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A Survey Paper on User Chat Recommendation

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Abstract -**The number of technology-based environments that support knowledge sharing is growing up very fast. Natural language processing is a field in computer science which involves making computers derive meaning from human language and input as a way of interacting with the real world. User chat, recommended images and user aspects for communicating over mobile devices that allow users to overcome geographic boundaries and to communicate based on mutual interests. In this way images and Emoji's, as a new way of conveying nonverbal signs, are widely adopted in computer-mediated communications. Hence, this paper presents an overview of the field of recommender system for user chat that suggested images which are relevant to current chat. Additionally, in this paper we proposed solution for user chat recommendation which is analysis user chat history and present conversation.**

Keywords: Sentiment Analysis, Recommendation System, Data Pre-Fetching, Text Mining, Text Messages,

I. INTRODUCTION

Technology is growing rapidly and in the domain of mobile communication it growing exponentially. In last 10 years a significant changes in mobile devices are observed. In place of normal mobile phones the smart mobile phones are appeared. These phones are built with large capabilities to use different applications and other computational task too. Majorly the mobiles are used for accessing internet and social media based text communication. A significant social media application launches their mobile versions too, and a large number of social media users are accessing these applications using mobile devices. In social media for making post attractive or expressing the emotions authors also usages the images with the text. Due to this the mobile phones are actively utilized and frequently loose the mobile data and their power.

In order to rectify both the complexities the proposed work is intended to design a lightweight recommendation model that understand the text and suggest the appropriate images from previous images to use with the current chat session. The proposed recommendation system includes the implementation of clustering concept to make clusters of similar text messages and the images. In addition of that the classification technique is used to accurately identify the group of text which is currently being used. In addition of that the system is also includes the preservation of the current chats and the images which are newly used. The proposed technique claims to provide higher accuracy for predicting the images for the current chat. This section provides the basic understanding of proposed working model for enhancing the mobile data usage performance.

II. BACKGROUND

The background of a study is an important part of our research paper. It provides the context and purpose of the study. Hence there is need for background study that contribute to prepare proposed system

A. Text Mining

Unstructured text has huge amount information which is not easily used by the computer for processing. So that we require certain techniques to accomplish this task for extracting required patterns. Text mining plays an important role of extracting useful patterns from unstructured text.

Text mining is an art of "text analytics" which is one way to make qualitative or "unstructured" data usable by a computer. Qualitative data is descriptive data that cannot be measured in numbers and often includes qualities of appearance like color, texture, and textual description. Quantitative data is numerical, structured data that can be measured. However, there is often confusion between qualitative and quantitative categories. For example, a photograph might traditionally be considered "qualitative data" but when you break it down to the level of pixels, which can be measured [1].

Text mining process starts with a document collection from various resources. Text mining tool would retrieve a particular document and pre-process it by checking format and character sets. Then document would go through a text analysis phase. Text analysis is semantic analysis to derive

high quality information from text. Many text analysis techniques are available; depending on goal of organization combinations of techniques could be used. Sometimes text analysis techniques are repeated until information is extracted. The resulting information can be placed in a management information system, yielding an abundant amount of knowledge for the user of that system [2]. Text mining process is as shown in following figure 1:

