TRAINING: Data Science and AI for Medicine Training School 2026
Day 1: Python and Tools – AI Assistants in JupyterLab

SPEAKER: Matthias Täschner

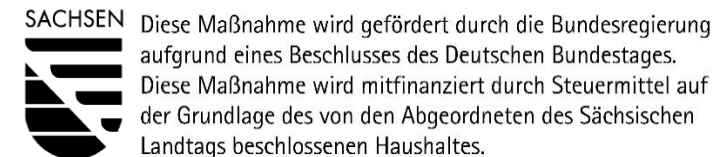Using materials from Robert Haase (DSC ScaDS.AI / Leipzig University)

Training: Data Science and AI for Medicine Training School 2026
Day 1: Python and Tools – AI Assistants in JupyterLab
Speaker: Matthias Täschner, DSC ScaDS.AI, Leipzig University

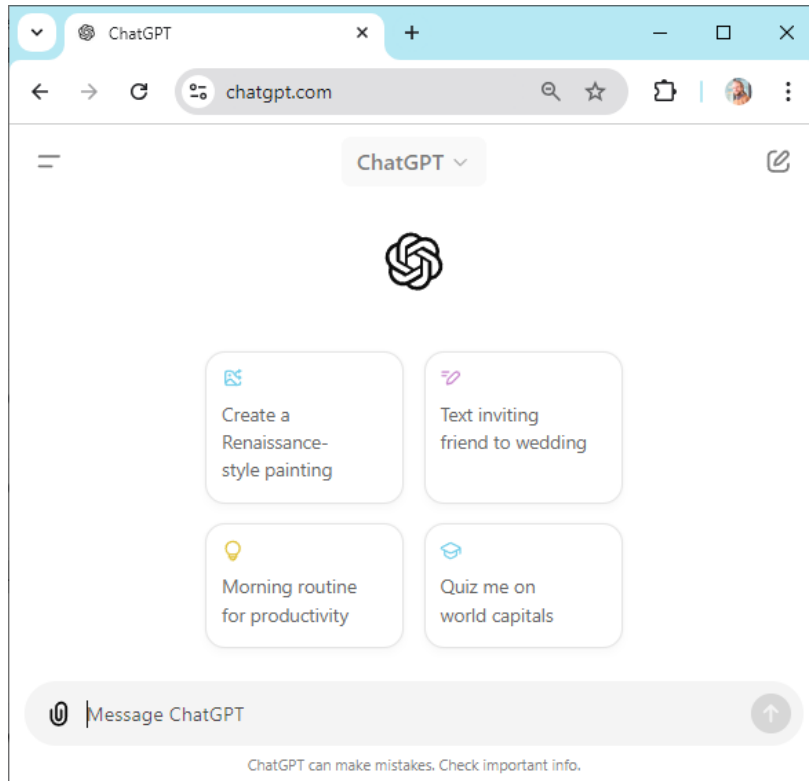Slide 1

LLM Services and Their Use
What is an LLM?

- Advanced AI models (neural networks/deep learning),
  which are trained on large amounts of text

- Designed to "understand" and generate human language

- Capable of incorporating context and interacting with users

- Can perform a variety of tasks depending on their specialization:
  - Answering questions
  - Summarizing texts
  - Translating
  - Generating code
  - Other functions, e.g., web search

