, the movie would be recommended highly to that particular user. The goal of our project is to help users in making decisions when picking a movie. We try to achieve this by building a Facebook application in which a collaborative filtering algorithm is used to recommend movies to that user. There are other Facebook applications that do the same thing as we want to do. However, these applications tend to use a more content-based algorithm, and even if they do use a collaborative filtering algorithm, they tend to limit themselves to just one's friends.

Milestones

For this project, we have set up several milestones that we plan to achieve. These are in chronological order:

- Final Project proposal
- Prototype in which we have a Facebook application set up and where we know for each logged in user which movies are liked by the friends of that user
- Midterm report
- Working recommender algorithm
- Final Facebook Application
- Final Report

Our first milestone is the final project proposal. When we have gotten feedback and possibly adapted our initial proposal, we have a solid fundament to work from. This will then be presented to the rest of the class. Our next step then will be to build an initial prototype, which will include setting up the Facebook application, and were we can use the Facebook API such that we can extract all movies that are liked by the friends of a specific user. We hope that by the midterm report we have that finished and we already started with the actual recommender algorithm. The final goals of the project are the final application as well as the final report.

Summary

Research has shown that people have a hard time making a decision when there is a extensive choice set (Iyengar and Lepper, 2000). A way to facilitate the decision making process is to present people with a limited choice set. Two techniques to present people with a limited but accurate choice set are content based filtering and collaborative based filtering. In this project we intend to use the latter one because the algorithm used is simpler, less error-prone and yields comparable results. The main goal of this project is to help people with choosing a movie to watch. We intend to use the large population of Facebook and the preferences of its users to come up with an accurate set of movies which will be recommended to a user. Using the large amount of data available through the Facebook API it is possible to come up with accurate recommendations based on similar users other than your own group of friends.

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