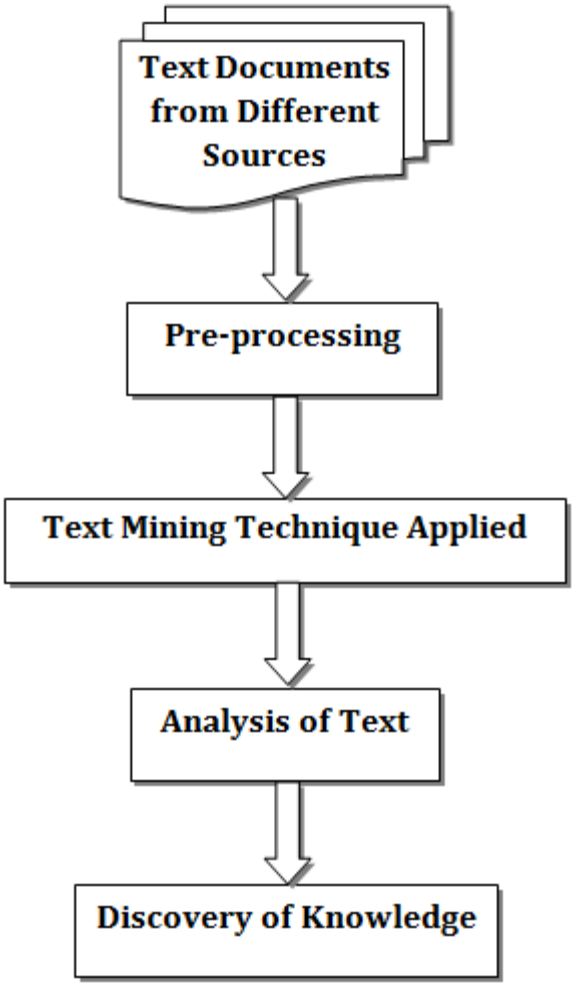

Figure 1: Text Mining Process

B. Data Pre-fetching

Prefetching has been widely used to improve system performance in mobile environments. Since prefetching consumes system resources, such as bandwidth and power, it is important to consider the system overhead when designing prefetching schemes. Data Prefetching is a fundamental technique for improving application performance. It is employed in numerous domains, including computer architecture, databases, files systems, and distributed systems. In essence, a prefetching system predicts what data a higher system layer, such as an application, will request and speculatively retrieves and caches that data in anticipation of future need. If the prediction is correct, the cached data is provided on request — this improves performance by eliminating the fetching of the data from the critical path of servicing the request. However, if the prediction is incorrect, prefetching consumes resources that could be used for other activities. Most prefetching systems use heuristics to balance these concerns; such heuristics decide when and how much data to pre-fetch [3].

C. Chat Sentiment Analysis

Sentiment analysis or opinion mining deals with using automatic analysis to find sentiments, emotions, opinions and attitudes from a written text towards a subject. This subject may be a product, an organization, a person, a service or their attributes [4]. Based on the words associated with negative, neutral or positive sentiments, the documents are classified into positive, negative and neutral categories, and ratings for various aspects of a given topic (restaurant, movies) can be predicted. Sentiment Analysis involves determining the evaluative nature of a piece of text. For example, a product review can express a positive, negative, or neutral sentiment (or polarity). Automatically identifying sentiment expressed in text has a number of applications, including tracking sentiment towards products, movies, politicians, etc., improving customer relation models, detecting happiness and well-being, and improving automatic dialogue systems. Over the past decade, there has been a substantial growth in the use of micro-blogging services such as Twitter and access to mobile phones world-wide. Thus, there is tremendous interest in sentiment analysis of short informal texts, such as tweets and SMS messages, across a variety of domains (e.g., commerce, health, military intelligence, and disaster management) [5].

D. Recommendation System

Recommendation System is part of Daily life where people rely on knowledge for making decision of their personal interest. Recommendation system is subclass of information filtering to predict preferences to the items used by or for users. Although there are many approached developed in past but search still goes on due to it often usage in many applications, which personalize recommendation and deals with information overload. These demands throws some challenges so different approaches like memory based, model based are used. Recommender system still requires improvement to become better system. Recommendation system is a sharp system that provides idea about item to users that might interest them some examples are amazon.com, movies in movielens, music by last.fm. Recommendation system has been seen to be very useful for user to select an item amongst many [6].

However, to bring the problem into focus, two good examples of recommendation systems are [7]:

- ✓ Offering news articles to on-line newspaper readers, based on a prediction of reader interests.
- ✓ Offering customers of on-line retailer suggestions about what they might like

The domain of Recommender System consists of a number of techniques, each with their own set of advantages and disadvantages, which make them suitable for applications in different domains. The image below gives an overview of the relation between different techniques.

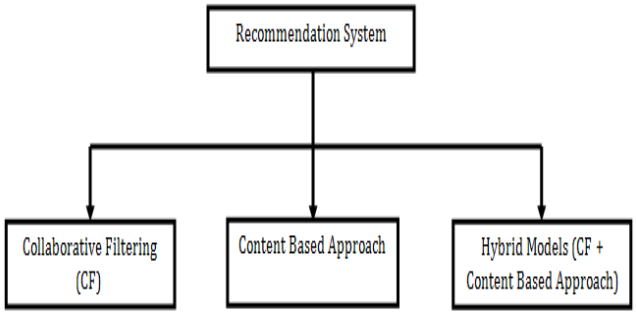

Figure 2 Categories of Recommendation System

III. LITERATURE SURVEY

The given section provides the understanding about the recently developed techniques and improvements for improving mobile data consumption for the chat applications using different users.

Rather than leave the job to applications, **Brett D. Higgins et al. [8]** argue that the underlying mobile system should provide explicit prefetching support. This prototype, IMP, presents a simple interface that hides the complexity of the prefetching decision. IMP uses a cost-benefit analysis to decide when to prefetch data. It employs goal-directed adaptation to try to minimize application response time while meeting budgets for battery lifetime and cellular data usage. IMP opportunistically uses available networks while ensuring that prefetches do not degrade network performance for foreground activity. It tracks hit rates for past prefetches and accounts for network specific costs in order to dynamically adapt its prefetching strategy to both the network conditions and the accuracy of application prefetch disclosures. Experiments with email and news reader applications show that IMP provides predictable usage of budgeted resources, while lowering application response time compared to the oblivious strategies used by current applications.