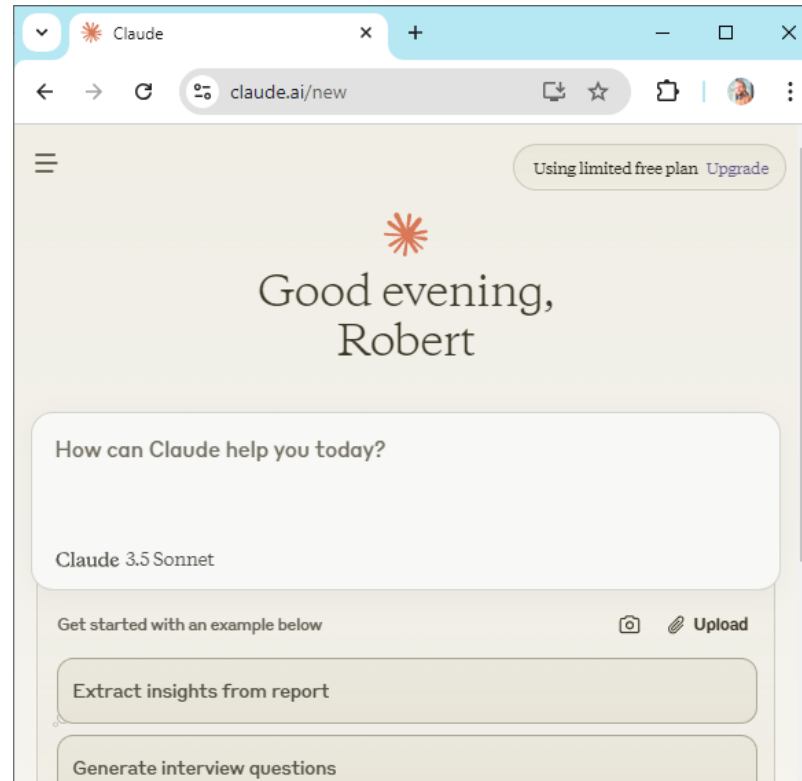Training: Data Science and AI for Medicine Training School 2026
              Day 1: Python and Tools – AI Assistants in JupyterLab
Speaker: Matthias Täschner, DSC ScaDS.AI, Leipzig University

Slide 2

LLM Services and Their Use
What is an LLM?

ChatGPT

https://chatgpt.com/

Claude

https://claude.ai/

Open models

https://huggingface.co/chat/

Training: Data Science and AI for Medicine Training School 2026
Day 1: Python and Tools – AI Assistants in JupyterLab
Speaker: Matthias Täschner, DSC ScaDS.AI, Leipzig University

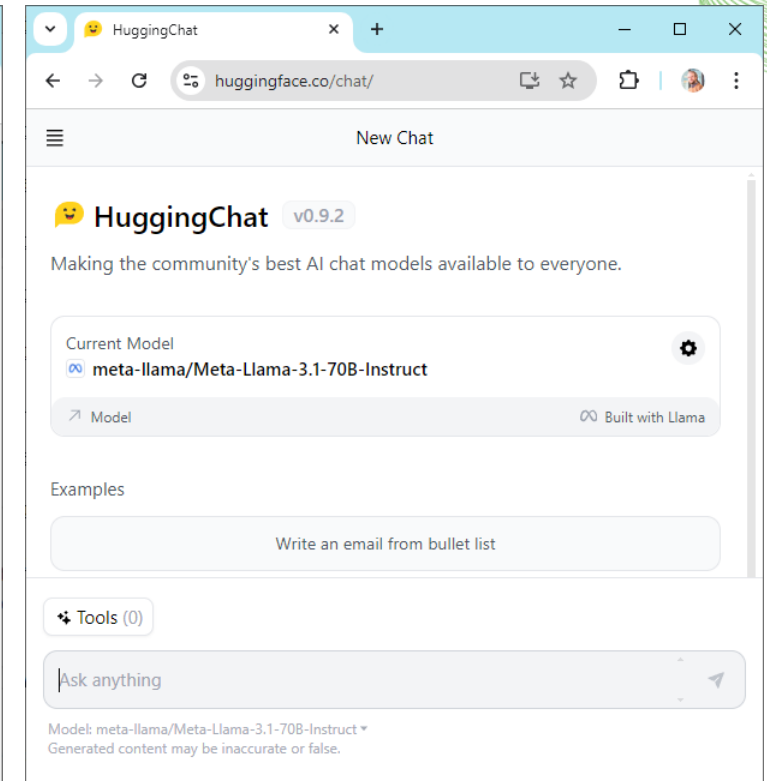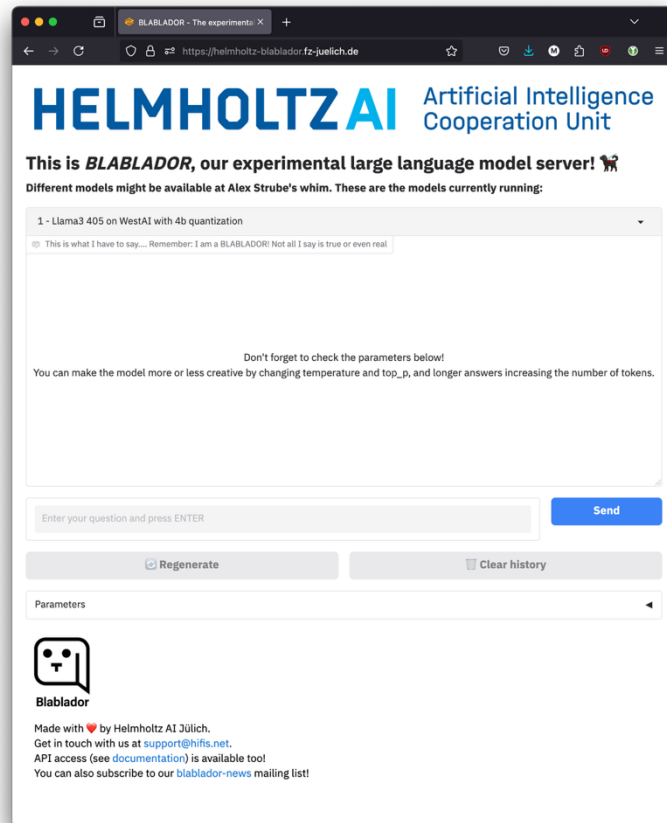Slide 3

