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Alexander Roman

Orchestral AI: Accelerating Scientific Discovery with Agentic Workflows

Abstract

We present Orchestral AI, a framework for building AI agents designed for scientific research. Orchestral AI enables language models to act as capable research agents, allowing them to orchestrate complex scientific workflows. The framework allows for easy implementation of new custom tools, provides supports multiple model providers, and incorporates built-in safety mechanisms suitable for production scientific environments.

We will highlight applications in particle physics phenomenology, quantum-circuit optimization, and exoplanet-astronomy pipelines, demonstrating how AI agents can function as intelligent collaborators that accelerate and augment the scientific process.