Service Rating Prediction by check-in and check-out behavior of user and POI

Bhushan Patil, Siddheshwar Anajekar, Ganesh More, Sujit Dhaware

Students , B.E Computer , JSPM Narhe Technical Campus ,Pune , India

---***---

Abstract - *Now's days over 200 million customers online to the world-wide web, and E-commerce of world trade. Throw the uses of mobile device and techniques have fundamentally enhanced social networks services, such as Facebook, twitter, Google plus, LinkedIn, etc. which allows users to share their experiences, reviews, ratings, photos, check-ins, video, audio ,etc. The user geographical information located by smart phone bridges the gap between physical and digital worlds. The new factors of social network like interpersonal exchange and interest based on circles of friends and challenges for recommender system (RS). Location data functions as the connection between user's physical behaviors and social networks service by the smart phone or web services. We refer to these social networks know to geographical information as location-based social networks (LBSN).We mine:(1)user's rating for any item.(2) between user's rating differences and user-user.(3)interpersonal interest similarity, are a unified rating prediction modules are used to communicate with the user.*

Key Words: *B*ig data, Geographical location, Social network services, Recommender systems, Rating prediction, Smart Phones, Predictive models, User rating confidence, Mobile communication, Personal interest ,E-commerce ,Web mining.

INTRODUCTION :

Now a days rapid development of ubiquitous internet access and use of different mobile devices , social media such as facebook , twitter , linkedin are widespread . smart phone users produce large volumes of data . The internet revolution has brought about a new way of expressing an individual's opinion. It has become a medium through which people openly express their views on various subjects. These opinions contain useful information which can be utilized in many sectors which require constant customer feedback. The proposed method attempts to overcome the problem of the loss of text information by using well trained training sets. Also, recommendation of a product or request for a product as per the user's requirements have achieved with the proposed method.

Big data has received considerable attention, because it can mine new knowledge for economic growth and technical innovation .The data in this competition is a random selection from Hotels and is not representative of the overall statistics**.** System is being designed such a way that in predicting which hotel group a user is going to book. Where similar hotels for a search (based on historical price, customer star ratings, geographical locations relative to city center, etc.) are grouped together.

When users take a long journey, they may keep a good emotion and try their best Service to have a very nice trip. Most of the services they consume are the local featured things. They can give high ratings more easily than the local rating. This can helpful us to constrain rating prediction.

In addition information, when users take a long distance travelling for an away new city as strangers. They may depend more on their local friends. Therefore, users' and their local friends' ratings may be similar. It helps us to constrain rating prediction. Furthermore, if the geographical location factor is ignored, when we search the Internet for a travel, recommender systems may recommend us a new scenic spot without considering whether there are local friends to help us to plan the trip or not. But if recommender systems consider geographical location actor, the recommendations may be more humanized and thoughtful. These are the motivations why we utilize geographical location information to make rating prediction.

With the above motivations, the goals of this paper are: 1) to mine the relevance between user's ratings and user item geographical location distances, called as user-item geographical connection, 2) to mine the relevance between users' rating differences and user-user geographical location distances, called as user-user geographical connection, and 3) to find the people whose interest is similar to users. In this paper, three factors are taken into consideration for rating prediction: user-item geographical connection, user-user geographical connection, and interpersonal interest similarity. These factors are fused into a location based rating prediction model. The novelties of this paper are user-item and user-user geographical connections, i.e. we explore users' rating behaviors through their geographical location distances. The main contributions of this paper are summarized as follows:

- We mine the relevance between ratings and user item geographical location distances. It is discovered that users usually give high scores to the items (or services) which are very far away from their activity centers. It can help us to understand users' rating behaviors for recommendation

- We mine the relevance between users' rating differences and user-user geographical distances. It is discovered that users and their geographically far away friends usually give the similar scores to the same item. It can help us to understand users' rating behaviors for recommendation.

- We integrate three factors: user-item geographical connection, user-user geographical connection, and interpersonal interest similarity, into a Location Based Rating Prediction (LBRP) model. The proposed model is evaluated by extensive experiments based on Yelp dataset. Experimental results show significant improvement compared with existing approaches.

Literature survey : The focus of the literature survey is to study and collect the information of user behavior from reviews or opinion based on semantics for service system and features of domain of service system.

1. Shunmei Meng et al. focused on keyword based service recommender system which analyzes present and past user's behavior searching best hotel list as per their requirement through reviews posted by users. It actually dose preprocessing of HTML for collecting set of keywords like food, accommodation, location etc. to form candidate set which is fed to approximate and exact similarity computation algorithm along with preferences of current and past user reviews.

2. Lisette García-Moya et al. focused on identification of aspects or feature of product from customer's reviews about product features, semantic classification from opinion of customer and aspect ranking is identifying relevance of aspect and opinion. This system considers stochastic mappings between words to estimate a unigram language model of product features. It determines the probabilistic model for mapping opinion to product feature by retrieving words from reviews based on co-occurrence vale and refining them. Finally evaluation of retrieval is done using HITS method.

These existing methods of extraction of prediction from user are useful for only limited database, but if there are hug datasets then it is difficult to analyze prediction of users review there for this system is proposed which is using Hadoop for Big data analysis, and Map reduce for further processing of data.

Existing system:

- The system consists of application software on smart phone , web server , database server
- The Hadoop distributed file system is used to handle the database
- For location purpose the GPS is used

Proposed System :

- Main perspective of this system is to provide recommendation of a particular hotel on the basis of users review. System uses Geographical location of user, if he is login to the system from particular location, suppose Pune then he is able to see first that location's recommended hotels.