LLM Services and Their Use
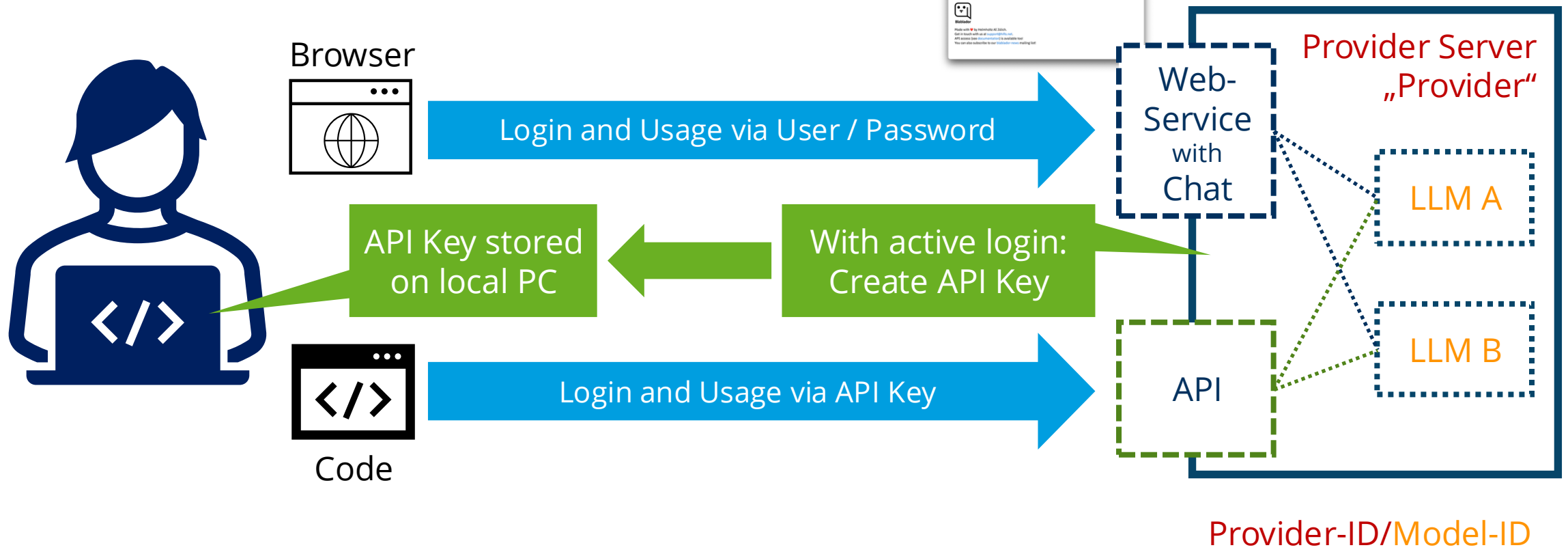# What is an LLM?

