Chapter 14

DJournal: A Blockchain-Based Scientific-Paper-Reviewing System With a Self-Adaptive Reviewer Selection Sub-System

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ABSTRACT

The paper reviewing process evaluates the potentiality, quality, novelty, and reliability of an article prior to any scholarly publication. However, a number of recent publications are pointing towards the occurrence of the biasness and mistreatments during the progression of the reviewing process. Therefore, the scientific community is involved to standardize the reviewing protocols by introducing blind and electronic submission, selecting eligible reviewers, and supporting an appropriate checklist to the reviewers. The amplification of reviewing with decentralization and automation can solve the mentioned problems by limiting the possibility of human interaction. This chapter proposes and implements a decentralized and anonymous paper reviewing
INTRODUCTION

Scientific paper reviewing is a process of critically appraise, examine, and evaluate research quality and secure essential features, substantive appearance, related evidence, current findings on theoretical and methodological innovations, and their proofs by domain experts (Mulligan, Hall, & Raphael, 2012, p. 132-161). Therefore, reviewing can be considered as the backbone and the final metric of analysis for publishing a research work, for approving a grant application, or for offering a reward, and etc. Considering the above involvement of reviewing in the scientific community, it is necessary to keep reviewing more transparent, trustier, and freer from human related prejudices including author’s reputation, gender, and institution rather than their submission quality. Reviewing should provide a valuable judgment and constructive feedback, and thus helps to contribute to the scientific discoveries (Kelly, Sadeghieh, & Adeli, 2014, p. 227–243). In this regard, publishers or relevant organizations follow devise strategies including blind reviewing, double-blind reviewing, and etc. to improve their reviewing and ensure fewer biases but more trustful and more transparent system. However, still many peer-reviewing frauds are detected and removed from various journals for biased reviewing (Stoye, 2019) (Mahoney, 1977) including Sage publications removed 60 research papers for exploiting peer reviews (Fanelli, 2009). In the traditional reviewing process, the biasness can occur at the very beginning (assignment phase) of a systematic reviewing process. Here, a submitted paper can be influenced by the editor and can contribute biasness. Reviewers can also be biased or offer biased reviews. The whole reviewing process is questionable if anyone from the editor or reviewers forgets his/her ethical norms and drowns into dishonesty. Thus, a new peer-reviewing system is needed to solve the drawbacks of existing traditional reviewing system and assigns reviewers a submitted research paper automatically without any human interaction (Clarke, 2013). In this paper, we present a reviewing system without any explicit influencing factors, biasness, or un-trust issues, but with more trustful and more transparent. The proposed system improves the reviewing process and resolves all un-trustful issues with the following contributions:
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