F⊙RCE 2017

Tsunami-proof? How to engineer peer review to validate 3 million articles in 2022.

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For 100 years the scientific literature has been growing exponentially, with no sign of slowing; this expansion is putting pressure on all stages of the publication process (validation, data availability, dissemination, discoverability), but peer review is under particular pressure.

There is currently much experimentation around the review process (open peer review, triple-blind processes, post-publication review), but often the question of whether these approaches will stand the test of exponential growth is left unaddressed. After 10 years of engineering, evaluation, and re-engineering, and publication of 60'000 articles, our collaborative peer review approach has converged on a process that achieves quality at scale involving thousands of editors. Automation powered by artificial intelligence provides the tools that are effective and objective; but recognition, collaboration, and accountability are also critical to ensuring the human dimension that ultimately improves the quality of manuscripts. Maintaining the quality at scale is one of the main challenges to ensure a sustainable growth.

We demonstrate how a combination of tools that are becoming commonplace in the open-science space (semantic searching, text and data mining) combined with social reinforcement (reviewer recognition, transparency, collaborative interaction, network-driven discoverability) can make peer review more efficient and effective, providing the scalability to meet the challenge of exponential growth.