

ment methods, we transform the current offline learning manner of peer assessment into an online and sequential manner.

We derive a trust-aware allocation scheme to allocate peer assessment tasks to students while maximizing the probability of constructing a correct ranking of assignments with a budget constraint. Moreover, we also derive the upper bound of the corresponding probability of prediction error on the inferred ranking of assignments. Furthermore, we propose the Trust-aware Ranking-based Multi-armed Bandit Algorithms to sequentially allocate the assessment tasks to the students based on the derived allocation scheme and aggregate the full ranking using a merge-sort based approach.

However, the allocation scheme exhibits sparsity feature, in other words, some pairs of assignments may have no comparisons at all, while other pairs of assignments may have many comparisons. Hence, we will address this problem by introducing a regularization term in the objective function to penalize the sparse behavior and derive a new allocation scheme based on the new optimal solution. In the future, we will conduct experiments to evaluate the accuracy and efficiency of the proposed algorithms using both synthetic data and dataset in real-world MOOCs. Furthermore, we would like to collaborate with MOOCs providers and apply the proposed peer assessment framework into their MOOCs platforms. As the derived allocation scheme and the proposed algorithms assume that when we have prior knowledge about all students' reliability and the trust values are fixed in a known interval, we will consider the case that we do not have prior knowledge about all students' reliability. We will extend the proposed Trust-aware Ranking-based Multi-armed Bandit algorithm to learn reliability of all the students adaptively during the peer assessment process.

6. REFERENCES

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