Inverse Problems and Machine Learning in Medical Physics

Tutorial: Introduction to Python

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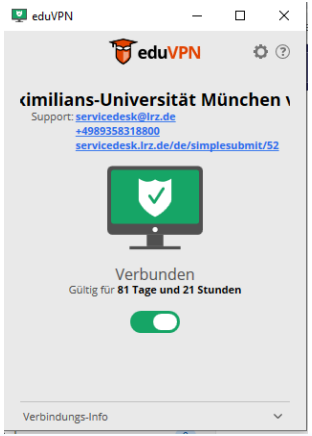
Getting started

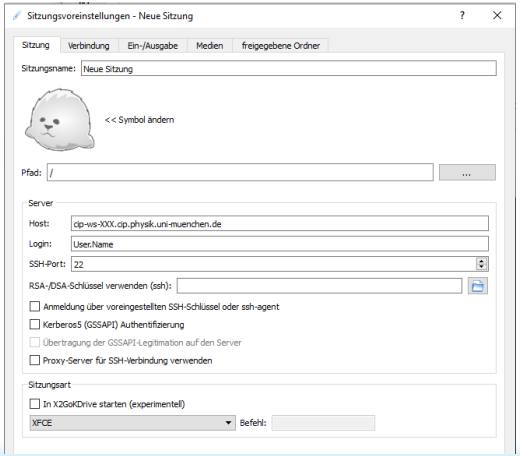
Computational Resources

- Use your own device (need python installation)

OR

- Connect to a Linux machine in the LMU physics CIP pool via X2Go
  - Connect to LRZ via VPN: Instructions
  - Set up remote connection to Linux machine: Instructions





Getting started

Set up your python environment

- We use python version 3.10
- Code will be presented as jupyter notebook
- Recommended: work with anaconda or virtual environment
  - Anaconda (Linux)

```
module load python
conda init bash ← (only once)
conda create -p /path/../my_env
conda activate /path/../my_env
```

  - venv (Linux)

```
module load python
python -m venv /path/../my_env
source path/../my_env/bin/activate
```

- Install required python packages (environment.yml, requirements.txt available on gitlab, see next slide, download/clone, navigate to folder)
  - Anaconda (Linux)

```
conda env update -p /path/../myenv --file environment.yml
```

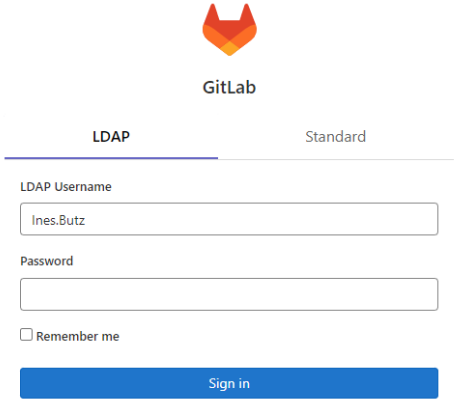
  - venv (Linux)

```
pip install -r requirements.txt
```

Getting started

GitLab repository

- Access the code of the tutorial at: https://gitlab.physik.uni-muenchen.de/Ines.Butz/tutorials-inverse-problems-and-machine-learning-in-medical-physics
- Log in with your LMU account **without** @physik.uni-muenchen.de or campus@lmu.de



- Set up a directory for the repository on your machine

```
mkdir /path/to/tutorial
```

- Within this directory, clone the repository

```
Git clone https://gitlab.physik.uni-muenchen.de/Ines.Butz/tutorials-inverse-problems-and-machine-learning-in-medical-physics.git
```

- Start jupyter

```
jupyter notebook
```