COLLABORATIVE MEMO-BASED SYSTEM IN ACADEMIC CONFERENCE

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ABSTRACT

We propose a system called "memoQ" in which participants can more easily ask their questions at academic conferences. The participants can input their memos on a web page set up specifically for the presentation. The system anonymously publishes the memos that include a "?" as *question memos,* and keeps the other memos private as *personal memos.* The participants can decide on the importance of the questions to evaluate the public question memos by clicking vote buttons. When they click the buttons, the system changes the background color of the question memos. The participants can then know which questions interest the other participants in real time. In addition, the system provides a good opportunity for discussion for a speaker and the participants by displaying a graph mapping the question memos using the voting results. We implemented and applied the system on an academic conference. As a result of this operation, we found that sharing the question memos information with the participants was effective.

1. INTRODUCTION

At academic conferences, some presentations finish without having had any discussion, because none of the participants asked any questions during the question time. In addition, multiple questions by a single person are not favored. We believe that there are participants who hesitate to ask questions because they are afraid that their questions are unsuitable. However, there is the possibility that the questions that are not spoken are good questions for the speakers and participants. We propose a system to solve this problem that we call "memoQ", in which the participants put their memos on the web pages for the presentation to make it easier to ask their questions at academic conferences. Our target is to revitalize discussions by sharing the questions generated by the speakers and participants at a conference using our system. At a conference, the participants write   memos in their notebooks when they listen to presentations. We believe that sharing these memos amongst the participants would be effective because they are included in the participant's useful comments or questions. We specifically propose a system in which the participants put their memos on the web pages set up for specific presentations instead of their notebooks that is based on our research.

The paper is organized as follows. Section 2 describes the related works. Section 3 describes the interface design of the system and Section 4 describes the operation of the system. Section 5 describes the results of a questionnaire we distributed and Section 6 is the discussion section. Section 7 closes this report by describing the limitations of this system and our future work.

2. RELATED WORKS

Some applications use annotation systems that enable group members to write their views and contributions as notes or annotations. CaMILE [5], Col•laboració [6], and CoNote [7] supports the anchors to a threaded discussion of an entire web page or a section of a page or document. The first displays comments below the text, the second embeds a link to the discussion in a page, and the third is a discussion board in which a

thread contains a link to the object being discussed. WebAnn [3 & 4] allows comments to be attached to specific words or passages and it supports the viewing of annotations and the original document in a single window. In contrast, our system allows only memos, but it supports real time communication.

3. INTERFACE DESIGN

We propose the system we call "memoQ", in which participants input their memos onto a web page provided for the presentation information at an academic conference. Figure 1 (L) shows a screenshot of memoQ. We describe our design objective and implementation for achieving the objectives in the following sub-sections.
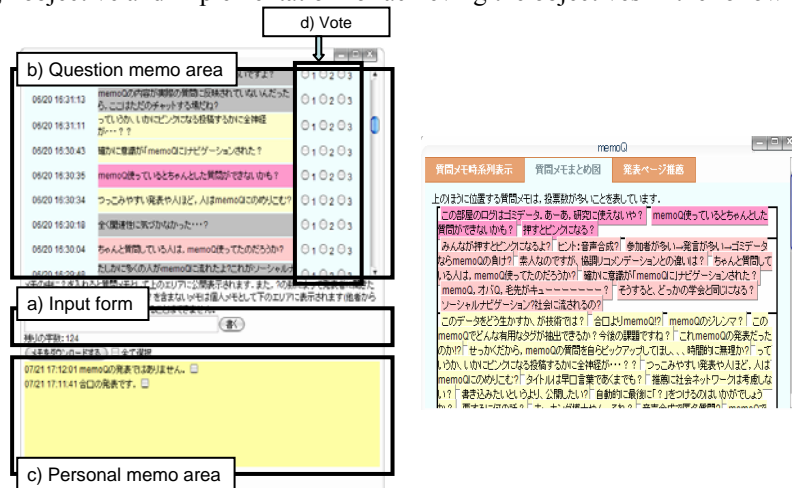

Figure 1. (L) Figure on left is screenshot of memoQ and (R) figure on right is graph mapped question memos

3.1 Design Objective

The design objective of memoQ is to make it easier to input memos at academic conferences and to promote more open communication by sharing the questions generated by the speakers and participants at a conference. Our objectives of this study are as follows.

