Askalot: An Educational Community Question Answering System

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Many times we come into a situation that we search for something that is not easily found anywhere on the Internet. One option to obtain such information is to ask a community where everyone knows something [2]. This kind of collaborative knowledge management systems based on collective intelligence is being widely used lately. They provide a rich source of information, which is not available elsewhere. In our project, we specifically focus on Community Question Answering (CQA) systems, such as Stack Overflow, Yahoo! Answers or Quora.

CQA systems are commonly used to look for or give answers to various questions on the open web. On the other side, they have a great potential to be used also for academic purpose (e.g. [1]). Therefore, our main goal is to propose and develop a CQA system named Askalot which is focused on the domain of education. We plan to implement functionality that supports the educational aim and specifics of universities, e.g. in our proposed system, we consider a strong role of teacher who is able to moderate the discussion about questioned topics.

Our motivation is to create a system that could be widely used on the field of faculty by our fellow students and teachers. Lack of such system at our faculty and existence of obsolete forum that served such purposes (cumulating knowledge among students), leads towards the thought to create an educational CQA system that could not only replace outdated forum, but even more, support real time questioning on lectures, simplify asking various questions about actual topics at school and make an organized and easily searchable database of knowledge for current and future students (especially, shift students' focus from asking questions in isolated Facebook groups to our CQA system).

Based on the thought, that everybody knows something, we believe that it is possible to collect right answers by the community of students. Since there are many of them, we can say that the answers to questions will be verified by the others. On top of it, there is always a teacher that can answer or verify the student's questions and answers.

The aspect of education in our system is highly reflected in the role of a teacher. A teacher has several opportunities to lead the collaboration among students: give feedback by evaluating questions and answers, comment on them or give the right answer. The first possibility is give a feedback by means of five grade scale on which the evaluation of question or answer quality can be performed. Another method of teacher's participation is commenting answers or questions (the comment from a teacher is visually differentiated from another comments). By commenting, a

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teacher can lead the discussion the right direction and can help students in their effort to answer the question. The last of the teacher interaction methods is directly answering the question, which produces a visually different answer, so students can easily see which content was added by a teacher. With these three improvements of the community answering process, we can obtain better answers, and the students can easily see the teacher's opinion about the particular content. Teacher can influence the problem-solving process in a way he desires. However, we do not want to create a system that has the most of content generated by a teacher as soon as a teacher does not have the time and capacity to answer everything. Therefore, the community of students is supposed to generate answers itself as it is in regular CQA systems. It is also meant to be the primary source of knowledge while teacher's collaboration is supposed to be a supporting one.

To encourage students in asking questions, there is an opportunity to ask a question anonymously. We believe that this feature is a motivating factor for some students, when he or she is not sure about the quality of the posted question, feels ashamed for giving such question, but still needs the piece of information.

As soon as the employment of concepts of CQA systems in educational domain represents an open research problem, our system has also advanced method of logging. In our application we log every action that is performed with corresponding data and application state. As the results, we are able to obtain a comprehensive dataset for further research use.

The proposed system is based on open-source technologies. It is implemented in Ruby on Rails a framework for creating web applications. We also use Bootstrap, a CSS framework that helps us to build responsive design for our application. The quality of our code is assured by employing test driven development (TDD) and regular code review process.

Askalot has been already successfully employed as a part of educational process at four bachelor degree courses at our Faculty of Informatics and Information Technologies, Slovak University of Technology in Bratislava. During the first four days of its production deployment, more than 130 students used our system. The fast adaptation of the question answering concept by students promises further positive results.

In our future work, to encourage students in knowledge sharing process, we plan to develop a student motivational system which will include social elements, e.g. following other users or integration with social networking sites. Moreover, the student motivation will be enhanced also by well-known system of badges or achievements. Besides motivation, we plan to support creation of high-quality content, too, e.g. by means of an algorithm which will be able to compare the questions and filter out similar or event duplicated questions at the time of their creation.

The main contribution of our work is the proposal and implementation of the educational CQA system Askalot that is specifically designed for supporting of community question answering process at university. Askalot is not only a tool to support students' learning, but it provides also a great possibility to collect a robust dataset with plenty of user interactions to be analysed subsequently.

References

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