Mobile environments, such as vehicular communication systems (VCSs), are typically subjected to network fluctuations and intermittent downtimes, e.g., if service consumers operate in a tunnel or switch between cells of an ISP. **Waldemar Hummer et al. [9]** present an approach for service and data prefetching from the Cloud, which allows ensuring continuous service delivery and consistent quality of experience (QoE). We leverage the fact that most applications have typical access patterns, for instance streaming, or polling in regular intervals. In this system model, authors consider the context under which the consumer is currently executing, including time, location, and projected route. Based on projections for network quality at future locations, we propose a decision problem for optimizing data prefetching and continuous QoE, and discuss different mechanisms for generating service requests for prefetching. Authors thoroughly evaluate this approach based on a popular data set of vehicular GPS traces in Switzerland, which we deploy and simulate in a Cloud environment.

Mobile phones have evolved from communication devices to indispensable accessories with access to real-time content. The increasing reliance on dynamic content comes at the cost of increased latency to pull the content from the Internet before the user can start using it. While prior work has explored parts of this problem, they ignore the bandwidth costs of prefetching, incur significant training overhead, need several sensors to be turned on, and do not consider practical systems issues that arise from the limited background processing capability supported by mobile operating systems. In this paper, **Abhinav Parate et al. [10]** make app prefetch practical on mobile phones. Authors' contributions are two-fold. First, authors design an app prediction algorithm, APPM, that requires no prior training, adapts to usage dynamics, predicts not only which app will be used next but also when it will be used, and provides high accuracy without requiring additional sensor context. Second, they perform parallel prefetch on screen unlock, a mechanism that leverages the benefits of prediction while operating within the constraints of mobile operating systems. These experiments are conducted on long-term traces, live deployments on the Android Play Market, and user studies, and show that authors outperform prior approaches to predicting app usage, while also providing practical ways to prefetch application content on mobile phones.

Olutobi Owoputi et al. [11] consider the problem of part-of-speech tagging for informal, online conversational text. We systematically evaluate the use of large-scale unsupervised word clustering and new lexical features to improve tagging accuracy. With these features, our system achieves state-of-the-art tagging results on both Twitter and IRC POS tagging tasks; Twitter tagging is improved from

90% to 93% accuracy (more than 3% absolute). Qualitative analysis of these word clusters yields insights about NLP and linguistic phenomena in this genre. Additionally, we contribute the first POS annotation guidelines for such text and release a new dataset of English language tweets annotated using these guidelines.

Pushpak Bhattacharyya et al. [12] present a system for Emotion Analysis of Instant Messages (IM). Using Instance Based classifier authors have shown that our system can outperform similar systems in the IM domain. Tagged instant messages and elaborate feature engineering can help a lot in increasing the performance of text classification of unstructured, ungrammatical text. The impact of class imbalance on classification has been studied and demonstration has been made of how under sampling can help mitigate this problem.

IV. SUGGESTED SOLUTION

A. Problem Domain

The proposed is motivated from the research article [13], in this work the smart mobile devices are targeted from the improving the resource preservation. In this context a NLP based solution is provided that analysis the communicated text among the users. Additionally, on the basis of obtained keywords, the possible images are suggested. This technique helps to improve the data consumption and other resource consumption. But in this work he limited classes namely negative and positive classes are used, additionally, the user behaviour is not considered for the appropriate user image suggestions. Therefore this model can more improvable. In this context we proposed a model for user chat recommendation using figure 3.

B. Solution Domain

Theproposed work is intended to utilize the following improvement on the basis of given system architecture.

The above given system accepts two input data first the user text history and user historically used images by the different user communication session. In the first step individual text sessions are evaluated and frequently used keywords are extracted. Using these extracted keywords, k-mean clustering is used. The K-mean clustering create group of similarity communicated text. In the similar manner, the images and their groups are computed with the similar methodology. In next part the grouped data is used with the Bayesian classifier for performing the training. In this context, the trained model is used to classify current communication session between two users using the Bayesian classifier and the group of text is predicted. The concerned group of text and associated images are used to make suggestions.