- Also system uses NLP technique to suggest best Hotel in that area. If there are number of hotels having recommendation then difficult to choose, using NLP it is easy to decide because it sorts hotel according to Positive and negative recommendations, so hotel having positive comments that will see first

- **Architecture:**
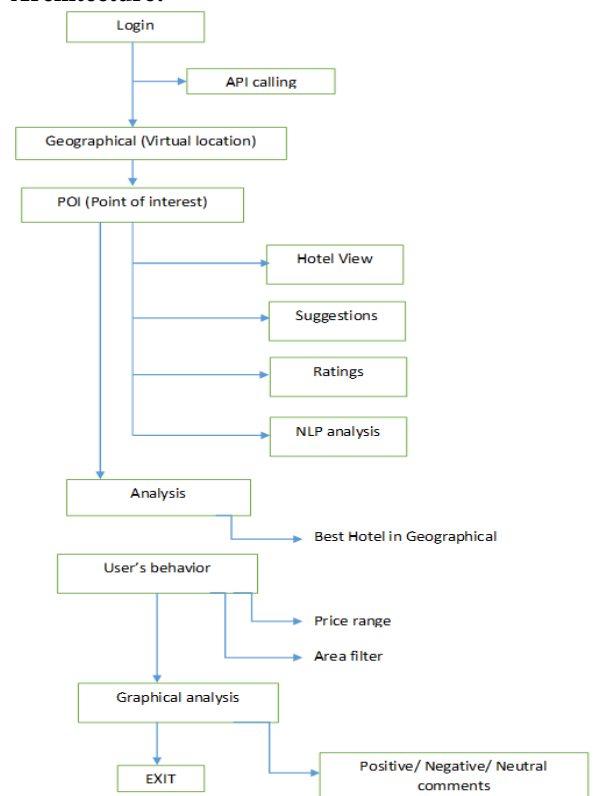
Hardware Requirements:

- 4 GB of RAM
- And multiple systems are user wants to have a cluster node setup.
- Database proposed: HDFS

Software Requirements:

- Operating system: LINUX centos 6.7
- Language: JAVA, HADOOP.

Conclusion: We compare the performances of the three independent Factors was proposed by combining social network factors: personal interest similarity, interpersonal interest similarity, and interpersonal items and these factors were fused together to improve real-time items accuracy and applicability of recommender system. We conducted extensive experiments on three large real-world social rating datasets, and showed significant improvements over existing approaches that use mixed social network information. In our future works, we will take user location information to recommend more personalized and real-time items.

References:

[1] J. Zhang and C. Chow, "Spatiotemporal Sequential Influence Modeling for Location Recommendations: A Gravity-based Approach," ACM Transactions on the Intelligent Systems and Technology, Accepted.

[2] J. Zhang, C. Chow, and Y. Li, "LORE: Exploiting Sequential Influence for Location Recommendations,"2014.

[3] R. Sinnott, "Virtues of the haversine", Sky & Telescope, vol. 68,no. 2, pp. 159.

[4] S. Jiang, X. Qian, Y. Fu, and T. Mei, "Author Topic Model-based Collaborative Filtering for Personalized POI Recommendations, "IEEE Trans. Multimedia, vol. 17, no. 6.

[5] G. Zhao, X. Qian, "Service Objective Evaluation via Exploring Social Users' Rating Behaviors".

[6] G. Zhao, X. Qian, "Prospects and Challenges of Deep Understanding Social Users and Urban Services – a position paper," in Proc. BigMM, 2015, pp. 15-20.

[7] M. Richardson and P. Domingos, "Mining knowledge-sharing sites for viral market1ing," in *Proc. KDD*,pp. 61–70.

[8] X.-W.Yang, H. Steck, andY. Liu, "Circle-based recommendation in online social networks," in *Proc. KDD*, 2013, pp. 1267–1276.

[9] M. Jiang *et al.*, "Social contextual recommendation," in *Proc. CIKM*,2013, pp. 45–56.

[10] M. Jamali and M. Ester, "A matrix factorization technique with trust propagation for recommendation in social networks," in *Proc.* 2010, pp. 135–142.

[11] H. Ma, I. King, and M. R. Lyu, "Learning to recommend with social trust ensemble," in *Proc. SIGIR*, 2009, pp. 203–210.

[12] M. Jamali andM. Ester, "Trustwalker: A random walk model for combining trust-based and item-based recommendation," *Proc. KDD*, 2009.

[13] X. Yang, Y. Guo, and Y. Liu, "Bayesian-inference recommendation in online social networks," in *Proc. INFOCOM*, 2011.

[14] J. Zhang, C. Chow, and Y. Li, "iGeoRec: A Personalized and Efficient Geographical Location Recommendation Framework,"*IEEE Transactions on Services Computing*.

[15] J. Zhang and C. Chow, "TICRec: A Probabilistic Framework to Utilize Temporal Influence orrelations for Time-aware Location Recommendations," *IEEE Transactions Services Computing*,2015.

[16] J. Zhang , "CoRe: Exploiting the Personalized Influence of Two-dimensional Geographic coordinates for Location Recommendations," *Information ciences*,pp.163-181, 2015.

[17] J. Sang, T. Mei, "Activity sensor: Check-in usage mining for local recommendation," *ACM Transactions on Intelligent Systems and Technology*.

[18] J. Zhang and Chow, "GeoSoCa: Exploiting Geographical, Social and Categorical Correlations for Point-of-Interest Recommendations ,"*ACM SIGIR'15*, 2015.

[19] Service Rating Prediction by Exploring Social Mobile Users' Geographical Locations .Guo shuai Zhao, Xueming Qian, *Member, IEEE*, Chen Kang-2016