

EOSC CZ Summer School for Data Stewards 2026

JupyterLab, AI Assistant, and Python for Data Stewards

Introduction

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About me

- Research Associate at DSC ScaDS.AI, Leipzig University, Germany
- Professional Background: IT systems technician, IT admin, data scientist
- Responsibilities: Transfer projects, research and development, trainings, IT coordination

About my workplace

- ScaDS.AI: National AI competence center, located at Leipzig University and Dresden University of Technology
- Funded by German Government and the Free State of Saxony, Germany
- Interdisciplinary research on AI and Data Science
- Development of scalable, responsible, trustworthy, and efficient AI solutions
- Transfer of research results to science, industry, and society

Agenda

Session 1 (June 16, 13:30–17:00)

- Python projects with uv
- JupyterLab and notebooks
- AI assistant in JupyterLab
- Data steward tasks in JupyterLab

“Get to know your tools”

General handling and understanding

Session 2 (June 17, 08:30–12:00)

- Python-based toolkit and pipeline
- Data exploration and preparation
- Data validation and metadata
- Documentation, DMP
[Export via API usage, automation]

“Use your tools productively”

Detailed usage of the Python Toolbelt

Training Materials

Public GitHub Pages

- Notebooks and files for the sessions
- <https://scads.github.io/eosc-ssds-2026>

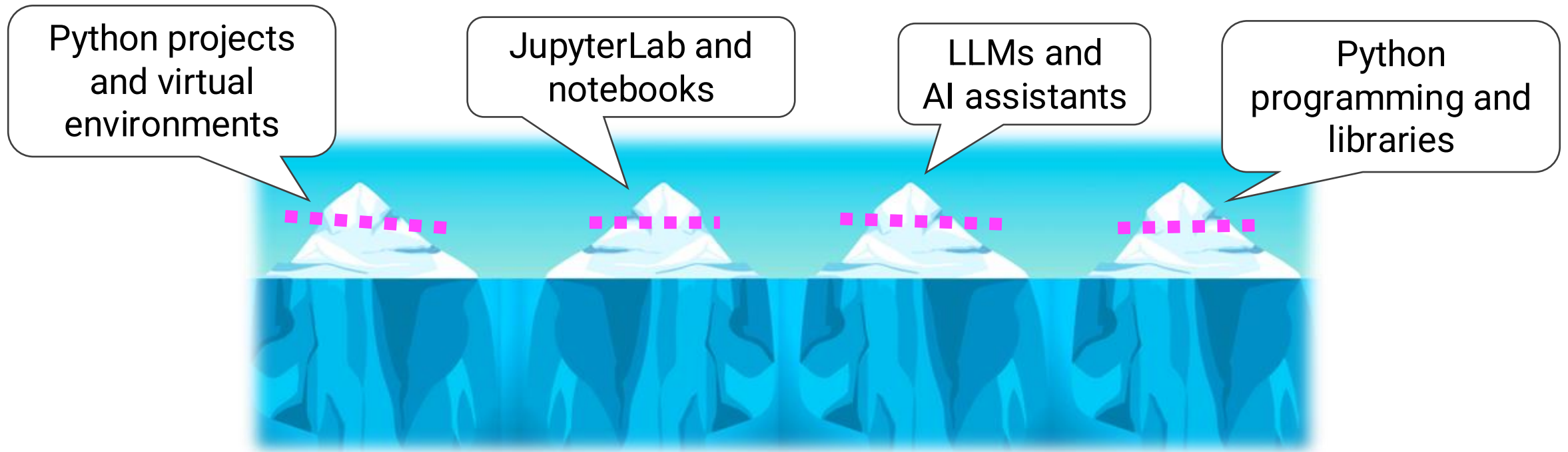
Nextcloud Share

- Additional helpful resources
- <https://urlr.me/qE92Ny>



Expectation management

Teaching the fundamentals as a foundation for further independent learning and application.