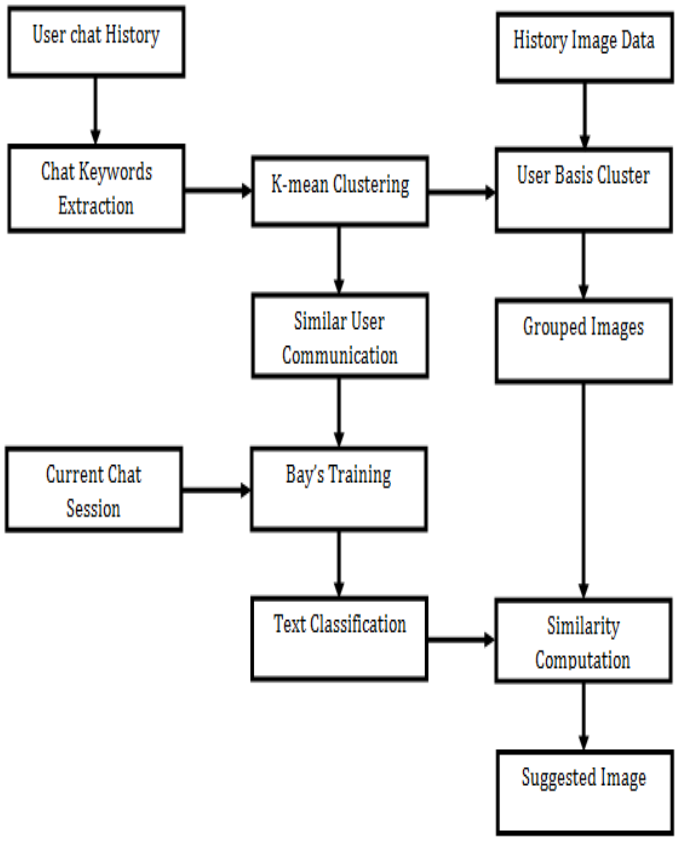

Figure 3 System Architecture

V. CONCLUSION

The Internet has become a necessity in today's society; any information is accessible on the internet via web browser. However, these activities could have an impact on users, one of which changes in behavior.The use of mobile devices in combination with the rapid growth of the internet has generated an information overload problem.A number of applications usages technique such as stock market prediction, face recognition, and financial decision making. This can also be used for new generation technology advancement. Therefore in this survey paper present the smart mobile phone's performance scaling using recommendation therefore this is key motive of the paper. In this context the two issues are focused to work first the mobile data consumption and second the power consumption of the mobile phones. Basically during the frequent access of internet based applications consumption of both the resources are increases. So that this paper, by evaluate the pros and cons of obtainable existing literature which helps to developed model of the user chat recommendation successfully.

REFERENCES

[1] Sebastiani, F., "Machine learning in automated text categorization." ACM Computing Surveys, Volume 34, No. 1, pp. 1–47, 2002
[2] Latika Kaushik, "Text Mining - Scope and Applications", Journal of Computer Science and Applications, Volume 5, Number 2 (2013), pp. 51-55
[3] Anand, M., Nightingale, E. B., And Flinn, J. Ghosts in the machine: Interfaces for better power management. In Proceedings of the 2nd International Conference on Mobile Systems, Applications and Services (Boston, MA, June 2004), pp. 23–35
[4] S. Ickin, K. Wac, M. Fiedler, L. Janowski, J.-H Hong, and A. K. Dey, "Factors Influencing Quality of Experience of Commonly Used Mobile Applications," IEEE Communications Magazine, vol. 50, pp. 48–56, 2012
[5] Bing Liu, "Sentiment Analysis and Opinion Mining", Morgan & Claypool, Synthesis Lectures on Human Language Technologies, 2012
[6] Thenmalar V, Tamilselvi R, Sandhiya S3 and Dhivya Shree M, "Social Recommendation for Interactive Online System", International Journal of Science and Research (IJSR), Volume 6 Issue 2, February 2017
[7] Loh, Stanley, et al. "Recommendation of complementary material during chat discussions." Knowledge Management & E-Learning 2.4, 2010, pp. 385-399.
[8] Higgins, Brett D., Jason Flinn, Thomas J. Giuli, Brian Noble, Christopher Peplin, and David Watson. "Informed mobile prefetching." In Proceedings of the 10th international conference on Mobile systems, applications, and services, pp. 155-168. ACM, 2012.
[9] Hummer, Waldemar, Stefan Schulte, Philipp Hoenisch, and Schahram Dustdar. "Context-aware data prefetching in mobile service environments", In Big Data and Cloud Computing (BdCloud), 2014 IEEE Fourth International Conference on, pp. 214-221. IEEE, 2014.
[10] Parate, Abhinav, Matthias Böhmer, David Chu, Deepak Ganesan, and Benjamin M. Marlin. "Practical prediction and prefetch for faster access to applications on mobile phones." In Proceedings of the 2013 ACM international joint conference on Pervasive and ubiquitous computing, pp. 275-284. ACM, 2013.
[11] Owoputi, Olutobi, et al. "Improved part-of-speech tagging for online conversational text with word clusters", Association for Computational Linguistics, 2013.
[12] Bhattacharyya, Pushpak, "Emotion analysis of internet chat", In the Proceedings of the ICON Conference, 2010.
[13] Joon-Gyum Kim and Chia-Wei Wu, "A picture is worth a thousand words: Improving mobile messaging with real-time autonomous image suggestion", Proceedings of the 17th International Workshop on Mobile Computing Systems and Applications, ACM, 2016, pp. 51-56.