

Friend Recommendation in Social Media Platforms using Big Data Analysis

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Abstract— These days it's very common to opt for digital immersion for a quick getaway from the tiring schedule throughout the day. People of all age groups love to spend time on social media learning and making new friends. All Social Networks can be thought of as a platform for global connection and easy communication. Social media has become a platform for connecting with people worldwide, where they share photos, videos and follow their friends. Nowadays, with the rapid growth of users in social media platforms and the amount of information they gather about their users, recommendation system is ideal at connecting people in the social media. In this paper, we come up with an idea to use mapreduce algorithm on the data collected by the Cassandra tool. To verify the evaluation results, we also use Apache Mahout's Recommendation engine.

Index Terms— Social Media; RecommendationSystem; Mapreduce; Cassandra; Apache Mahout.

I. INTRODUCTION

A social page of a person is basically the person in a screen. It reflects everything about the person in a simpler way. Before even meeting the person, we get to know A to Z about him/her. A person can use the social handle to connect with people across the globe and extend his/her circle. This is a process wherein friends/connections are suggested by the platform (based on an algorithm) based on our recent posts/likes/check-ins/activity/connections. This is done to increase the usage of the platform and also can be considered as a marketing strategy. All the recent activity of the person is collected, stored and filtered using Cassandra which is a nosql database. Based on the recently visited places of the person, whose data will be connected from the location data from the GPS of the device, we would be suggesting similar places and the accommodation in and around that place.

Recommendation systems have been commonly used over the last ten years to provide recommendations of products and services to users, based on their interests, preferences and online behaviour. Such applications have gained popularity, especially due to the information overload problem, as they present the most relevant recommendations to users. The recommendations are based on implicit and/or explicit data obtained from the user. The implicit data are collected by recording the user's behaviours while interacting with the system. These data include navigations, preferences and rating. The explicit data is usually obtained during the registration when the user is asked to answer a number of questions. Examples of the recommender systems are movie recommender systems, job search systems, news personalisation systems, and advertisement delivery systems.

The increasing number of users in social networks, and the rich information they provide, illustrate the need for a recommender system that helps users find their preferred matches. The task of recommending people is more complicated and sensitive compared to the task of recommending products. The reason behind this is the special nature of the relationships between the users in social matching systems like online dating networks. An online dating network is a web-based service that allows people to make contact and communicate with each other, and where the user is the sender and receiver at the same time.

II. LITERATURE SURVEY

[1]Fan Jiang;Carson K. Leung;Adam G. M. Pazdor in 2016 proposed a big data analytic solution that uses the MapReduce model in mining these big social networks for discovering groups of frequently connected users for friend recommendation.

[2]Slah A. Alsaleh in 2012 proposed a hybrid recommendation system for matching people in social networks with the use of clustering.

[3]Anuja Shahane;Prof. Rucha Galgali in 2016 proposed a Friend Recommendation system for social networks, which recommends friends to users based on their lifestyles instead of social graphs and extracted lifestyles from user-centric data collected and recommended potential friends to users if they share similar lifestyles.

[4]Yakun Li;Jiaomin Lui;Jiadong Ren in 2019 proposed a novel social recommendation method that builds a new user relationship network by leveraging the interaction relationships among social users in complex networks.

[5]Kosaraju Naren Kumar;Kanakamedala Vineela in 2020 proposed a friend recommendation system to suggest friends to users using the Random Forest Classifier.

[6]Khushboo Dawada;Asst.Prof. Saket J Swarndeep in 2020 proposed a clustering technique and KNN technique with collaboration clarification algorithms to get added accuracy in the results.

[7]K. Farrahi;D. Gatica-Perez in 2010 proposed a model called bag of multimodal behaviour that integrates the modeling of variations of location over multiple time-scales, and the modeling of interaction types from proximity.

[8]W. H. Hsu;A. King;M. Paradesi;T. Pydimarri;T. Weninger in 2006 addressed the problem of link recommendation in weblogs and social networks. They first proposed a collaborative recommendation using the link structure of a social network and content-based recommendation using mutual declared interests. Next, describing the application of this approach to a small user or to a community network of the blog service LiveJournal was done. Then, the discussion of the ground features available in Live Journal's public user information pages and some graph algorithms for analysis of the social network was done. At last, they compared the performance of this proposed machine learning technique to that of the rudimentary recommender system provided by Live Journal.

[9]N. Eagle;A. S. Pentland in 2006 proposed a system for sensing complex social systems using the data collected from 100 mobile phones over a period of 9 months and demonstrated the capacity to use standard Bluetooth-enabled mobile telephones to measure the information access and to use it in different contexts.

[10]L. Bian;H. Holtzman in 2011 proposed a collaborative filtering friend recommendation system Matchmaker, based on personality matching. The main objective of Matchmaker is to grasp the social information and mutual understanding among people in the existing social connections, and generate friend recommendations based on rich contextual data from people's physical world interactions.

III. EXISTING SYSTEM

The existing friend recommendation algorithm depends on already existing user connections to pick friends. For example, Instagram depends on a social link analysis among those who share mutual friends and recommends symmetrical users as potential friends. There is no recommendation based on locality, gender and user preferences. The inputs are given based on the default friend recommendation algorithm. Mostly, all of the data is stored in a Hadoop based database.