Helmholtz Blablador

- Various providers with their own services and LLMs
- Proprietary to open source
- Paid to free of charge
- Server locations worldwide, in Europe, in Germany
- Basic technical structure and concepts are mostly similar
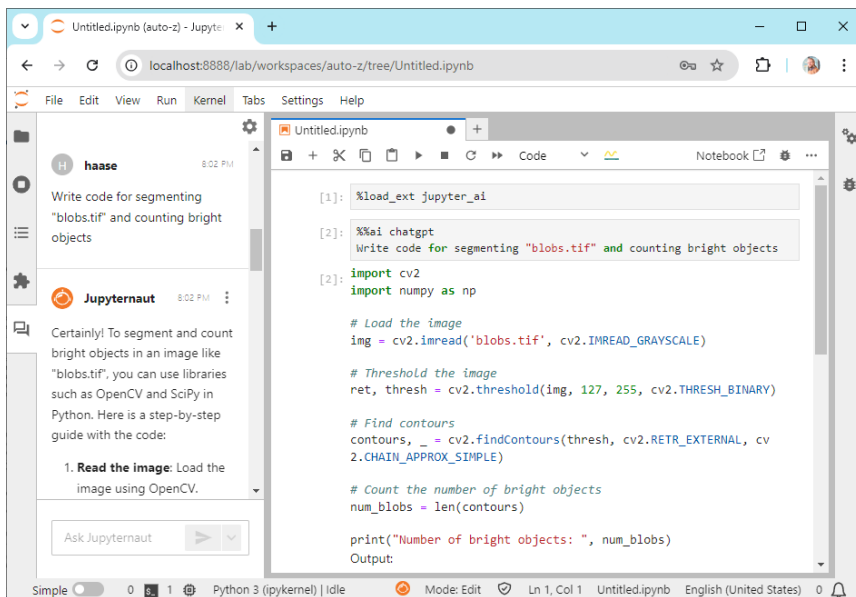
https://helmholtz-blablador.fz-juelich.de/

Training:
Data Science and AI for Medicine Training School 2026
Day 1: Python and Tools – AI Assistants in JupyterLab
Speaker:
Matthias Täschner, DSC ScaDS.AI, Leipzig University
Slide 4

LLM Services and Their Use
Setup and Usage

LLM Services and Their Use
AI Assistants

- Integration of LLM capabilities into existing tools and services
  - ChatBots on websites
  - AI assistant in MS365, Adobe Cloud, …
  - AI assistant in programming environments (IDE, etc.)
- or Jupyter Lab, e.g., via "jupyter-ai" or "bia-bob"

Login with API Key

Provider

API

LLM A

LLM B

blablador/alias-fast

Software package or plugin for chat function, text/code generation, etc.
with connection to …

Local computer

Local LLM Service

API ↔ LLM a

Alternatively: local access, requires appropriately powerful hardware

Training: Data Science and AI for Medicine Training School 2026
Day 1: Python and Tools – AI Assistants in JupyterLab
Speaker: Matthias Täschner, DSC ScaDS.AI, Leipzig University

Slide 6

LLM Services and Their Use
AI Assistants

Prompt Engineering

- Prompt: Instruction to the AI assistant/LLM to perform a task.
- Formulate as precisely as possible and provide context.
- Iterative modification of the prompt until the desired result is achieved.

Restrictions and limitations

- Prompts and context are transferred to LLM – when using an external LLM service provider, this means to external servers → observe data protection regulations!
- AI assistant is only as good as the LLM used – variation in quality of responses, available languages, knowledge level, code generation capability, etc.
- The context window (number of tokens) has limits and varies depending on the LLM

As part of this training, we use

- "bia-bob" (AI assistant for Jupyter) [https://github.com/haesleinhuepf/bia-bob]
- LLM cluster of Leipzig University

Training: Data Science and AI for Medicine Training School 2026
Day 1: Python and Tools – AI Assistants in JupyterLab
Speaker: Matthias Täschner, DSC ScaDS.AI, Leipzig University

Slide 7