

Distributed Social Networks Based Mobile Q & A System with Low Overheads and Cost Effectiveness

A Janardhan

Research Scholar, Department of Computer Science and Engineering, OPJS University, India

Abstract:

Question and Answer (Q&A) system based on social network gains more attention recently. The socialbased Q&A systems 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 socialbased mobile Q&A system with low overhead and system cost as well as quick response to question askers. It enables mobile users to forward questions to potential answerers in their friend lists in a decentralized manner for a number of hops before restoring 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 tracedriven simulation results show that Q&A system can achieve a high query precision and recall rate, a short response latency and low overhead.

Introduction:

Traditional search engines like Google and Bing are used to retrieve answerers for the factual questions through Internet [1]. In order to improve efficiency and performance of the search engine we proposed new method by using keywords in the search question itself. Social search engine helps to group the people with their similar interests in any particular field and refers to historical results [2]. Although the search engines answer factual queries that is already stored in centralized server hence this technique is not suitable for answering non-factual queries that are more subjective (for example, can anyone recommend me a Doctorate professor for doing my project in social network...?) If the valid information is not database then we forward these queries to the human, which are the most "intelligent machines" [4]. 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 systems?), especially when the information is not in the database. One method to solve 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 provides high quality answers and have been increasingly popular.

The social-based Q&A systems can be classified into two categories: broadcasting-based, which broadcast the questions of a user to all of the user's friends, and centralized server, which 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 smart phones has boosted mobile

internet access, which makes the mobile Q&A system a very promising application. 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 are not suitable to the mobile environment, where each mobile node has limited resources. Broadcasting questions to a large number of friends cannot guarantee the quality of the answers. Due to the rapid development of smart phones we can make use of internet access very fast hence it makes Q&A system a very compatible and promising application. However, the previous broadcasting and centralized methods are not suitable for the mobile environment (smart phones) because mobile nodes as the limited resources, higher bandwidth and cannot guarantee the quality of the answers. Later they proposed new technique called Distributed Social-based mObile Q&A system (SOS). SOS is the light weighted distributed answer search which enables to identify friends who can answer the queries by framing question ID with the social IDs

Related Work:

In this paper [2] focused on a specific aspect of a social search, where the searcher asks a question to group of people they know personally and friendly by means of social network message updating. By comparing this kind of social experiences can able to search for information with a web search engine. Search engine's seems to match expectation of no significant changes from pre-search to post-search questionnaires. In this paper [3] we identify the dimension and gratification of users of friends networking sites. As a result there are three kinds of dimensions the information dimensions, friendship dimension and the connection dimension. This paper makes a friend networking sites are mediated into social networking communities that helps people to interact with similar interest. The main purpose of this paper was to better understand of uses and gratification that user's obtain from friend networking sites

In this paper [4] social searching method focus on the creations of links between friends and group members, links associated between parents and children, where parents became collaborator. This kind between parents and children where represented by father and mother can be linked to his or her child as a guardian collaborator. In this paper [5] makes the phenomenon of using social network status message to ask questions. Survey covered by using topics of asking and answering questions via status – message update. This paper helps to understand how people fulfill information needs by using general purpose of social tools and status messages to ask questions rather than to simply describe their current status. In [7] the authors have proposed two types of Peer to Peer network, structured and unstructured networks. Structured core network which acts as backbone for the hybrid technical system and also provide lot of services for maintaining regular topology. Unstructured core network is attached to a node in the core network. This paper makes us to understand distributed data sharing which combines both structured and unstructured Peer to Peer network. Data has been generated by low cost mechanism. Peer hosting of the data may be overwhelmed because of huge amount of request.

In [8] authors have proposed about multimedia content, the design scheme to support P2P – based on multimedia sharing forums called multimedia board (M- Board). The increasing of bandwidth and storage resources leads to the people increase to share more multimedia content. Mostly people post multimedia materials such as video's and high resolutions pictures as a link to the third party services providers such as you tube. It is a most beneficial to develop a scheme to enable forums in order to share multimedia contents in an efficient, low cost and easy – to – use manner. In this paper [9] Instant messaging based on synchronous social Q&A services were deployed to an On – Line community and to study about prediction and there is a good gain over performance of baseline prediction in order to predicate for the task whether the question will be answered and the number of user's that will be interrupted by a question and helps to understand

accuracy is significantly lower performance to be part of related smaller number of features. This paper investigates outcomes of a question life cycle for prediction (eg, before it has been distributed to candidate answers or even before it has been asked).

In this paper [10] they proposed a new method called social based mobile Q&A system (SOS) with lower cost system and lower node which makes quick response to the asker's questions. Two categories are integrated in this technology they are broadcasting and centralized methods. An asker can identify potential answers from his or her friends based on their past answer quality. SOS users to generate only fewer questions because selecting potential answer, the question is very much likely to be forwarded to provide answer. Tools like registration server, First Order Logic representation (FOL) and Natural Language Processing (NLP). In a nutshell, SOS is featured by three advantages:

- (1) Decentralized. Avoids query congestion and high server bandwidth and maintenance cost problem.
- (2) Low cost. 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) Design a distributed Q&A mobile system based on social networks, which can be extended to low-end mobile devices.
- (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.

EXISTING SYSTEM: 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, especially when the information is not in the database. One method to solve 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.

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.

EXISTING TECHNIQUE:

Centralized Methods or Broadcasting Methods

DISADVANTAGES OF EXISTING SYSTEM

1. Broadcasting and centralized methods are not suitable to the mobile environment, where each mobile node has limited resource.
2. Broadcasting to a large number of friends cannot guarantee the quality of the answers.

PROPOSED SYSTEM:

In this paper, we propose a distributed Social-based mobile Q&A System (SOS) with low node overhead and system cost as well as quick response to question askers. SOS is novel in that it achieves lightweight distributed answerer search, while still enabling a node to accurately identify its friends that can answer a question.

We have also deployed a pilot version of SOS for use in a small group in Clemson University. The analytical results of the data from the real application show the highly satisfying Q&A service and high performance of SOS. 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

ADVANTAGES OF PROPOSED SYSTEM:

1. This avoiding the query congestion and high server bandwidth and maintenance cost problem.
2. Reducing the node overhead, traffic and mobile Internet access.

3. An asker identifies potential answerers from his/her friends based on their past answer quality and answering activeness to his/her questions.

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