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# Sos: An Allocated Mobile Q&A Entity Based On Social Networks

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**Abstract—** Recently, emerging research efforts have been focused on question and answer (Q&A) systems based on social networks. The social-based Q&A systems can answer non-factual questions, which cannot be easily resolved by web search engines. These systems either rely on a centralized server for identifying friends based on social information or broadcast a user's questions to all of its friends. Mobile Q&A systems, where mobile nodes access the Q&A systems through Internet, are very promising considering the rapid increase of mobile users and the convenience of practical use. However, such systems cannot directly use the previous centralized methods or broadcasting methods, which generate high cost of mobile Internet access, node overload, and high server bandwidth cost with the tremendous number of mobile users. We propose a distributed Social-based mObile Q&A System (SOS) with low overhead and system cost as well as quick response to question askers. SOS enables mobile users to forward questions to potential answerers in their friend lists in a decentralized manner for a number of hops before resorting to the server. It leverages lightweight knowledge engineering techniques to accurately identify friends who are able to and willing to answer questions, thus reducing the search and computation costs of mobile nodes. The trace-driven simulation results show that SOS can achieve a high query precision and recall rate, a short response latency and low overhead. We have also deployed a pilot version of SOS for use in a small group in Clemson University. The feedback from the users shows that SOS can provide high-quality answers.

Index Terms—Question and answer systems, online social networks, peer to peer networks

## INTRODUCTION

TRADITIONAL search engines such as Google and Bing are the primary way for information retrieval on the Internet. To improve the performance of search engines, social search engines have been proposed to determine the results searched by keywords that are more relevant to the searchers. These social search engines group people with similar interests and refer to the historical selected results of a person's group members to decide the relevant results for the person. Although the search engines perform well in answering factual queries for information already in a database, they are not suitable for non-factual queries that are more subjective, relative and multi-dimensional (e.g., can anyone recommend a professor in advising

research on social-based question and answer (Q&A) systems?), especially when the information is not in the database (e.g., suggestions, recommendations, advices). One method to this problem is to forward the non-factual queries to humans, which are the most
"intelligent machines" that are capable of parsing, interpreting and answering the queries, provided they are familiar with the queries.

Accordingly, a number of expertise location systems have been proposed to search experts in social networks or Internet aided by a centralized search engine. Also, web Q&A sites such as Yahoo!Answers and Ask.com provide high-quality answers and have been increasingly popular.

To enhance the asker satisfaction on the Q&A sites, recently, emerging research efforts have been focused on social network based Q&A systems in which users post and answer questions through social network maintained in a centralized server. As the answerers in the social network know the backgrounds and preference of the askers, they are willing and able to provide more tailored and personalized answers to the askers. The social-based Q&A systems can be classified into two categories: broadcasting-based and centralized The broadcasting-based systems broadcast the questions of a user to all of the user's friends. In the centralized systems since the centralized server constructs and maintains the social network of each user, it searches the potential answerers for a given question from the asker's friends, friends of friends and so on.

In respect to the client side, the rapid prevalence of smartphones has boosted mobile Internet access, which makes the mobile Q&A system a very promising application. The number of mobile users who access Twitter [23] increased 182 percent from 14.28 million in January 2010 to 26 million in January 2011. It was estimated that Internet browser-equipped phones will surpass 1.82 billion units by 2013, eclipsing the total of 1.78 billion PCs by then [24]. The mobile Q&A systems enable users to ask and answer questions anytime and anywhere at their fingertips.
However, the previous broadcasting and centralized methods re not suitable to the mobile environment, where each mobile node has limited resources.

SOS leverages the lightweight knowledge engineering techniques to transform users' social information and closeness, as well as questions to IDs, respectively, so that a node can locally and accurately identify its friends capable of answering a given question by mapping the question's ID with the social IDs. The node then forwards the question to the identified friends in a decentralized manner. After receiving a question, the users answer the questions if they can or forward the question to their friends. The question is forwarded along friend social links for a number of hops, and then to the server. The cornerstone of SOS is that a person usually issues a question that is closely related to his/her social life. As people sharing similar interests are likely to be clustered in the social network the social network can be regarded as social interest clusters intersecting with each other. By locally choosing the most potential answerers in a node's friend list, the queries can be finally forwarded to the social clusters that have answers for the

question. As the answerers are socially close to the askers, they are more willing to answer the questions compared to strangers in the Q&A websites. In addition, their answers are also more personalized and trustable. In a nutshell, SOS is featured by three advantages:
(1) Decentralized. Rather than relying on a centralized server, each node identifies the potential answerers from identifies the potential answerers who are very likely to answer this question, thus reducing the node overhead, traffic and mobile Internet access.
(3) Quick response. An asker identifies potential answerers from his/her friends based on their past answer quality and answering activeness to his/her questions. The contributions of this work are summarized as follows:

1. As far as we know, it is the first work to design a distributed Q&A mobile system based on social networks, which can be extended to low-end mobile devices. The system can tackle the formidable challenge facing distributed systems: precise answerer identification.

