Dr.Sai: An AI Agent for Physical Analysis of BESIII Experiment

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The BESIII experiment has collected the world's largest sample of charm hadron data, yielding a wealth of physical results. Large AI models, with their comprehensive data and god's-eye view, have the potential to significantly enhance the efficiency of human scientific discovery. The Computing Center and Experimental Physics Center at IHEP have collaborated to develop Dr. Sai, an AI agent for physical analysis. Dr. Sai aims to highly automate tasks such as literature review, code writing, case generation, case analysis, result interpretation, and paper writing, thereby freeing scientists from routine work with lower innovation requirements and promoting a shift in the research paradigm towards an intelligent model. This report will discuss the latest progress of Dr. Sai, including its overall design, domain-customized HEP·Xiwu LLM, its perception layer, execution layer, memory layer, multi-agent collaborative system, and UI interface.

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