

# Community Question-Answer (CQA) system

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## Abstract—

Now-a-days, there are many QA based application in community system which are very helpful to the users. Currently users are mostly dependent on the internet for searching the questions online in which existing QA web based application provide the related answers to them by using the more and more corresponding keywords and matching concepts. This concept may not find answers for the questions which are not belonging to the asker's interest. Many times users do not get the proper answers of their question which have been asked, thus we propose new CQA system which will work on the social-based Q&A system that depends on a user's social friends which will provide answer to user. CQA has a fine-grained reputation system to evaluate user's reputation based on expertise, and uses a reputation based reward strategy to encourage users. CQA improves the response latency and quality of answer in both the social domain and global domain. In this we are using virtual network concept based on friend's ranking method which will identify best answerer candidates by considering social closeness and Q&A activities. This system works on weak tie assisted social based potential answerer algorithm and an interest coefficient based uncategorized question forwarding algorithm. This paper support online forum when user is not satisfied with the answers. Fuzzy spell dictionary is also introduced in this system to correct the misspelled questions or answers.

**Keywords—:** Forum, CQA, fuzzy, social and global.

## INTRODUCTION

Community Question Answering (CQA) on web such as Quora[11], Yahoo[9] answers and Stack Overflow[10] are more popular which become less extreme only indirectly via the community. In these systems, user can post questions and answers freely. This has been seen on two sides a) a user can freely ask any question and can expect a best variety of

them all. Which have been used more options support to this all problem. The main approach is to propose a system which may help to automate the process of finding best answers of newly posed questions. So going forward to this paper, it introduced rank based QA and online forum support technique. The Community Question and Answer (CQA) system have large number of users where they have different types of questions. User asks questions in his community and rates the answers so that answerer can act like expert. User acknowledges the answerer when he gets best answer by rating same answer and likewise high rated answers act like experts and also helps to and near to best answer. It improves response rate and response delay of answer quality in both the social community and global community. Since, the interest coefficient based uncategorized QA forwarding algorithm and weak tie assisted social based potential answerer location algorithm.

## Related work

We saw solved non- factual questions posted by users by finding friends close and interested [2] .But this paper was based on mobile networks and it worked on finding answerer rather than finding answers. Ranking algorithm for QA users where they can be used for answering questions. Users are ranked by considering some measures where they can other factors to consider.[5]

To study the problem of using social annotations to improve the quality of web search. The proposal of the SocialSimRank algorithm to measure the association among various annotations and the Social PageRank algorithm to measure a web page's static ranking based on social annotations.[3]

Annotation ambiguity is another problem concerned with SSR, i.e., SSR may find the similar terms to the query terms while fail to disambiguate terms that have more than one meanings. For example, as has been shown in the case studies, ticket may refer to either airplane ticket or concert ticket, and terms with these two different meanings will be mixed up.

Peer to peer video forwarding system [4] is found out so that there will be less load on servers of YouTube.Paper has indexing drawback where video sharing is not up to the mark and that's why there is limitations of video sharing.

## Problem Statement:

To develop a system which will provide the global and social communitiesto find best answers to users in timeliness along with spell check API and forum support named as Community Question Answer (CQA) System.