2. We propose a method that leverages lightweight knowledge engineering techniques for accurate answerer identification.

3. We use answer quality to represent both the willingness of a node to answer another node's questions and the quality of its answers. We propose a method that considers both interest similarity and answer quality based on past experience in question forwarder selection in order to increase the likelihood of the receiver to answer/forward the question.

its friends, thus avoiding the query congestion and high server bandwidth and maintenance cost problem.
(2) Low cost. Rather than broadcasting a question to all of its friends, an asker
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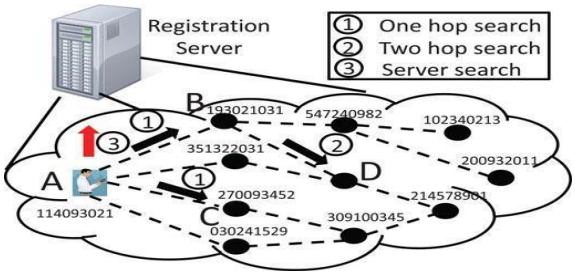
4. We have studied our crawled data from Yahoo!Answer and Twitter with regards to node interactions in online Q&A systems and online social networks. We then conducted extensive trace-driven simulations based on the crawled data. Experimental results show the high answerer identification accuracy, low cost and short response delay of SOS.

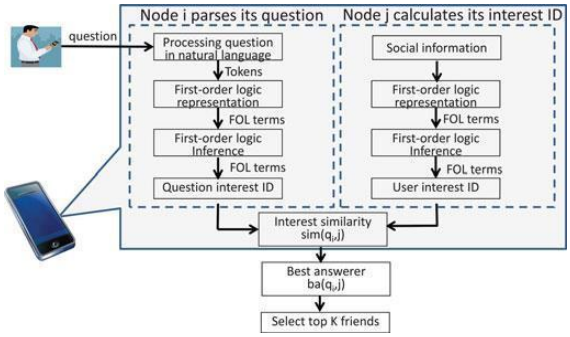
5. We have deployed a pilot version of SOS for use in a small group in Clemson University and revealed interesting findings in the mobile social-based Q&A system.




The figures show that questions posted in online Q&A sites are likely to receive few responses with long delay, though they are a good channel to inquire information. Similar result is also found in which shows that the latency for receiving a satisfying answer in an online Q&A site is high with the average equals 2:52:30 (hh:mm:ss) even when the number of

the registered users is

very large (290,000). This is because anonymous users in a Q&A site do not have social relationship between each= other, so they may not have incentives to answer others' questions. By leveraging the close social relationship and interest similarity properties among friends in social networks, social-based Q&A systems can help to overcome the inherent




first derives the first-order logic representation (FOL) from its social information, then conducts first-order logic inference to infer its interests, from which it decides the interest ID.

answers. The low computation cost makes

## CONCLUSION

In this paper, we present the design and implementation of a distributed Social-based mObile Q&A System (SOS). SOS is novel in that it achieves lightweight distributed answerer search, while still enables a node to accurately identify its friends that can answer a question. SOS uses the FOL representation and inference engine to derive the interests of questions, and interests of users based on user social information. A node considers both its friend's parsed interests and answer quality in determining the friend's similarity value, which measures both the capability and willingness of the friend to answer/forward a question. Compared to the centralized social network based Q&A systems that suffer from traffic congestions and high server bandwidth cost,

SOS is a fully distributed system in which each node makes local decision on question forwarding. Compared to broadcasting, SOS generates much less overhead with its limited question forwarding hops. Since each user belongs to several social clusters, by locally selecting most potential answerers, the question is very likely to be forwarded to answerers that can provide

problems in online Q&A sites with high response rate and low response delay, since people with similar interests or close social relationship are likely to interact with each other, especially when a user specifically sends a tweet to another user.

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the system suitable for low-end mobile devices. We conducted extensive trace-driven simulations and implemented the system on iPod Touch/iPhone mobile devices. The results show that SOS can accurately identify answerers that are able to answer questions. Also, SOS earns high user satisfaction ratings on answering both factual\ and non-factual questions. In the future, we will study\ the combination of SOS and cloud-based Q&A system. We will also release the application in the App Store and study the Q&A behaviors of users in a larger-scale social network.

## REFERENCES

[1] Google, http://www.google.com, 2013.

[2] Bing, http://www.bing.com, 2013.

[3] B.M. Evans and E.H. Chi, "An

Elaborated Model of Social Search," J. Information Processing and Management, vol. 46, pp. 656-678, 2009.

[4] L. Terveen, W. Hill, B. Amento, D. McDonald, and J. Creter, "PHOAKS: A System for Sharing Recommendations," Comm.ACM, vol. 40, pp. 59-62, 1997.

[5] M.S. Ackerman, "Augmenting Organizational Memory: A Field Study of Answer Garden," ACM Trans. Information Systems, vol. 16, pp. 203-224, 1998.

[6] L.G. Terveen, P.G. Selfridge, and M.D. Long, "Living Design Memory: Framework, Implementation, Lessons Learned," Human-Computer Interaction, vol. 10, pp. 1-37, 1995.

[7] E. Amitay, D. Carmel, N. Har'El, S. Ofek Koifman, A. Soffer, S. Yogev, and N. Golbandi, "Social Search and Discovery Using a Unified Approach," Proc. 20th ACM Conf. Hypertext and Hypermedia (HT '09), 2009.

[8] D. Carmel, N. Zwerdling, I. Guy, S. Ofek-Koifman, N. Har'el, I. Ronen, E. Uziel, S. Yogev, and S. Chernov, "Personalized Social Search Based on the User's Social Network," Proc. 18th ACM Conf. Information and Knowledge Management (CIKM '09), 2009.

[9] S. Kolay and A. Dasdan, "The Value of Socially Tagged URLs for a Search Engine," Proc. 18th Int'l Conf. World Wide Web (WWW '09),2009.

[10] S. Bao, G. Xue, X. Wu, Y. Yu, B. Fei, and Z. Su, "Optimizing Web Search Using Social Annotations," Proc. 16th Int'l Conf. World Wide Web (WWW '07), 2007.

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