1. **The use of an interface where the participants can quickly input their memos about what they hit on**: Useful things may be included in the questions that they hit upon when they are listening to presentations that they won't if they take the time to consider them.
2. **The function to make it easy for anyone to input memos**: We need to make it easy for participants who don't wish to show a memo to someone else to input their memos.
3. **The function to let participants concentrate on presentations**: It is desirable for participants to pay attention to the presentations, thus the system should provide the least amount of functions as possible.
4. **The function to decide the importance of questions between participants:** This is because answering all of the questions would difficult if the participants input too many question memos.

3.2 Input Interface

We adopted the Twitter [1] input interface to make it easy to quickly input what comes to mind. Twitter is a social networking and micro-blogging service that allows users to send "updates". It provides the input form that users can input a text that is up to 140 characters long. When users listen to presentations, they constantly input short memo. Therefore, we adopted an input interface to make it easier to input short memos (See Figure 1(L) a).

3.3 Display Interface

It is desirable to share memos with participants to know what kind of questions others have for the presentations. On the other hand, if all the memos are shared, it may be difficult to find the more important memos, because they may include the opinions or the reflections of the participants as well as questions that need to be addressed to the speakers. In addition, if the participants share all their memos with the others in real time, they may use memos for conversations and not for their questions. The system anonymously publishes the memos that include a "?" as *question memo*s and keeps the other memos private as *personal memos*. Figure 1(L) b) shows the question memo area and Figure 1(L) c) shows the personal memo area. Participants can pay closer attention to the presentations because they can't reply to the question memos. In addition, it is easy for novice listeners to input questions by displaying a memo using anonymity. The system displays memos input by the participants in a timeline order.

3.4 Voting

The system provides a function to estimate their question memos by clicking vote buttons (See Figure 1(L) d). Question memos include questions that the participants really want to hear the answers to as well as those that the participants don't want to hear so much about. The participants can decide on the importance of the questions memos by clicking the vote buttons and vote on three degrees of estimation. The system uses the numbers of "?" in the question memos as votes. If participants input a question memo including "???", the system assumes that they voted three points for the question. Participants can change the points by clicking the vote buttons and points of other participants' question memos. The system changes the background color of question memos, when they click the vote buttons. Three colors are provided, yellow, light pink, and deep pink, according to the number of votes. Participants can easily understand which questions the other participants are attracted to in real time, because they share the changing background colors. They may feel happy if their question memos are voted valid.

3.5 Graph

The system displays a graph mapping of the question memos using the results from votes to use during the discussion period. Figure 1(R) shows the graph. The graph maps the question memos from top down in the order of the number of votes. The speaker and participants can quickly determine the more important questions by viewing the graph during the discussion period.

4. OPERATION OF SYSTEM

We offered memoQ as a part of a support system at the 21st annual conference for the Japanese Society for Artificial Intelligence 2007 (JSAI2007), which was held from June 20th to 22nd. The support system was operated as a Web system, and every conference participant could access it using a user ID and password. We targeted Web pages that included information on the papers. We set a start button for our system on the Web pages. Participants could start the system by clicking the start button.

An analysis of the results revealed that there were 72 participants who used the system during the presentations. There were 61 participants who inputted question or personal memos, and 11 participants who just voted points. We obtained 2556 memos (1849 question memos and 707 personal memos). We analyzed the user logs according to the design objective outlined in Section 2.1.

4.1 Effect of Input Interface

We proposed an input interface in which participants can quickly input memos with up to 140 characters (up to 280 bytes, because a Japanese character is represented with 2 bytes).   From the results of the analysis, the average number of character bytes in the memos input by the participants was 40.0 bytes. In this way we can see that the participants tended to input short memos.

4.2 Analysis of Question Memos

The system anonymously published memos that included a "?" as question memos. We investigated these question memos. We found that 72.3% of all the input memos were question memos. We next investigated how the question and personal memos were used by each participant. The proportion of participants who input more question memos than personal memos was 72.1%. Therefore, we found that many participants used the system for inputting question memos.

