**Software Requirement Specification**

1. Product/Project Overview

Recommender systems for automatically suggested items of interest to users have become increasingly essential in fields where mass personalization is highly valued. The popular core techniques of such systems are collaborative filtering, content-based filtering and combinations of these. In this paper, we discuss hybrid approaches, using collaborative and also content data to address cold-start - that is, giving recommendations to novel users who have no preference on any items, or recommending items that no user of the community has seen yet. While there have been lots of studies on solving the item-side problems, solution for user-side problems has not been seen public. So we develop a hybrid model based on the analysis of two probabilistic aspect models using pure collaborative filtering to combine with users' information. The experiments with MovieLen data indicate substantial and consistent improvements of this model in overcoming the cold-start user-side problem.

1. External Interface Requirements
   1. Hardware Interfaces

Hardware : Pentium

Speed : 1.1 GHz

RAM : 1GB

Hard Disk : 20 GB

Floppy Drive : 1.44 MB

Key Board : Standard Windows Keyboard

Mouse : Two or Three Button Mouse

Monitor : SVGA

2.2 Software Interfaces

Operating System : Windows

Technology : Java and J2EE

Web Technologies : Html, JavaScript, CSS

IDE : My Eclipse

Web Server : Tomcat

Tool kit : Android Phone

Database : My SQL

Java Version : J2SDK1.5

3. Functional Requirements

1. **Social Networks Module**

The ability to create a **Profile page**–this is your main “home” on the network. Different networks offer varying abilities to personalize your page in terms of look and feel. They may also differ in terms of the types of information you would include, such as name, Date of Birth, Photo, etc. Facebook, for example, asks for your relationship status (because it’s more “social”), while on LinkedIn, which is primarily for professional use, does not.

**A way to find and link to “friends” or connections**–The purpose of a network is connections, so facilitating a members’ ability to find and connect to other people is important. Each network offers different types of search capabilities and once you’ve located a potential friend, you must send an “friend request” to invite them into your personal network.

***Privacy Controls***–In most networks, your ability to access more detailed information about a person is based on their status as one of your connections; “friends” can see much more information than those who are not your “friends.” You can control who is actually in your personal network by effectively managing who you invite into your network and whose friend request you accept.

**The ability to send public messages**–In Ning and Facebook, you can communicate with your connections either by sending a private message or “writing on their wall.” On LinkedIn, you communicate via person-to-person messages. Ning also provides Forums where members can interact with one another on specific topics (you’re reading this in one of the Ning forums).

**Ability to share various digital objects and information**–Both Ning and Facebook allow members to share various items, including photos and RSS feeds. LinkedIn offers some ability to share links, although it’s multimedia capacities are nothing like what you find on Facebook or Ning.

1. **Interpersonal Influence Module**

Many social network based models have been proposed to improve the performance of the RS. Recently, propose to use the concept of ‘inferred trust circle’ based on the domain-obvious circles of friends on social networks to recommend user favorite items. Their approach not only refines the interpersonal trust in the complex networks, but also reduces the load of big data. Meanwhile, besides the interpersonal influence, demonstrate that individual preference is also a significant factor in social network. Just like the idea of interpersonal influence, due to the preference similarity, user latent features should be similar to his/her friends’ based on the probabilistic matrix factorization model However, do all users actually need the relationship on the social networks to recommend items? Does the relationship submerge user’s personality, especially for the experienced users? It is still a great challenge to embody user’s personality in RS, and it is still an open issue that how to make the social factors be effectively integrated in recommendation model to improve the accuracy of RS. Explored three separate dimensions in designing such a recommender: content sources, topic interest models for users, and social voting. They demon started that both topic relevance and the social voting process were helpful in providing recommendations. The quality of recommendations and usability of eight recommender systems was examined in The results show that the user’s friends consistently provided better recommendations. For example 90% of users believe the shopping mall recommended is good from friends, 75% of users believe that the recommendation is useful from friends. This research shows that the interpersonal influence is important in social media had analyzed a large social network in a new form of social media known as micro-blogging. It has a high degree correlation and reciprocity, indicating close mutual acquaintances among users. They had identified different types of user intentions and studied the community structures.

That is to say user intentions or interests can be reflected by those of its friends.

1. **Recommendation System Module**

**Recommender systems** or **recommendation systems** (sometimes replacing "system" with a synonym such as platform or engine) are a subclass of information filltering system .that seek to predict the 'rating' or 'preference' that user would give to an item. The recommender system compares the collected data to similar and dissimilar data collected from others and calculates a list of recommended items for the user.Here we applied Cold Start Filtering appraoch This systems often require a large amount of existing data on a user in order to make accurate recommendations.

**4.Cold start Filltering Module**

**Cold start** is a potential problem in computer-based information systems which involve a degree of automated data modelling. Specifically, it concerns the issue that the system cannot draw any inferences for users or items about which it has not yet gathered sufficient information.

The cold start problem is most prevalent in recommender systems. Recommender systems form a specific type of information filtering (IF) technique that attempts to present information items ( news, images) that are likely of interest to the user. Typically, a recommender system compares the user's profile to some reference characteristics. These characteristics may be from the information item (the content-based approach) or the user's social environment (the collaborative filtering approach).

In the content-based approach, the system must be capable of matching the characteristics of an item against relevant features in the user's profile. In order to do this, it must first construct a sufficiently-detailed model of the user's tastes and preferences through preference elicitation. This may be done either explicitly (by querying the user) or implicitly (by observing the user's behaviour). In both cases, the cold start problem would imply that the user has to dedicate an amount of effort using the system in its 'dumb' state – contributing to the construction of their user profile – before the system can start providing any intelligent recommendations.

In the collaborative filtering approach, the recommender system would identify users who share the same preferences (e.g. rating patterns) with the active user, and propose items which the like-minded users favoured (and the active user has not yet seen). Due to the cold start problem, this approach would fail to consider items which no-one in the community has rated previously.

4. Design Constraints

**Recommender Systems Limitations**

There are different limitations for using recommender systems. The most twodistinct but related well problems are new user and new item problems. A new user with few ratings becomes hard to recognize in recommender systems. Similarly a new item with few ratings cannot be easily recognized by the recommendation system, so there is a need to encourage users to rate items in such systems In this section.

**Insufﬁcient Recommendations for New Users**

To have accurate a reliable recommendation, the user needs to rate sufﬁcient number of items, as this is the base for content-based recommendations.The system will not be able to predict good recommendations if the user is new in the system and he rated only a few items.

**Insufﬁcient Ratings for New Users**

Collaborative recommender systems perform recommendation based on user preferences; so for a new item to be seen and recommended by the system a sustainable number of users must rate it. Hybrid recommendation approaches are also used to solve this problem as discussed in the sections “Social Networks” and “Recommendation Techniques”.