CoMeT
Collaborative Management of Talks System
Modification & Improvement

INFSCI 2950 – INDEPENDENT STUDY

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http://halley.exp.sis.pitt.edu/comet/
Part 1. Introduction to Collaborative Management of Talks

Collaborative Management of Talks, also known as CoMeT, is an adaptive web system on which stores and presents collaborations of academic studies, researches, talks and seminars.

With user personalization and collaborative filtering techniques, the system helps managing as well as recommending new released talks or seminars with a wide rage of academic fields and areas. It stores information of a user, either attendees or professional presenters/hosts such as professors or researchers in the related field. All the talks and seminars are categorized as and targeted to the most related clusters of personal. Each user would grant his own privilege as the system builds up his personal profile, so in later usage he would have his own personal recommendation on of talks that related to his own study. The system also provide group options to make recommendation to a set of people, who are strongly related to the topic of target talks.

Part 2. Technical Details

Development Environment and Techniques:

1. Database: MySQL
2. Backend Language: Java
3. Framework: Struts & Hibernate
4. Other Techniques: Java Mail Service

Part 3. System Glimpse

1) User Registration and Login

Although on default the system opens for the guest, user still needs to register and login to get the best experience with the adaptive aspects. The system provides common registration flow to allow users to be registered in the system and use the service properly.
The system then will store user’s information in the database, thus user could access the site normally.
2) Talk management board and filtering mechanism on user’s search activities

Login or not, user can browse and select talks and seminars in the talk management page, which is assembled from a calendar, a side bar presenting research areas and the content list based on the selection from the sidebar, where an adaptive recommendation algorithm is applied for each personal profile. Based on the recommendation and the date, the content division will present talks and seminars that most fit the users need on a time basis.

3) Talk post and approval mechanism

On default any user could post talk and/or seminar information on CoMeT. A post request would go through another application outside the system --- TalkExtract, where the contents is viewed and examined by the administrators, who will have the final decision on the subject of whether it would be posted or not. The administrator could also grant a user the permanent access to the system so he could post and edit the talks freely.
G.04 Posting Talks

The information of talks and user privilege would then be stored in the database for future queries.

G.05 User Storage and Privileges
G.06 Talk information storage

Part 4. System Improvements

- Email Verification for Registration Process

While users could register freely at the website, there is a high chance that untrusted users will violate the good intention of the website has to offer and make post junk information such as adds. This will create inconvenient user experience and burden the administrator for unnecessary check and approve operations.

To reduce such unexpected users and their behaviors, one important update is to add an email-verification mechanism. This is helpful because observations on action patterns of spam users suggest that spam users, whose goal is to distribute junk information, would normally use fake email addresses, which receive no email verifications for a proper registration.

Using Java mail service, we created a procedure for each registering user, who would immediately receive an email in his registration email box. By clicking the link provided, this user would be able to redirect back to the CoMeT main page, and finish the registration process.
Welcome to the CoMeT System!

Just one more step before your account fully setup!

An email has been sent to you for your verification, please check it out.

G.07 Email Verification Request from CoMeT

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**CoMeT: Verifying your new CoMeT Account**

comet.paws@gmail.com  1:23 (0分钟前)

Dear Yet Another Intern,

Welcome to join the CoMeT system!

Just one more step then you are ready to go!

Now we need you please click on this following URL or copy it to the browser to complete the verification process:

http://halley.exp.sis.pitt.edu/comet/verifemail.do?h=1673803967

The CoMeT Team

G.08 User receiving request in their email

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Congratulations, Yet Another Intern! Your account has been successfully set up!

Click here to login

G.09 Verification Complete
• Privilege Increment Mechanism

Originally, every talk and seminar should go through the TalkExtract, the supervisor of CoMeT system. By checking all posts manually, the TalkExtract would approve certain talks and seminars to officially post to the site. This process involve with storing post information in a shadow database, and transferring the right ones into the true database after TalkExtract’s approval. TalkExtract could also grant user privileges so a recognized user could automatically have his post to the site without censor.

But still, this process requires a lot of inspections on all the talks and manual approval for users. To make it more convenient to use, we are trying to implement a self-increment mechanism for user privileges. The original idea is that, one user’s posts would gain this user a weight in the system, which would allow his post information directly go to the true database once his weight meet with the standards. To initialize this idea, we put a simple idea that grants user such privilege if he gets any one post approved from TalkExtract. This turned out to be fine in practice since there are lots of post requests clustering among some certain professors and organizations, this also increase the efficiency of approval work.

G.10 With writable equals to 1, user got posts directly stored to the formal database

Due to practical usage of the system, we didn’t further develop the algorithm for the self-increment, which we believe, would become truly useful for a target customer in a more magnificent number than what we have right now, where users are categorize in all different areas and distributed in all fields. (Right now the main users are from certain areas like Computer Science and Information Science, where professors and talkers are relatively solid and stable).

Also, this mechanism improve the user experience because of a more efficient presentation of posts, which create good faith among trusted users, while blocking the bad user from abusing it.
• Categorized User Recommendation

The original start page of CoMeT generates an excellent recommendation list of talks for users to choose and bookmark. The sidebar under the calendar lists wide variety of research areas that talks or seminars belong to, so by clicking those areas, users could gain more precise recommendations for his personal interest, according to the recommendation algorithm applied to their search.

Applying more rules to the original categorization, we implement a set of new conditions for talk recommendation, and now user could make the search of topics based on not just research area, but also based on location, speaker, whether it is bookmarked by the users or whether it belongs to certain group this user is in. This definitely improve the personalized search results for the vast users, because the tags would offer much more custom filters for user to get the wanted target in a faster pace.
Part 5. Limitation and Future Works

Although much have done for the improvement of the CoMeT System, there are certain restraints of the system, and a lot of future work will be needed if a even better outcome is planned to be reached.

a) The user privilege increment mechanism still has space for improvement. Since right now we had a brutal way of deciding a user’s privilege to access the system, there is always better algorithm for a proper increase of the level of privilege for each user. This however would require that the users are evenly scattered among different academic area. This would definitely become a crucial issue if CoMeT would like to expand for more users.

b) Although more recommendation options are added to the sidebar to provide better search result, this feature is not officially move to the released version. This is because of a small bug in the presentation of sidebar – the sidebar fails to respond the tag control of time (month tag), and the sidebar is showing wrong numbers even though the result list is giving the right contents. This would require a fix in the presentation layer.

c) The code itself is not quite clear for maintenance purpose. Although giving promised results in practice use, the code itself has some chaotic factors for maintenance --- firstly, the code used a random insertion of JAVA code in the jsp files, which truly violate the idea of MVC presentation of a web project. With the model and view layers mixed up it is hard to initialize a proper
debug procedure. Secondly, the system seems lack of a good documentation for introducing models, workflows and database relationships. This would give any new comer a hard time to adjust to the system. Last but not least, the system is still using Tomcat 5.5 and 6 which are no long supported in updates. An immigration might be necessary for future development and maintenance