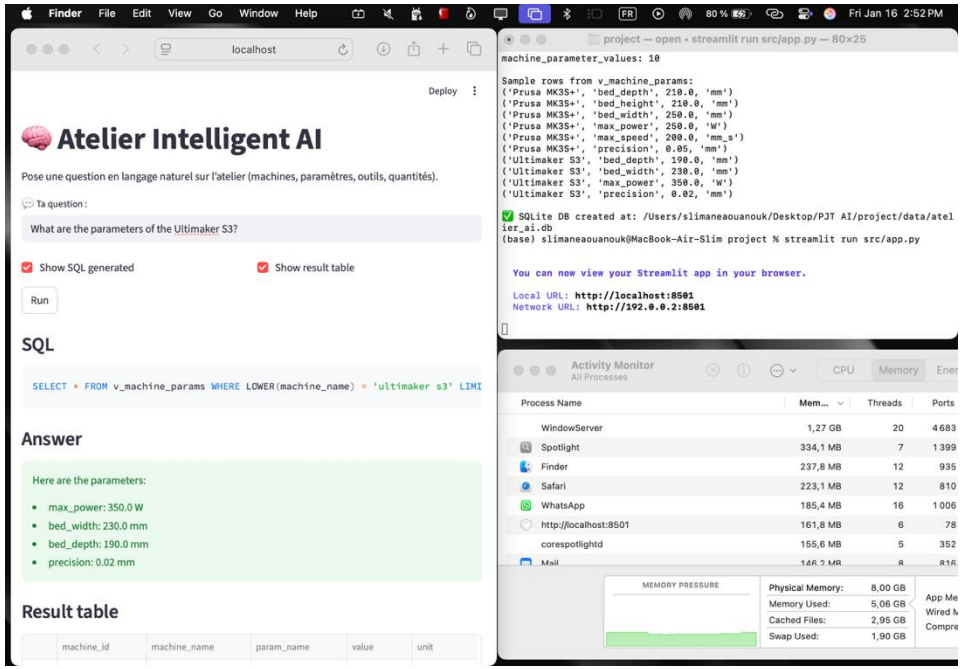
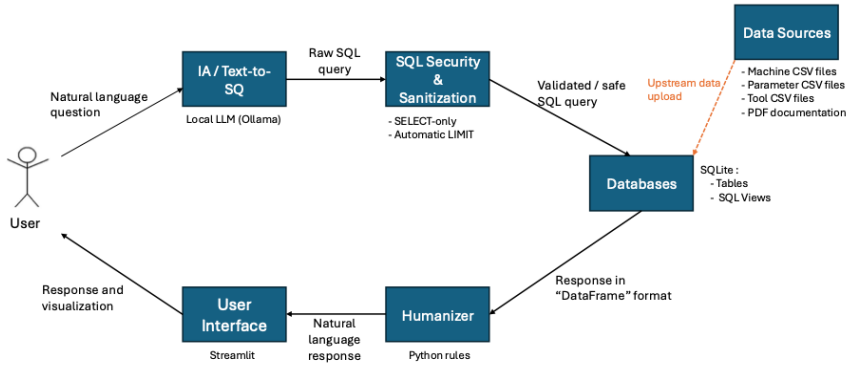
Local AI-Driven Workshop Data Assistant

Research Project

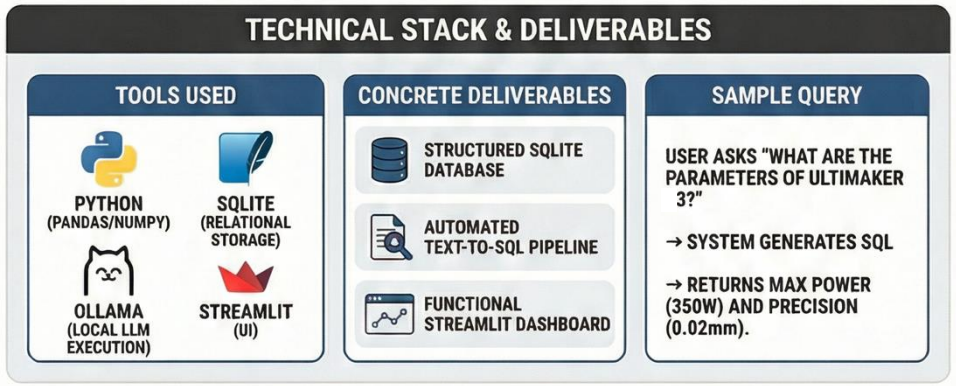
Arts et Métiers Sciences et Technologies



Local Text-to-SQL Execution with Streamlit Interface



System Architecture of the Local AI-Driven Text-to-SQL Pipeline



Objective :

Design a local, secure AI system to query structured workshop data (FabLab context) using natural language, without relying on external cloud services.

- Built a local end-to-end data pipeline (CSV → SQLite) using Python & pandas.
- Developed a Text-to-SQL system powered by a locally deployed LLM (Ollama).
- Designed SQL views and enforced safe query execution (read-only, LIMIT).
- Explored and validated data in Jupyter Notebook.
- Delivered an interactive Streamlit interface:

Natural language → SQL → database → human-readable answer.