**Motivation:**

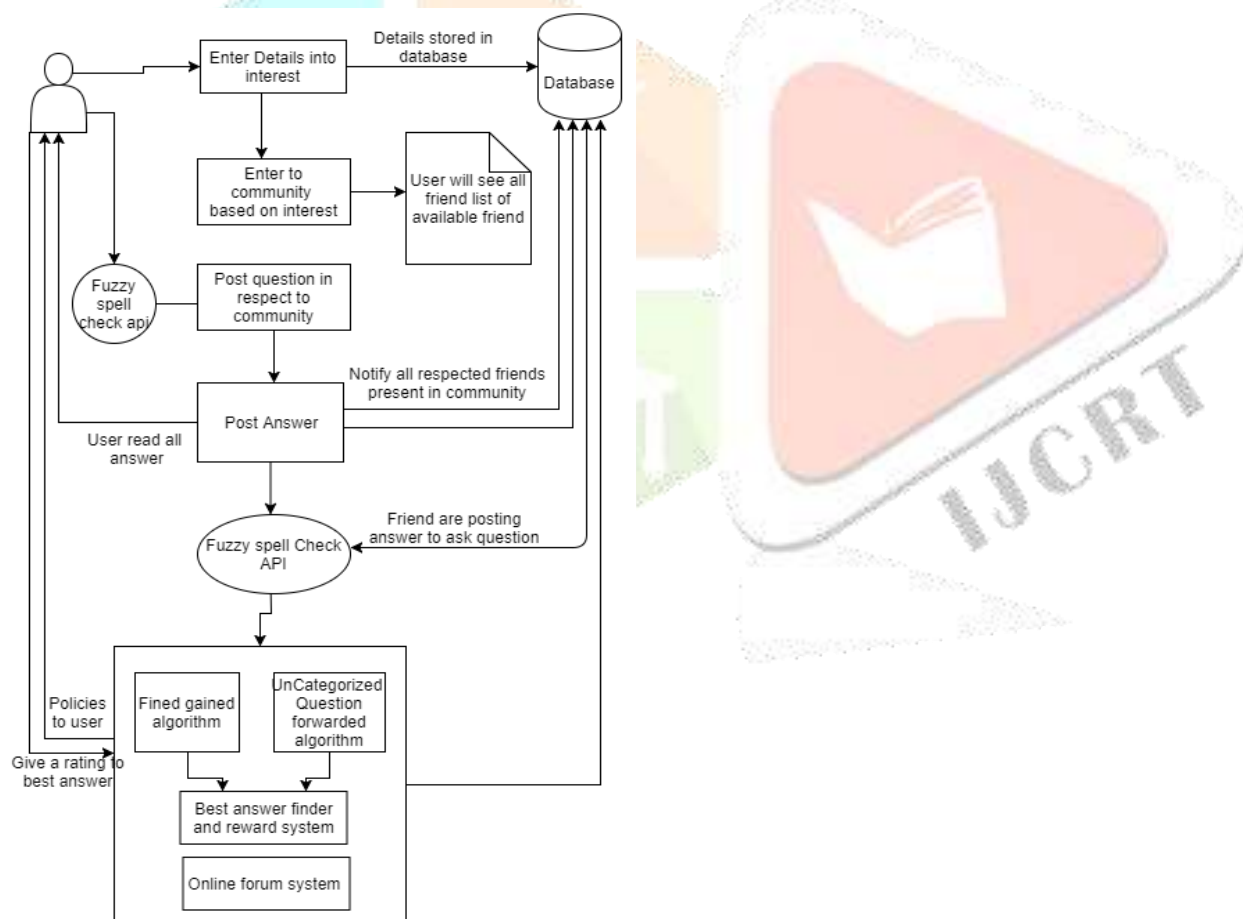
There are many QA systems which are useful for people to find answers of their posted questions of their interest and get answers on the web forums. But every time when user search for new question they get lot of answers. So, it becomes difficult to find best answers. Also, the process to analyze those answers is more time consuming. So in this paper we proposed a system which work on rank model based on question answer pair rating and online forum support.

**System Architecture:**

If user wants to use our system then user have to register into system with details of interest. After registrations user can login into the system where user can post questions or answers according to their knowledge.

In this system we are using some techniques that are defined below: Feigned gained Algorithm: it finds the good quality answers based on users feedback. Social based potential answers: find QA pair in social and global system. Best answer reward system: in this system, we have ratings given by the user to the answers, thus the highest rated answer will be considered as best answer and accordingly to that the user will awarded.

In that feigned grained technique and reward system having high priority to calculate or gives best answers. When user is not getting best answers, he/she can post that question on forum site. In Fig 2 shows the flow of the whole system of CQAP, in that main entity belongs with the feigned grained answers selection techniques. This forms the best answers related to the previous system.



**Fig1. system architecture**

**Best Answers selection steps:**

To find a social community’s current interest of an answer, for each of user friends, CQA time to time calculates the following social and Q&A activities: response rate, mutual interaction frequency, response delay and precision rate.

Symbol	Description
$I_j$	different degrees of knowledge in different interests

$u_a$	User present in system
$f_i$	User's all friends list
$R_{f_i}$	Response rate
$Q_{f_i}$	question sent and forwarded to $f_i$
$ACK_{f_i}$	response from $f_i$ and $Q_{f_i}$
$M_{f_i}$	Is denoted by mutual interaction frequency
$T$	time of prediction
$D_{f_i}$	Response delay of question sending
$P_{f_i}^j$	precision rate of question and answers
$G$	upper bound precision score of an answer in the system
$G_{f_i}^j$	is the average precision score of all answers

**Table 1. Notation Table**

A) Response rate:

Response rate is a response from user's all friend list and question send and forwarded to all friend list by question send and forwarded to all user's friend list.

$$R_{f_i} = ACK_{f_i} / Q_{f_i}$$

where ,

$ACK_{f_i}$ - response from  $f_i$  (User's Friends list)

$Q_{f_i}$  -Question send & forwarded to  $f_i$ .