Learning Objectives Session 1

Getting comfortable with the three tools:

- ***uv*** – Python project and environment management
- ***JupyterLab*** – browser-based interactive computational notebooks for code and documentation
- ***bia-bob*** – AI coding assistant for JupyterLab

Agenda Session 1

- **13:30 – 13:45** **Welcome & Introduction** ✓
- **13:45 – 14:30** **Technical Setup Check, uv**
- **14:30 – 15:00** **JupyterLab & Notebooks Introduction**
- **15:00 – 15:30** ☕ **Coffee Break**
- **15:30 – 16:30** **AI Assistant Introduction**
- **16:30 – 16:50** **Data Exploration Exercise**
- **16:50 – 17:00** **Wrap-Up**

*Any
Questions?*

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uv for Python projects and venv

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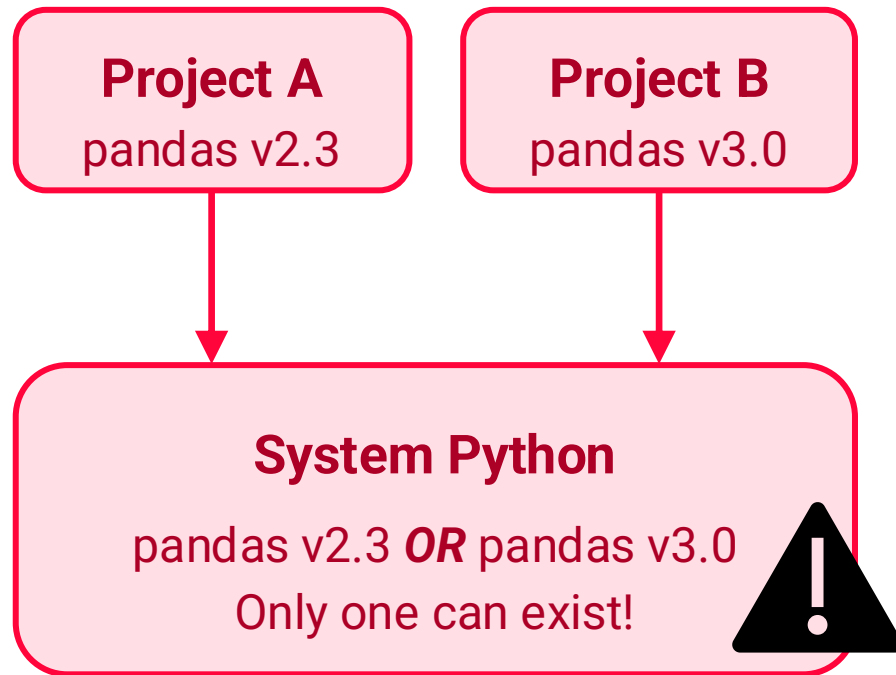
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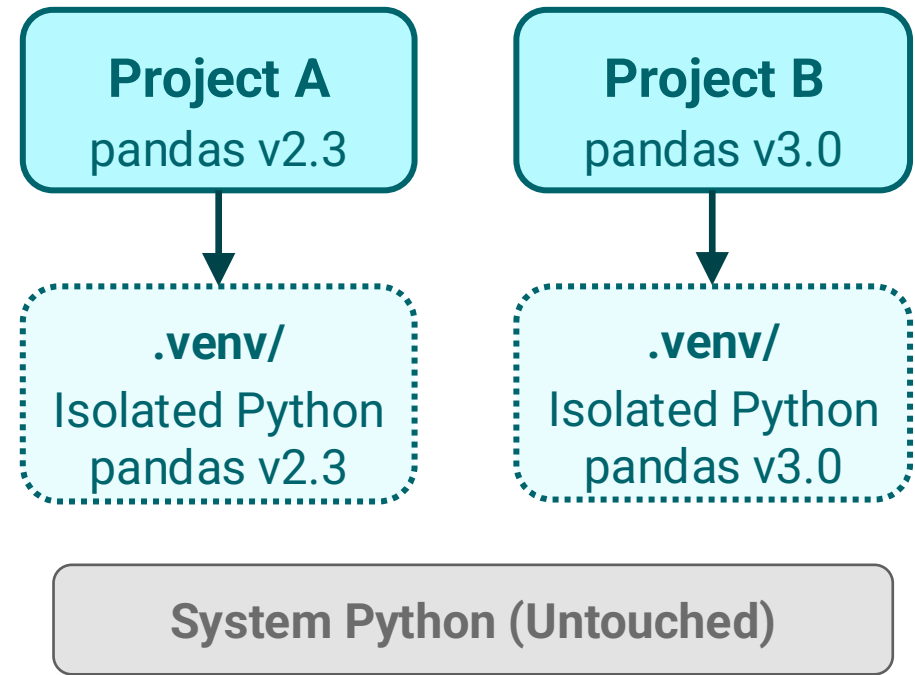
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Python projects and Virtual Environments

