SORS: Accelerating software development: The LLM (R)evolution

AI4S registration link

Abstract

Large language models are achieving state of the art results in a wide variety of well-studied areas, eclipsing past work in well-studied areas like auto-completion. I argue that they should also presage a "Cambrian explosion" – a wave of radically new kinds of software development tools powered by AI that will make all our lives easier. I propose a paradigm for how we can best re-think existing tools to leverage a combination of LLMs and PL technologies like static and dynamic analysis, which promises to evolve our software tools far beyond their current capacities. I'll talk about this in the context of a range of tools built in my lab, including a profiler that proposes optimizations (Scalene), a debugger that actually debugs code and propose fixes, leveraging real-world knowledge (ChatDBG), compiler error messages that actually explain the problem and propose solutions (CWhy) and data analysis frameworks that actually analyze your data (FlowCo).

Short Bio
Emery Berger is a Professor of Computer Science at the University of Massachusetts Amherst, the flagship campus of the UMass system, and an Amazon Scholar at Amazon Web Services. At UMass, Professor Berger leads the PLASMA lab, whose research has led to numerous impactful software systems (see https://github.com/plasma-umass). Professor Berger is also the developer and soe maintainer of the influential CSrankings.org site, which has served over 3 million users. He served six years as an elected member of the SIGPLAN Executive Committee and a decade as Associate Editor of TOPLAS; he served as Program Chair for PLDI 2016 and co-Program Chair of ASPLOS 2021. His honors include an NSF CAREER Award, Most Influential Paper Awards at OOPSLA, PLDI, and ASPLOS; five CACM Research Highlights, and Best Paper Awards at FAST, OOPSLA, SOSP, and OSDI; he is an ACM Fellow.

Speakers

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