B) Mutual interaction frequency:

$$M_{f_i} = ACK_{f_i} / T$$

where,

$T$ =Time of prediction.

It is  $M_{f_i}$  calculate number of communication between  $f_i$  and  $u_a$  in a unit time period. This table reflects the social closeness of the two users.

C)Response delay:

$$D_{f_i} = \sum_{j \in I_1} ACK_{f_i}^j / ACK_{f_i}$$

$D_{f_i}$  calculate the response rate of user of posted answer of recent question.

D)Precision rate:

Precision rate is precision rate of posted question and answers.

$$P_{f_i}^j = G_{f_i}^j / G$$

Mutual interaction by two users with the help of user.

**Fine grained:**

1. Input: all rating of answer given by users
2. Output: Representation of users (expert).
3. Step 1: Root server calculate global reputation of users friend list.
4. Step2: Use all user's rating to calculate average of best answers from the answers.
5. Step 3: Virtual server calculation.
6. Step 4: Reputation of users
7. Step 5: Find top answers not found go to online forum support.

**Uncategorized question forwarding:**

1. Input: Uncategorized question posted by user

2. Output: Question is forwarded to respective community
3. Step 1: Uncategorized question posted by user.
4. Step 2: Find the friend's interest which is different from asker's interest with the help of interest coefficient.
5. Step 3: use maximum interest coefficient for asker and answerer(category name and subcategory name)
6. Step 4: A friend with the largest interest difference is selected to forward the uncategorized question.
7. Step 5: The uncategorized question is forwarded to respective community.

### Forum Support:

In proposed system, we introduce the onlineforum site where we can discuss the questions and answers related selected category.

### Forum Algorithm:

```

1) User  $U = \{u1, u2, u3, \dots, un\}$ ; complete the registration (User)
2) getUniqueId() <-0;
   msg<-null
   sub<-null
   foreach(i in U) do
   if (User register)then
   getUniqueId<-i;
   else
   //not_register
   registration(User)
   end if
3) includeCurrentDiscussionTopic()
   //previous user are talking on particular subject
   getSubject()
4) discussForum()
   //send message in the group
   Message<-sent message;
6) return message;
```

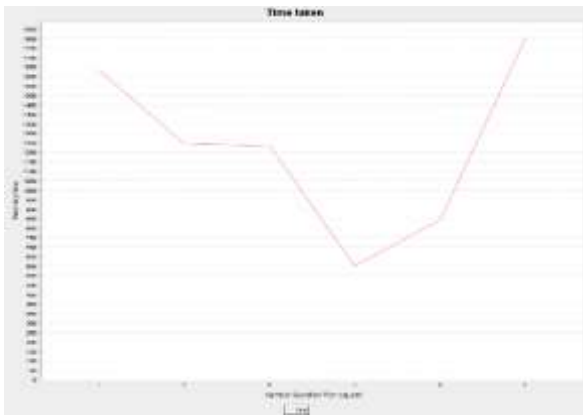
### Reward system:

We propose a reward system based on user's reputation to improve the answer quality and response co-operativeness. User will get reward in the form of virtual currency considering the quality of answer. The main aim of this reward system is to motivate users to answer questions with accurate answers and timeliness.

### Performance Evaluation:

This section investigates the impact of different proposed CQA system components on its performance .Performance of request sending and response time at single request: Fig shows that request time of searching question and calculating total time. Calculating time graph:

1. StartTime=System.getCurrentTime();
2. CQA System(best answerer)
3. EndTime = System.getCurrentTime();
4. Total time=End Time – StartTime



Graph1:Performance Evaluation

### Comparison with existing system:

Parameter	Existing system	Proposed system
System Name	Yahoo, Quora	CQA
Community availability	No. Separate category are present but all user aware of that.	Present. Each category user having good knowledge about his community.
Database nature	centralized	Centralized, Distributed
Rating system	Not available	Available
Forum	Support, not support	Support
Question forwarding to another community	Not support	Support
Answer provide quantity	High	Low (only best answer and top rated)

Table2: Comparison with exiting system

### Conclusion:

A centralized community question answer system maintains groups of users in the form of communities according to their interests. This helps in distributing or circulating the question posted by user to the person or people who acquire adequate amount of knowledge regarding the subject. To identify the experts of given subject, the system uses feigned grained and reward based system. Support of forum is provided for user's assistance where he can chat online.

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