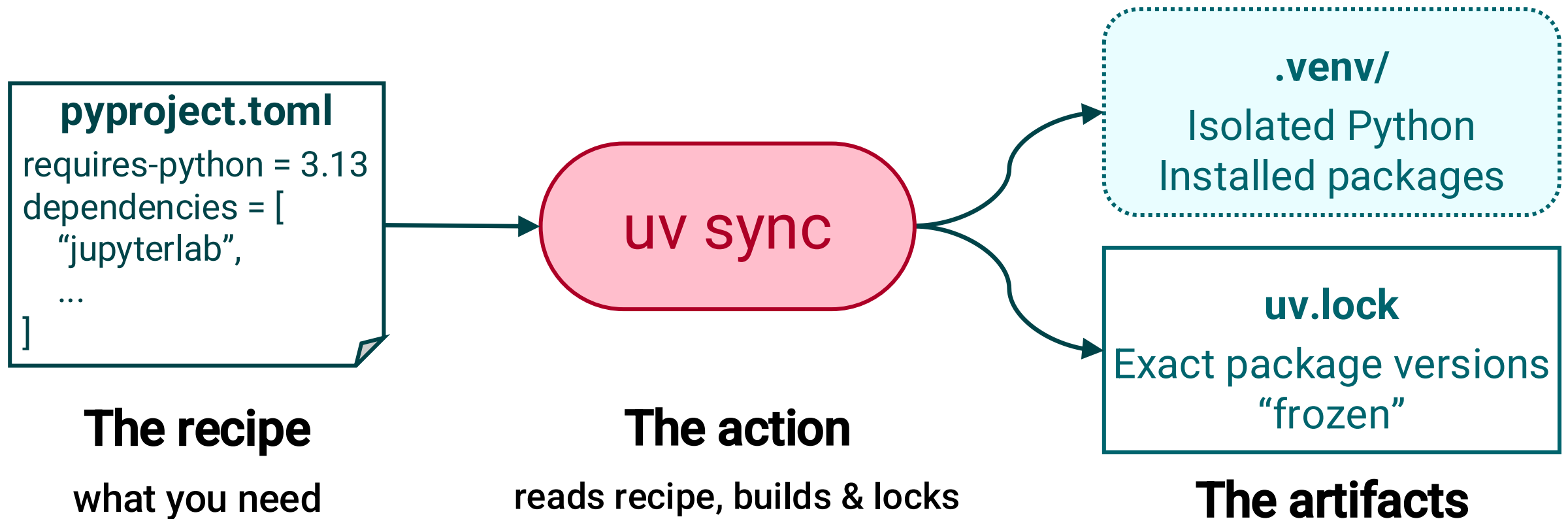
The problem (without venv)



The solution (with venv)



