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Enhancing the development of Cherenkov Telescope Array control software with Large Language Models

We develop AI agents based on instruction-finetuned large language models (LLMs) to assist in the engineering and operation of the Cherenkov Telescope Array Observatory (CTAO) Control and Data Acquisition Software (ACADA). These agents align with project-specific documentation and codebases, understand contextual information, interact with external APIs, and communicate with users in natural language. We present our progress in integrating these features into CTAO pipelines for operations and offline data analysis. The fast-evolving ACADA codebase is embedded in a vector database and linked to an open-source LLM. This integration enables advanced search, automated code and data model generation, and quality assurance tailored to the project's needs.

AI keywords

LLM; RAG; code generation; agents

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Track Classification: Foundation Models