



Title

Unified Architectures for LLM Agent Design – Seminar (B.Sc./M.Sc.)

Background

Unified architectures for LLM agent design aim to move from ad-hoc prompt chains and spaghetti orchestration code to principled, modular abstractions for building agentic systems. The focus is on defining standardized components—such as planning, memory, tool interfaces, user profile, and security/guardrails—and on specifying how these components interact so that single- and multi-agent systems can be composed, analyzed, and extended systematically. By introducing modeling frameworks and design patterns that separate LLM reasoning from orchestration and tooling, this line of work seeks to improve reliability, debuggability, and reuse across different application domains and frameworks. This seminar will examine recent frameworks and algorithms that formalize these processes, aiming for more reliable, efficient, and scalable agentic systems.

Literature review:

LLM-Agent-UMF: LLM-based Agent Unified Modeling Framework for Seamless Design of Multi Active/Passive Core-Agent Architectures (<https://arxiv.org/abs/2409.11393>)

Supervisor

Nikita Agrawal

Feel free to ask any questions anytime via Teams or e-mail (Nikita.Agrawal@uni-bayreuth.de)