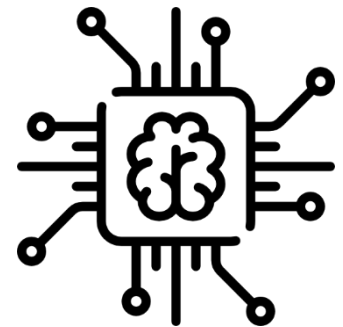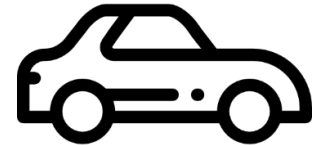**Supervised Learning: Classification**
Johannes Betz / Prof. Dr. Markus Lienkamp / Prof. Dr. Boris Lohmann

(Jan Cedric Mertens, M. Sc.)

Agenda

1. Excercise
   1. Task: Tools
   2. Task: Comparison of regression algorithms
   3. Task: Real world data analysis

Tools - Scikit – Learn – Example for a Python ML Library

- Actively developed machine learning library for python
- Extension to scipy
- Widely used and well documented algorithms for
  - Classification
  - Regression
  - Clustering
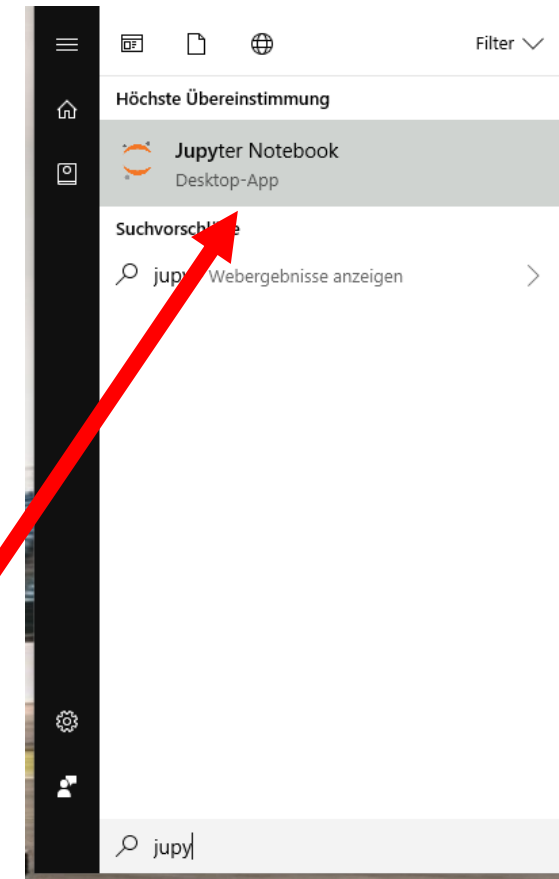 - Model selection
  - Data preprocessing
- http://scikit-learn.org/stable/documentation.html

