Askalot: An Educational Community Question Answering System

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Often we find ourselves in a situation that we search for something that cannot be easily found anywhere on the Internet. One option to obtain such information is to ask a community and employ common knowledge of its members [2]. This kind of collaborative knowledge management gained attention lately and a number of novel systems based on utilization of collective intelligence were introduced. Since the content of such systems is created by the community, the systems provide a rich source of information, not available anywhere else. In our project, we specifically focus on Community Question Answering (CQA) systems, such as Stack Overflow, Yahoo! Answers or Quora.

The main purpose of CQA systems is to find or give answers to various questions on the open web. Since they are used to share knowledge, they have a great potential to be used also for academic purposes (e.g. [1]). Therefore, our main goal is to propose and develop a CQA system 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. a strong role of teacher who is able to moderate the discussion about questioned topics. Our system is also a closed community system, therefore students can ask community specific questions.

Our goal 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 (sharing knowledge among students), lead towards the thought to create an educational CQA system that could not only replace outdated forum, but even more, support real time questioning on lectures (our system is integrated with startup sli.do, which supports questions asking during 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 our assumption that community agrees upon their common knowledge, 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 others. On top of it, there is always a teacher who can answer or verify the student's questions and answers. The aspect of education in our system is reflected in the role of a teacher. The teacher has several opportunities to lead the collaboration among students: give feedback by evaluating questions and answers,

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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 on answers or questions (the comment from a teacher is highlighted). By commenting, the teacher can lead the discussion into the right direction and can help students in their effort to answer the question. The teacher can also answer the question directly, which produces highlighted answer, so students can easily see the content added by the 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. The teacher can influence the problem-solving process in a way she desires. However, we do not want to create a system that has the most of the content generated by a teacher, since the teacher does not have time and capacity to answer everything. Therefore, the community of students is supposed to answer questions by themselves 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, 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 a result, 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 layout for our application. The quality of our code is assured by relying on test driven development and regular code reviewing.

Askalot has been already successfully employed as a part of educational process at four bachelor degree courses at Faculty of Informatics and Information Technologies, Slovak University of Technology in Bratislava. During the first five weeks of its production deployment, more than 500 students used our system. The fast adaptation of the question answering concept by students promises further positive results.

The main features of our system are: (1) Question asking support; (2) Notifications; (3) Followings; (4) Watchings; (5) Tags (search by tags);

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 even duplicated questions at the time of their creation.

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

References

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