How uv helps managing venv



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LLMs and AI Assistants

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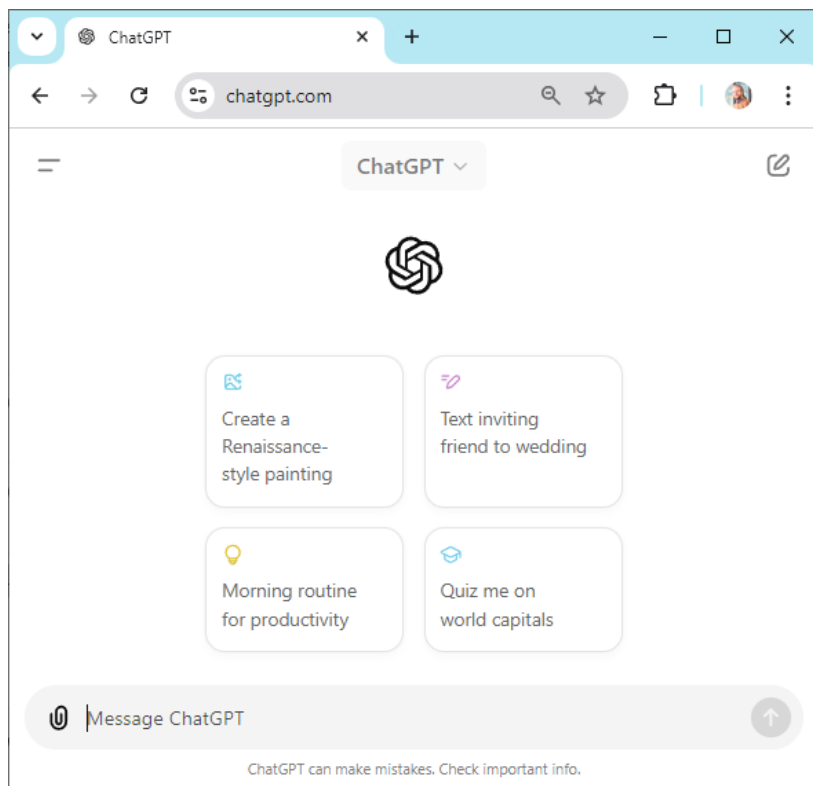


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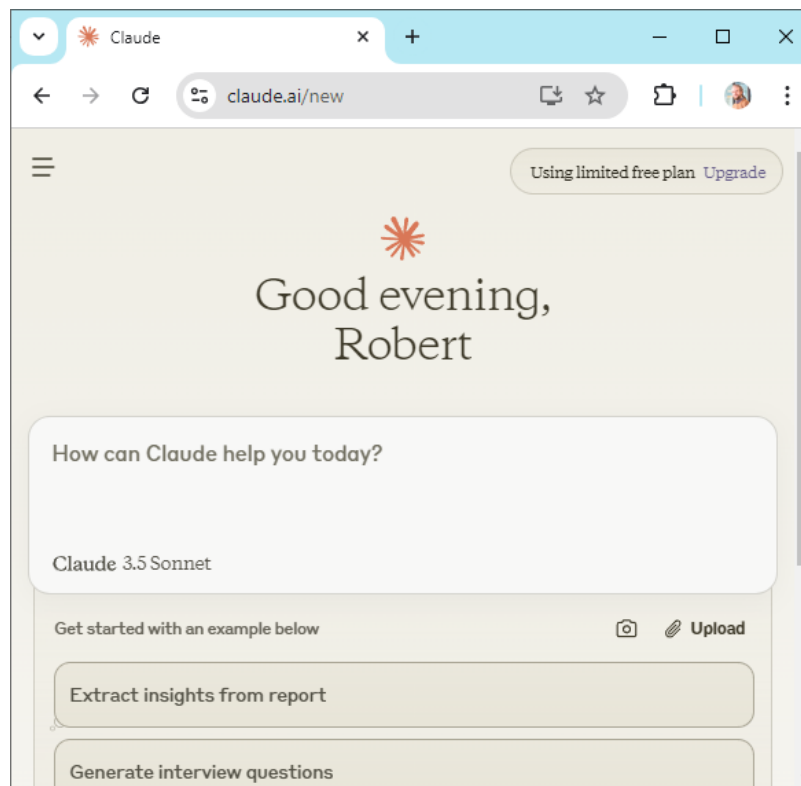
Large Language Models (LLM)

- **Advanced AI models (neural networks / deep learning), 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**
 - **Translating or summarizing texts**
 - **Generating code**
 - **Other functions and tool use, e.g., web search**

