WOOSTER
Applied Methods and Research Experience

Life Is On | Schneider Electric

Schneider Electric Autonomous Agents

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Built and evaluated AI-powered energy management agents using LLMs, prompt engineering, and tool orchestration. Developed multi-agent and single-agent architectures, integrated Model Context Protocol to access external tools for our agents, and delivered insights about our agentic approaches to Schneider Electric.

EXPERIENCE

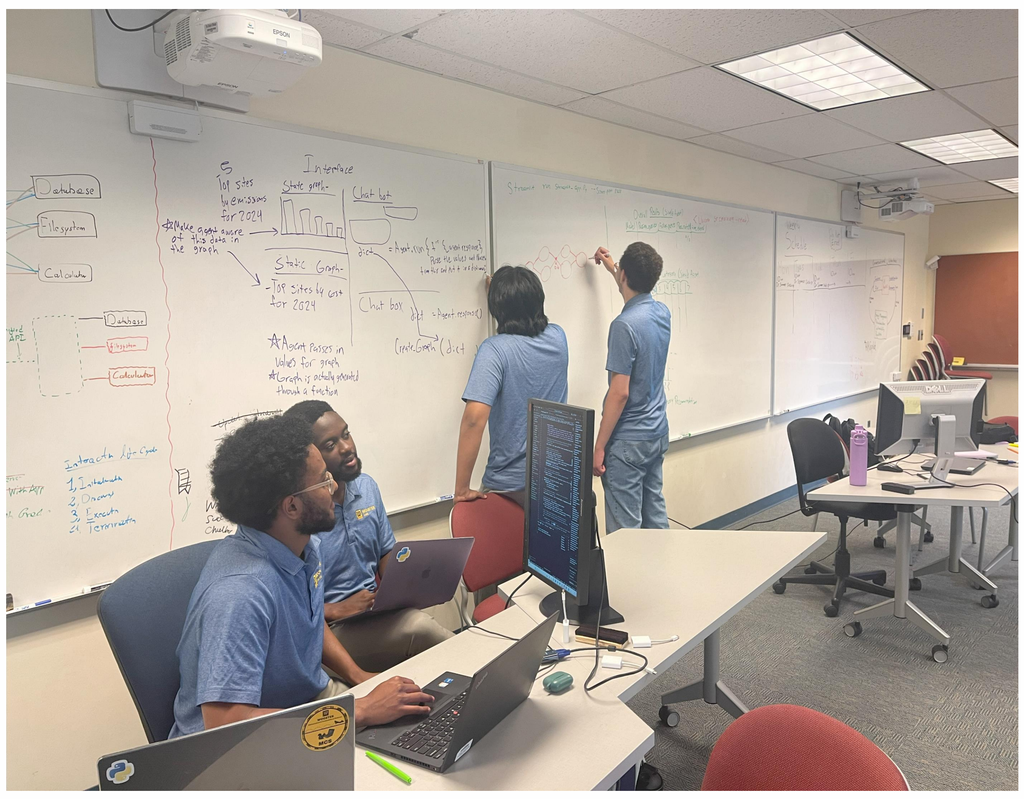
- Designed and deployed AI-powered agents using LlamaIndex, MCP, and FastAPI for energy data querying.
- Evaluated multi-agent and single-agent architectures across 100+ ground truth test cases.
- Integrated fuzzy matching and parameter validation to improve system reliability and fault tolerance.
- Built a branded Streamlit UI with real-time workflow tracking, visualization, and memory persistence.

OVERVIEW

Our project explored how autonomous agents powered by Large Language Models (LLMs) could be used to answer complex energy-related queries. We designed and tested single-agent and multi-agent architectures
using LlamaIndex, FastAPI, and Model Context Protocol (MCP) to build an intelligent energy co-pilot. Throughout the project, we evaluated agent behavior, routing accuracy, and prompt design across various workflows. Some of the LLM models we tested were GPT-4, Claude 3 Opus, and Gemini 2.5 Pro.

CLIENT

Schneider Electric's Sustainability Business takes a holistic approach to address Enterprise Data & Software, Energy Management, and Sustainability for many major companies. They provide both hardware and software solutions to address these topics for over 40% of the world's Fortune 500 companies. We worked specifically with the Data Science team, based out of Louisville, Kentucky.



CONCLUSION

Through hands-on development and evaluation, our team identified the strengths and limitations of agentic architectures for energy data systems. By refining workflows, improving tool orchestration, and testing LLM performance, we developed best practices for building scalable and reliable agent-based solutions. These insights can help inform Schneider Electric's future use of autonomous agents and LLMs in real-world applications.

ACKNOWLEDGEMENTS

We would like to thank The College of Wooster and the AMRE team for providing us with this unique opportunity. Additionally, we would like to thank Dr. Sommer and Dr. Kelvey for providing mentorship throughout the course of the project. Finally, we want to thank Jeff Willert '09, Carlos Ribadeneira Espinoza, and Levi Gainer '24, for their guidance and supervision. Additionally, we would like to acknowledge Harbage Endowed Fund, the Grace B. Jones Foundation, and the Donald and Alice Noble Foundation.