Differential Impact of GenAI on Research: Evidence from ICLR Submissions

Yucheng Lu

Abstract

Generative artificial intelligence (genAI) has transformed not only how researchers write but also *what* types of research they produce and *who* participates in research. Using comprehensive submission records from the International Conference on Learning Representations (ICLR), a leading ML/AI venue, we provide early evidence of a structural shift in research output following the public release of ChatGPT in late 2022, despite the community's familiarity with earlier genAI tools such as GPT-3, Codex, and Copilot. We document (1) a relative reallocation of submissions *away* from mathematically intensive research toward more empirical and expository work, and (2) that this shift is driven primarily by *new entrants* to the field. We provide further evidence of a slight but statistically significant drop in quality from referee scores and review contents.

Methodologically, we operationalize a "task-based" view of research production by decomposing submissions into symbolic reasoning, empirical experimentation, and narrative exposition. We quantify these components by counting tokens associated with mathematical formulas, prose, and tables in full-text PDFs and aggregate to subfields using an LLM-driven topic modeling technique. Finally, while our focus is on ICLR, we interpret the observed reallocation through the lens of a Roy model with endogenous entry, and provide tentative predictions for how the composition of scientific production may evolve as the genAI transformation deepens.