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CDISE Seminar
PeerReview4All: Fair and Accurate Reviewer Assignment in Peer Review

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Skolkovo Innovation Center
3 Nobel Street (TPOC-3, Blue Building), Room 408

ABSTRACT

We consider the problem of automated assignment of papers to reviewers in conference peer review, with a focus on fairness and statistical accuracy. Our fairness objective is to maximize the review quality of the most disadvantaged paper, in contrast to the commonly used objective of maximizing the total quality over all papers. We design an assignment algorithm based on an incremental max-flow procedure that we prove is near-optimally fair. Our statistical accuracy objective is to ensure correct recovery of the papers that should be accepted. We provide a sharp minimax analysis of the accuracy of the peer-review process for a popular objective-score model as well as for a novel subjective-score model that we propose in the paper. Our analysis proves that our proposed assignment algorithm also leads to a near-optimal statistical accuracy. Finally, we design a novel experiment that allows for an objective comparison of various assignment algorithms, and overcomes the inherent difficulty posed by the absence of a ground truth in experiments on peer-review. The results of this experiment corroborate the theoretical guarantees of our algorithm.

Short BIO

Ivan Stelmakh is a second year PhD student in Machine Learning Department of Carnegie Mellon University. His research interests lie in statistical learning theory and more specific in the field of learning from people.

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