Abstract

Large language models are rapidly changing how scientists read papers, formulate hypotheses, write code, analyze evidence, and communicate results. Yet the central question is not whether AI can replace scientific judgment, but how researchers can build AI workflows that amplify judgment while preserving verification, reproducibility, and intellectual responsibility. In this talk, I will discuss how to design an AI workflow for scientific research from the perspective of a working scientist: turning vague ideas into checkable research objects. I will also introduce the idea of reusable “skills”: distilled procedures that encode recurring research habits such as paper dissection, derivation auditing, baseline checking, and experiment reporting. The main message is that AI is most powerful when embedded in a verified scientific loop: human scientists define the question, set the standards of evidence, and make the final judgment, while AI expands the bandwidth of exploration, organization, computation, and revision.