Recommendation of New Questions in Online Student Communities

**Motivation**

- Students’ performance in Massive Open Online Courses (MOOCs) is enhanced by high quality discussion forums or recently emerging educational Community Question Answering (CQA) systems.
- Problems of discussion tools in MOOCs:
  - A small number of students answer questions asked by their peers.
  - An increasing proportion of unanswered questions (up to 50%).
  - Dropout rates for courses can be as high as 94%.
- Introducing a new task of educational question routing - routing of new questions without any answer in educational CQA system to suitable answerers

**Contributions**

- While existing methods primarily focus on askers’ needs, we take an answerer-oriented approach by considering not only students’ expertise, but also willingness to answer a question.
- Incorporating additional non-QA data from the course to involve more students in question answering and reduce the burden on individual users.
- Online experiment as an A/B test of the proposed method with more than 4600 MOOC students.

**Educational question routing framework**

**Matching of questions and users**

- Ensemble classifier
  - Predicting whether a user has sufficient expertise to answer a new question.
  - Predicting user willingness to answer a new question.
- Combination:
  \[ P(y = 1) = P(\text{expertise} = 1) \times P(\text{willingness} = 1) \]

**Online experiment**

- QuCryptQ Quantum Cryptography offered by TU Delft and Caltech at MOOC system edX
- Open-source CQA system Askalot

**Offline experiment**

**Conclusions**

- Higher accuracy of answerers prediction compared to baseline
- Higher interest of users in the routed questions and engaged more students, who in addition provided more contributions
- Lower dropout rate of active contributors in CQA and the lower instructors workload
- Cooperation with Harvard University
- Full paper accepted for ACM RecSys 2017 (acceptance rate 20.8%)