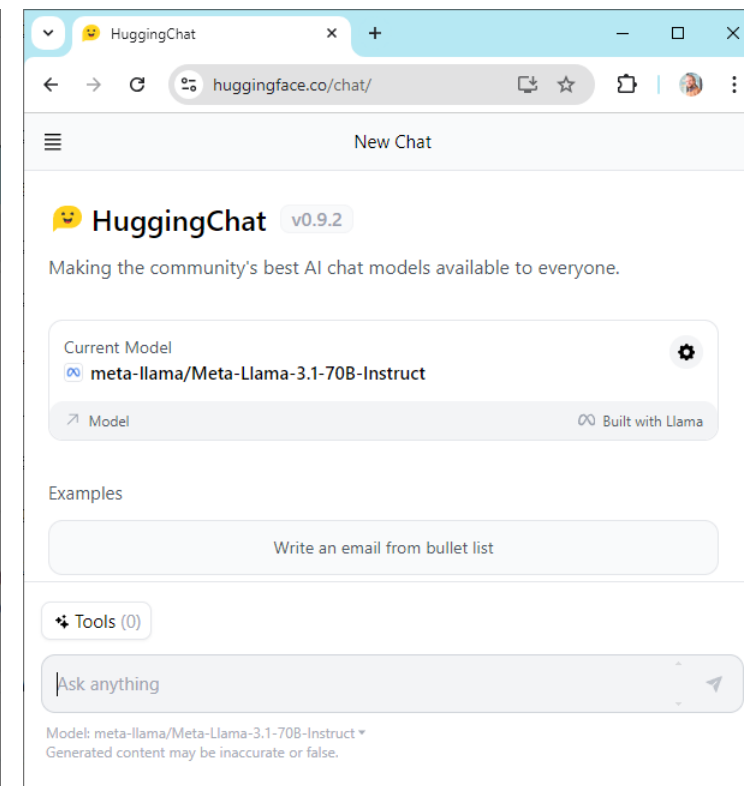
LLM Services – Chat Interface



<https://chatgpt.com/>

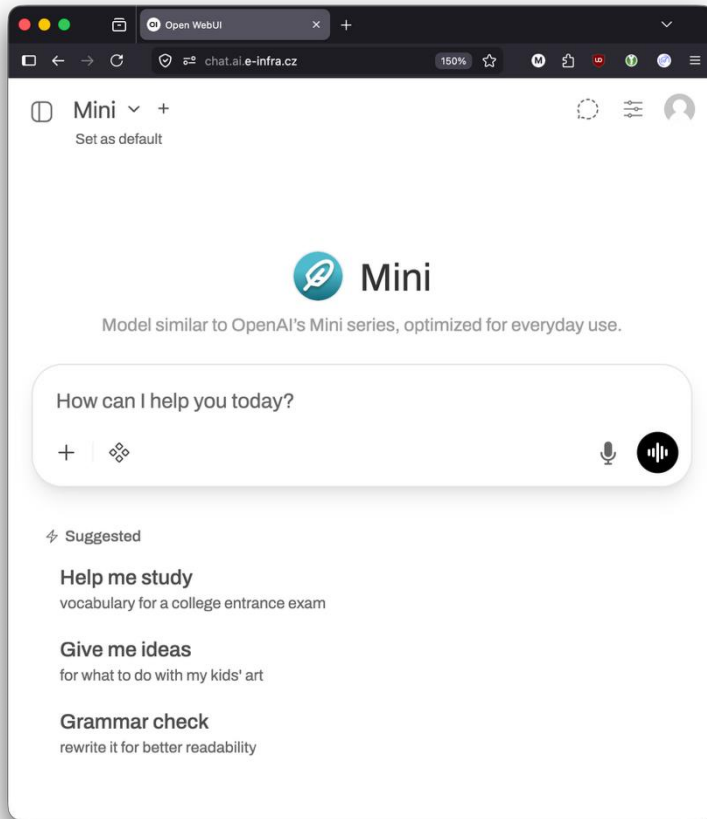


<https://claude.ai/>



<https://huggingface.co/chat/>

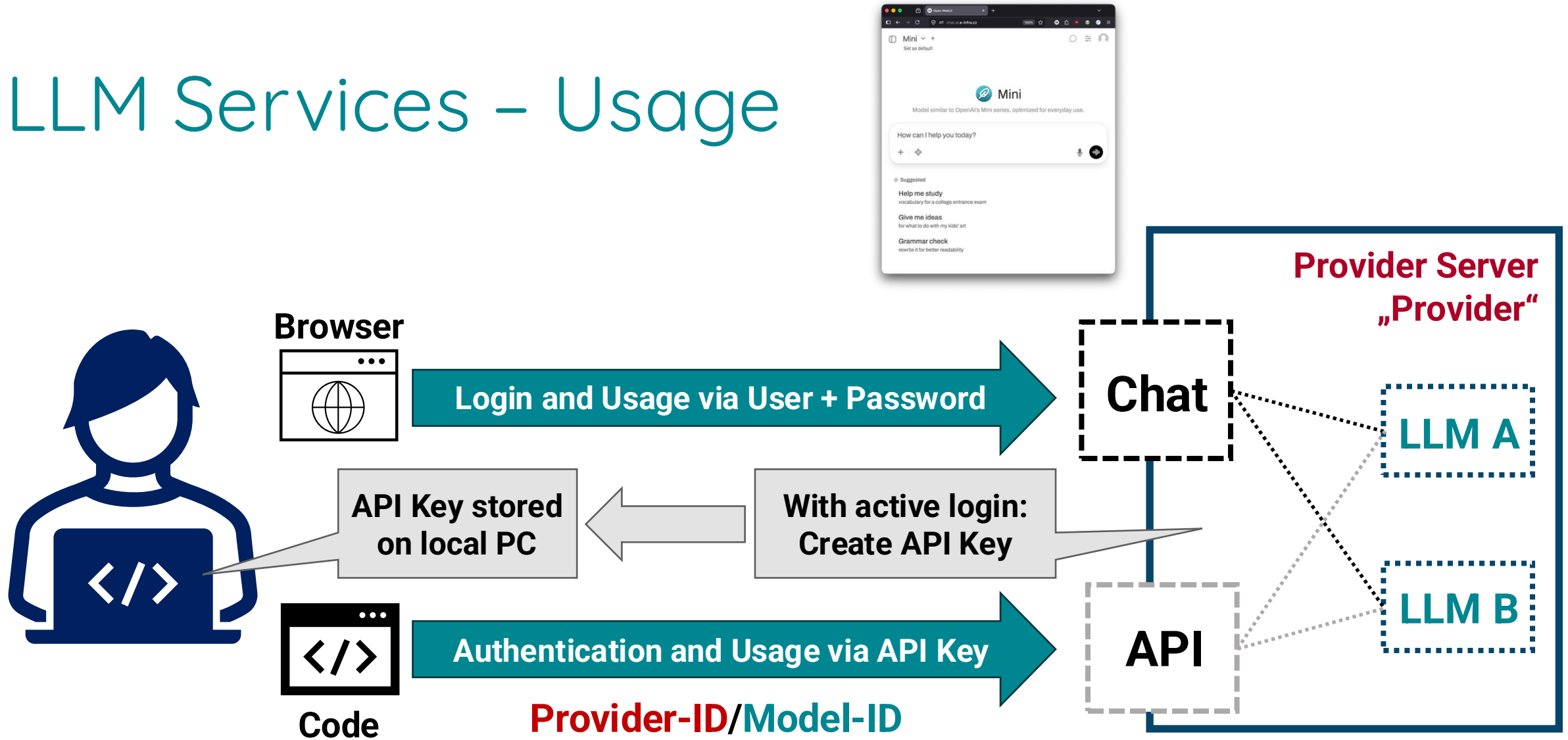
LLM Services – Chat Interface



<https://chat.ai.e-infra.cz/>

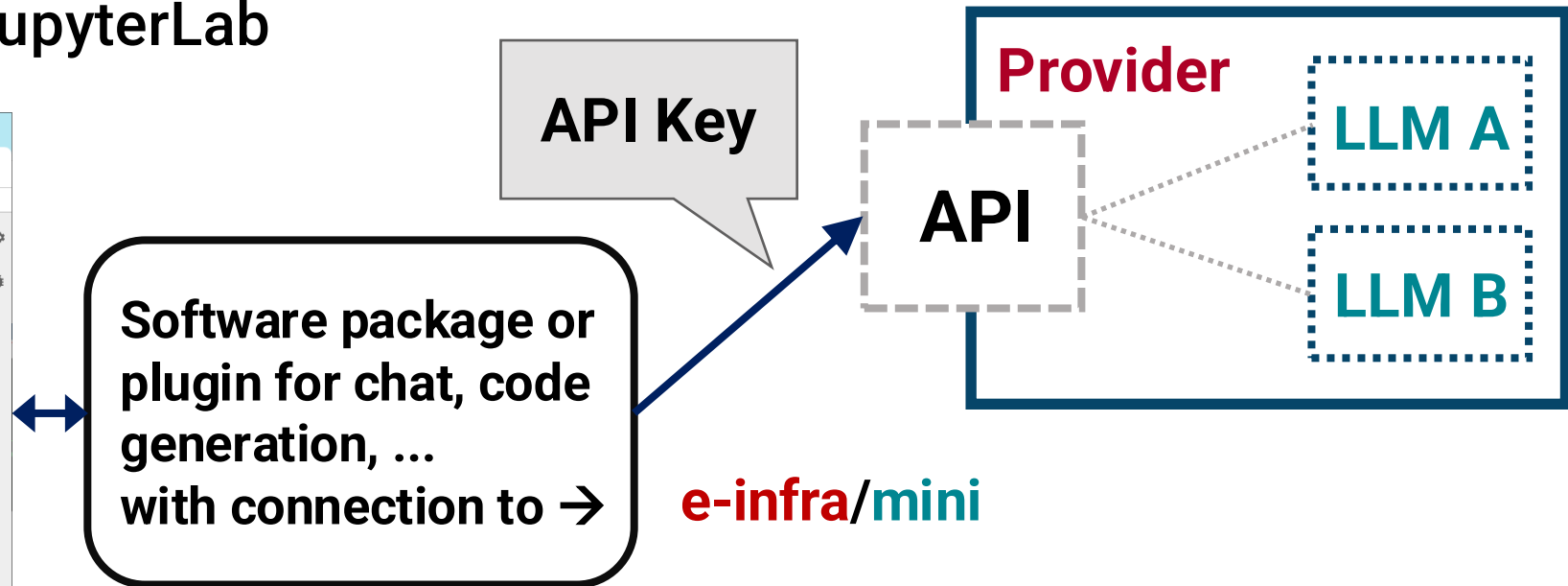
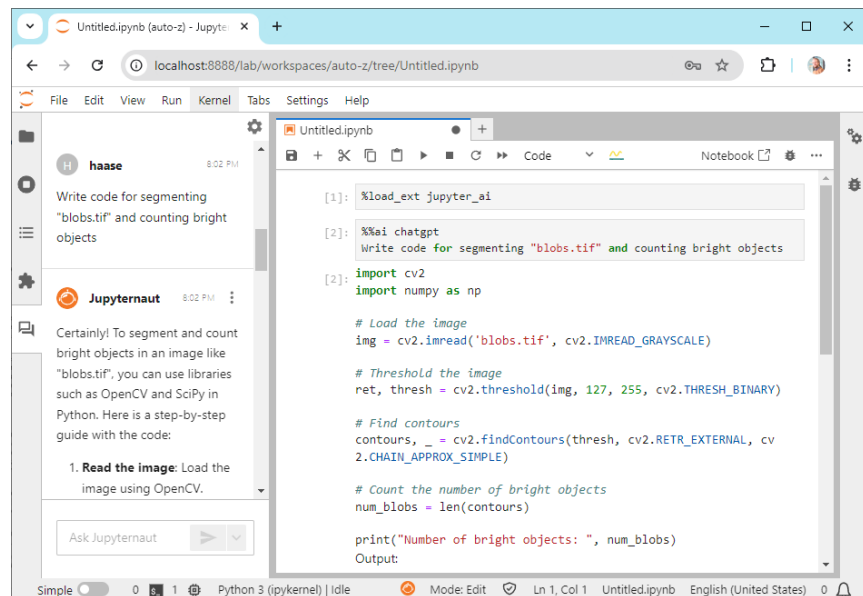
- Various providers with their own services and LLMs
- Proprietary to open source
- Paid to free of charge
- Server locations worldwide, in Europe, in Czech Republic
- Basic technical structure and concepts are mostly similar

LLM Services – Usage



LLM Services – AI Assistant

- Integration of LLM capabilities into existing tools and services, e.g., JupyterLab



AI Assistants – Usage

Prompt Engineering

- Prompt: Instruction to the AI assistant (LLM) to perform a task.
- Formulate as precisely as possible and provide context, use iterative modification

Restrictions and limitations

- Prompts and context are transferred to LLM (external LLM service provider) - observe data protection regulations!
- AI assistant is only as good as the LLM used (quality of responses, available functionality and languages, knowledge level, etc.)
- The context window (number of tokens) has limits and varies depending on the LLM

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Wrap Up

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