We then investigated the number of question and personal memos per presentation. Figure 2(L) shows the numbers of memos for presentations where the users input many question memos and (R) those where users mainly inputted question memos. There were few personal memos in comparison to question memos according to Figure 2(L). On the other hand, according to Figure 2(R) there were few question memos for presentations where many personal memos were input. Many users participated in presentations where many question memos and only a few question memos ere input. Therefore, we found that participants tended to input question memos when many participants were using the system.
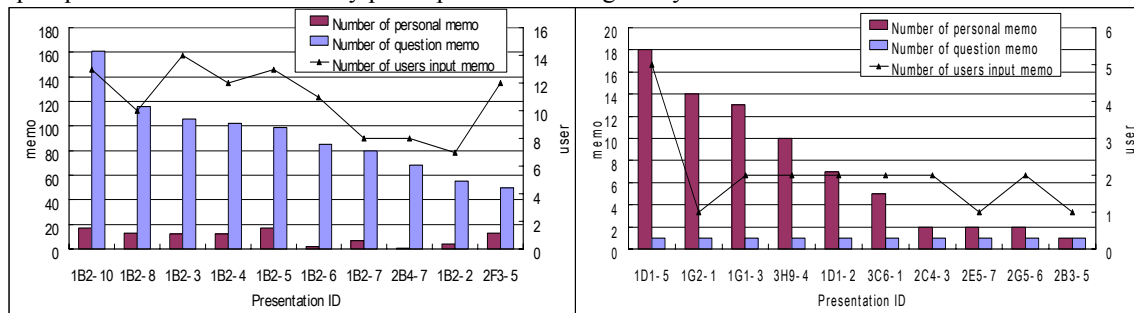

Figure 2. (L) Figure on left indicates number of question memos, personal memos, and users where users input many question memos, and (R) figure on right indicates those where users input only question memos

4.3 Analysis of Attention to the Presentation

The system published only the memos that included a "?" as question memos. There were 1014 memos to the speaker that included questions or comments and 835 memos not related to the presentation. We assumed that the participants inputted only question memos to the speakers. However, 45.2% of the memos were not related to the presentation. This means that there were participants who enjoyed talking by inputting a "?" in the memo.

We investigated whether the feature of the question memos was different for each session. Figure 3(L) shows the ratio of the category of question memos per session. Session 1B and 2B include a high ratio of "Not related to the presentation". We found that the same 11 participants inputted question memos in the two sessions. They tended to have a dialogue by inputting the question memos, because they knew each other. In addition, when a user input a roguish memo, the other users input memos on the coattails of the user. As there was such a user, this case might repeatedly occur.
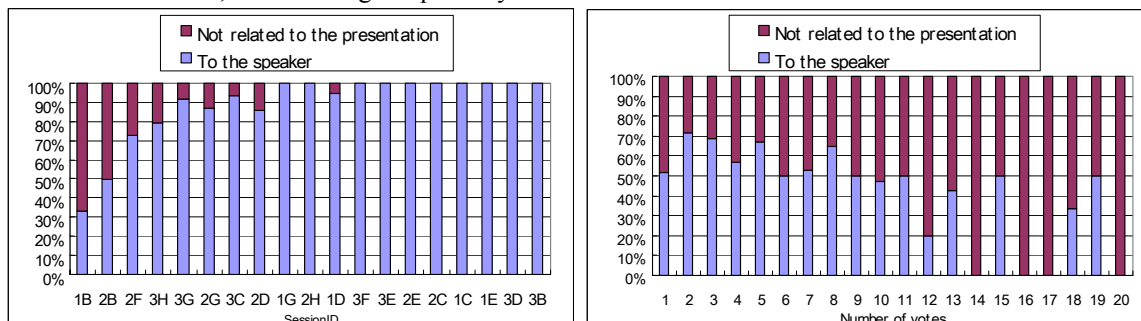

Figure 3. (L) Figure on left indicates type ratios for question memos per session, and (R) figure on right indicates type ratios for question memos per vote

4.4 Analysis of Votes

The participants could vote for points on all the question memos to decide on their importance. There were 58 participants who voted on others' question memos and the average frequency was 15.3 times. The highest number of vote times was 151 times. Figure 3(R) shows the type ratio for the question memos per vote. When the number of votes was high, the "not related to the presentation" ratio was high. Some of the participants tended to vote for many points to be given to question memos not relate to the presentation in session 1B and 2B. Therefore, we found that the participants used the function of votes positively, but a portion of the participants didn't use it seriously.