IV. PROBLEM STATEMENT

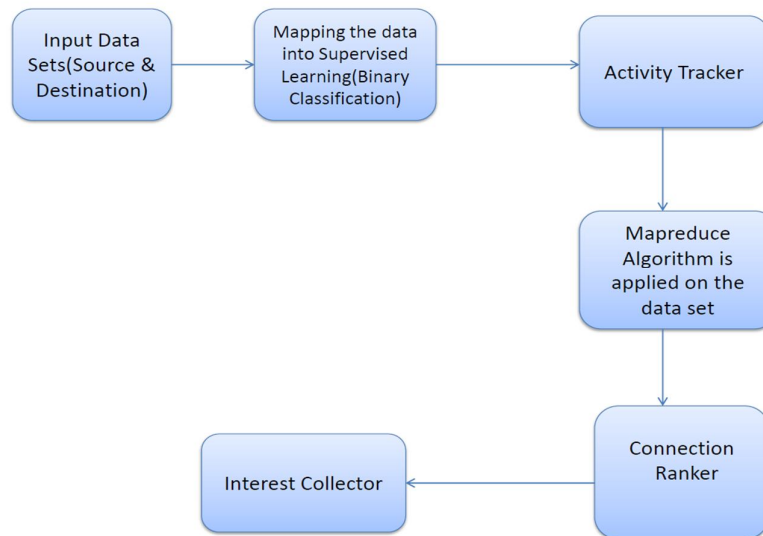
The problem with the existing system of friend recommendation is that the algorithm it runs on is based on the recent activity of the user on a particular page or post. It does not take the survey of the user preferences on other personality domains. It might be possible for a user to accidentally like a particular post with no intentions to follow or hear from it in the near future. In such cases, recommending friends based on this activity is not

right,hence the additional feature has been implemented in our project.Second most serious issue is that ,people have a lot of suggestions throughout the Globe,but when it comes to emergency the responsibility needs to be taken by the ones who are close to them and are approachable at the moment.This feature enables the user to enhance the social bond he/she shares with the neighbours .

V. PROPOSED SYSTEM

In this paper,we are trying to incorporate two important features whose absence has been notable in the existing papers.The first feature that we'd like to incorporate is the recommendation of friends based on a clean survey that is taken at the very beginning of the profile creation section.The user satisfaction is enhanced by providing an additional option of exceptions if he/she would like any.Further more,the exceptions can be taken into consideration once the survey results have been calculated .Second feature that we would add is that of the geographical recommendation of peers.This helps people know their surroundings better and gel along with their neighbours easily.

VI. ARCHITECTURE DIAGRAM



VII. MODULES

A. Activity Tracker

This module has been designed to keep an eye on all the implicit data that has been left by the user.All this data is fed to the database and is sorted based on different criteria and saved for future use.This database has all the current and past activity of the user.This can be thought of as an idea pool for the entire project as the data is dynamic and can be used for any latest algorithm that gets developed on the way.

B. Possible Friend Maker

This is the next module of the project where the inputs are taken from the ACTIVITY TRACKER module and suggestions are being made in the module.This module is the heart of the project ,as the whole title revolves around this module.This is where ,MAPREDUCE algorithm is used.The links are drawn and new connections are given directories.

C. Connection Ranker

This is the module where the code is written to rank the friends/connections based on the time they spend on chats and similar interests and the ratings they give for a particular place/thing.It also sends them information about each other's recent places visited (after confirming their consent).

D. Interests Collector

This module suggests similar interests to mutual connections so as to increase the rapport .It also suggests similar activities they can do together and explore new places of mutual interest.It also helps these connections others who would like to join them in a particular activity.This way,users find many more friends who become doors for better relations and exchange of thoughts.

VIII. CONCLUSION

The Authors of the paper hereby conclude on the proposed system. Further enhancements can be briefed here.

DISCUSSION

The purpose of this study was to study the existing friend recommendation systems and work towards one that has the additional features incorporated into it. As mentioned earlier ,one of the additional feature that would be a part of this system is the geographical location wise recommendation of friends ,for which the data from navigation application of the device is also collected once the user gives the permission to access the navigator application.

REFERENCES

- [1] Fan Jiang;Carson K. Leung;Adam G. M. Pazdor-Big Data Mining of Social Networks for Friend Recommendation.
- [2] Slah A. Alsaleh-Recommend People in Social Networks Using Data Mining.
- [3] Anuja Shahane;Prof. Rucha Galgali-Friend Recommendation System for Social Networks.
- [4] Yakun Li;Jiaomin Lui;Jiadong Ren-Social recommendation model based on user interaction in complex social networks.
- [5] Kosaraju Naren Kumar;Kanakamedala Vineela-Friend Recommendation Using Graph Mining On Social Media.
- [6] Khushboo Dawada;Asst.Prof. Saket J Swarndeeep-Friend Recommendation System using Machine Learning Algorithms.
- [7] K. Farrahi;D. Gatica-Perez-Probabilistic mining of socio geographic routines from mobile phone data. Selected Topics in Signal Processing.
- [8] W. H. Hsu;A. King;M. Paradesi;T. Pydimarri;T. Weninger-Collaborative and structural recommendation of friends using weblog-based social network analysis.
- [9] N. Eagle;A. S. Pentland-Reality Mining: Sensing Complex Social Systems.
- [10] L. Bian;H. Holtzman-Online friend recommendation through personality matching and collaborative filtering.
- [11] Fathima Mol, Neetha B S-Friend Recommendation System for Social Networks:A Semantic and Profile based Approach.
- [12] Sara Mazhari,Hoda Sadeghbeygi- A user-profile based friendship recommendation solution in social networks.