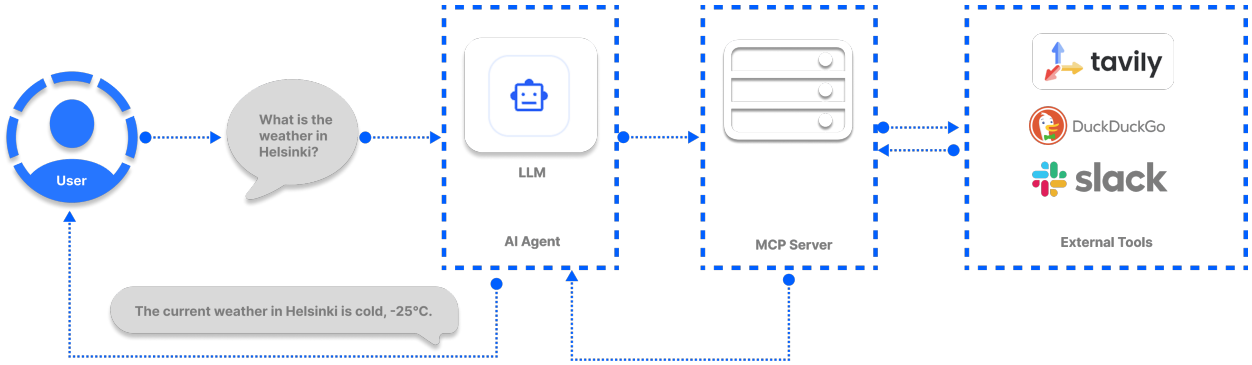
Project 2: Ericsson

Develop an AI agent for research tools

Most modern research relies on advanced simulation tools that help to collect data, analyze scenarios and test new technology. The more capable and realistic these tools become, the harder it is to use them, as researchers set up hundreds of parameters to describe different scenarios with high precision. This is where language models, and their understanding of the code and human language, can help with automating this process, eventually allowing multi-agent systems to take over all the technical work on setting up simulations.



A schematic example of MCP-powered AI application

In this project, you will build an AI application that, given a human description of a research task, will connect to a pool of simulation tools and run them with parameters inferred from the task description. The tool at hand is a set of open-source simulators for radio networks from Nvidia called Sionna [1]. Using Model Context Protocol (MCP) [2], it is possible to create an application which connects text with API-based tools. Since off-the-shelf language models do not possess any deep knowledge about radio or the tools, they need more information to be able to meaningfully perform the tasks. Some of this information is already available, such as tool documentation and usage examples, but more advanced tasks need the development of additional layers that can recognize intents and help to structure the request.

Project goals: develop an AI application using MCP and Sionna tools, enable running simple tasks from text, and gradually increase complexity of tasks and involved features/tools.

Complexity: developing a working application is estimated to be at a medium level of complexity.

Background: understanding of how LLMs work and their capabilities when working with structured data is expected. Experience in programming (in particular, Python) is important, but advanced knowledge is not required.

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References

[1] Sionna — Sionna 1.1.0 documentation

[2] Introduction - Model Context Protocol