5. QUESTIONNAIRE RESULTS

We distributed a questionnaire after the conference. There were 27 participants who filled it out. The questions on the questionnaire were as follows.
Q1. Was memoQ useful for listening to the presentation?
Q2. Was it easy to input the question memo, because it was anonymously shown?
Q3. What influence did you have in real time when seeing the question memo input by others?
Q4. Was the graph that mapped the question memos useful?
The first question was used to estimate the usefulness of memoQ. We prepared alternatives in 5 degrees, "Poor", "Average", "Good", "Very Good", and "Excellent". These answers equated from 1 to 5 points. The average number of points was 3.6. The participants who voted the lowest number of points said, "I couldn't start the system using my PC", "I couldn't find where the system was", or "I didn't understand how to use the system". We understood that the participants voted lower because of these problems before the system was used.

The second question was used to investigate the effectiveness of anonymity. We prepared alternatives in 3 degrees, "Not easy to input memos", "Average", and "Easy to input memos". These answers equated from 1 to 3 points and the average number of points was 2.4. There were a lot more users who selected "Average" than users who selected "Easy to input memos". We found that only one user felt that it was hard to input memos by anonymity, because there was only one user who selected "Not easy to input memos".

The third question was used to investigate the effectiveness of sharing memos. We asked the users to freely describe their answers. There were positive answers; "I could know what other people heard during the presentations and if it was useful to share questions and answer them", "There was the emergence of hitting on new questions through the use of the question memos", "I was able to better understand others viewpoints", and "It was good that I understood that there were others who had similar questions". According to these answers, we found that sharing memos was effective. Otherwise, the negative answers were; "The system was interesting, but I didn't pay a lot of attention to the speaker" and "I only felt it was useful to view serious questions. I didn't pay attention to the presentations when the system became chat like". They sometimes couldn't pay attention to presentation. We described this issue in Section 4.3.

Question four was used to investigate the effectiveness of voting. We prepared the same alternatives as in Q1 and an alternative answer, "I didn't know the function". Two users didn't answer and six users   selected "I didn't know the function". The average number of points given by the other users was 2.8. This evaluation was not very positive. We think that the reason is because a serious question did not come to high rank (See 4.4 sections).

Lastly, we asked the users to freely write their impressions and opinions. One of the alternatives that was given was, "I was interested in the changing background color of the question memos that other users voted on and thought it necessary to push for the question that everybody seemed to vote for". We found that changing the background color of the question memos was effective at getting the message across based on this comment. There were also some negative answers; "Because the number of irresponsible remarks increased do to the anonymous inputting, I thought that anonymity was useless.", "I felt that this system was difficult to use, but more importantly I think you need decrease as many of the negative comments that may lead to mental abuse as possible", and "I want to be able to discuss the issues between the participants and see the question memos for the speakers. I think that a freer system would be better."   I will discuss these issues in the next section.

6. DISCUSSION

The system anonymously published the question memos to make it easier for the participants to input memos. Joinson found that lowering the height threshold of communications by publishing memos under anonymity was effective [2]. We proved this effectiveness because more question memos than personal memos were made using our system. However, there were many memos that were unrelated to the presentations in several sessions. We found out that the users who inputted these memos knew each other. These users tended to input memos when one person inputted a frivolous memo. We think that this happened because the system displayed memos in a time line. We need to change the indication method to prevent conversations from occurring in the future. The number of memos not related to the presentations might decrease by projecting the question memo with the previous slide viewed by the speaker. Moreover, the votes have concentrated on the memos not related to the presentation. We may decrease this effect by preparing a minus evaluation button.

7. CONCLUSION

We proposed the memoQ system so that the participants could input their memos on the web pages for presentations to revitalize discussions and to share questions between the speakers and participants. The memoQ system has four features; 1) Participants can easily use the system because it anonymously publishes memos that include a "?", 2) the participants can pay closer attention to the presentations because the system publishes only question memos, 3) the participants can decide on the more important questions by clicking vote buttons, and 4) they can communicate with the speaker to share the graph mapped question memos. We used this system at JSAI2007. The results from our analysis confirmed that sharing memos between participants was effective. However, some listeners complained that they couldn't pay attention to the presentation because of the number of memos unrelated to the presentations. In addition, communication between the speaker and participants wasn't achieved because we couldn't prepare a method where a speaker could see the question memos during the discussion period.

It is necessary to develop a mechanism that does not allow memos unrelated to the presentation to be written and a mechanism where participants can't vote on unimportant question memos.

ACKNOWLEDGEMENT

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