Tools - Jupyter Notebook

- Lightweight tool to develop python code
- Creates so called ‚Notebooks', which store
  - Code
  - Results
  - Plots
  - Documentation in Markdown
- Ideal for small to medium sized projects, especially student thesis
- Can be downloaded and installed via the tutorial:
  - http://jupyter.org/install
- Docs are available here: https://jupyter-notebook.readthedocs.io/en/stable/
- **There will be example code for the homework available via jupyter notebooks at moodle!**
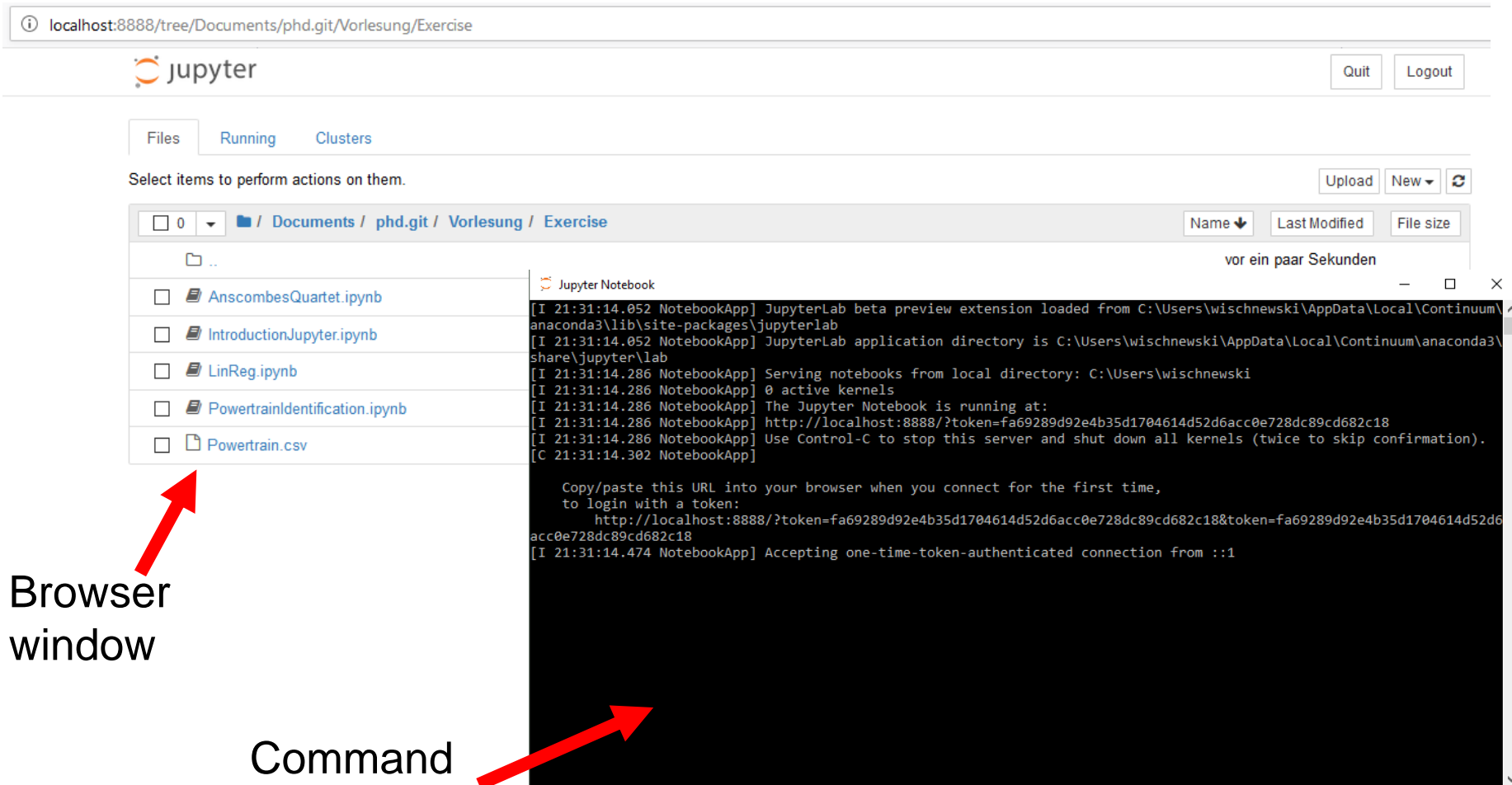
Tools - Use the jupyter notebooks

- Install Jupyter according to the tutorial http://jupyter.org/install using the **Anaconda Distribution for python3**!

- Download the Notebooks and Datasets from Moodle

- Create a new folder within your *Documents* folder

- Copy everything into this folder

- Start Jupyter Notebook by pressing the start button, type Jupyter and execute *Jupyter Notebook*

- This opens a **command prompt** and a **browser window**. Both have to stay open during your work!

Tools - Use the jupyter notebooks

Browser window

Command line prompt

Tools - Use the jupyter notebooks

- Open one of the notebooks by clicking on the name
- Run each cell seperatly by clicking into it and press *Strg+Enter* (Take care of the order! Things needed later have to be run first)
- Or run the whole notebook by clicking Kernel → Restart & Run all → Restart and Run all Cells

Excercises

- Explanation

9. Discussion/ Improvements/ Questions
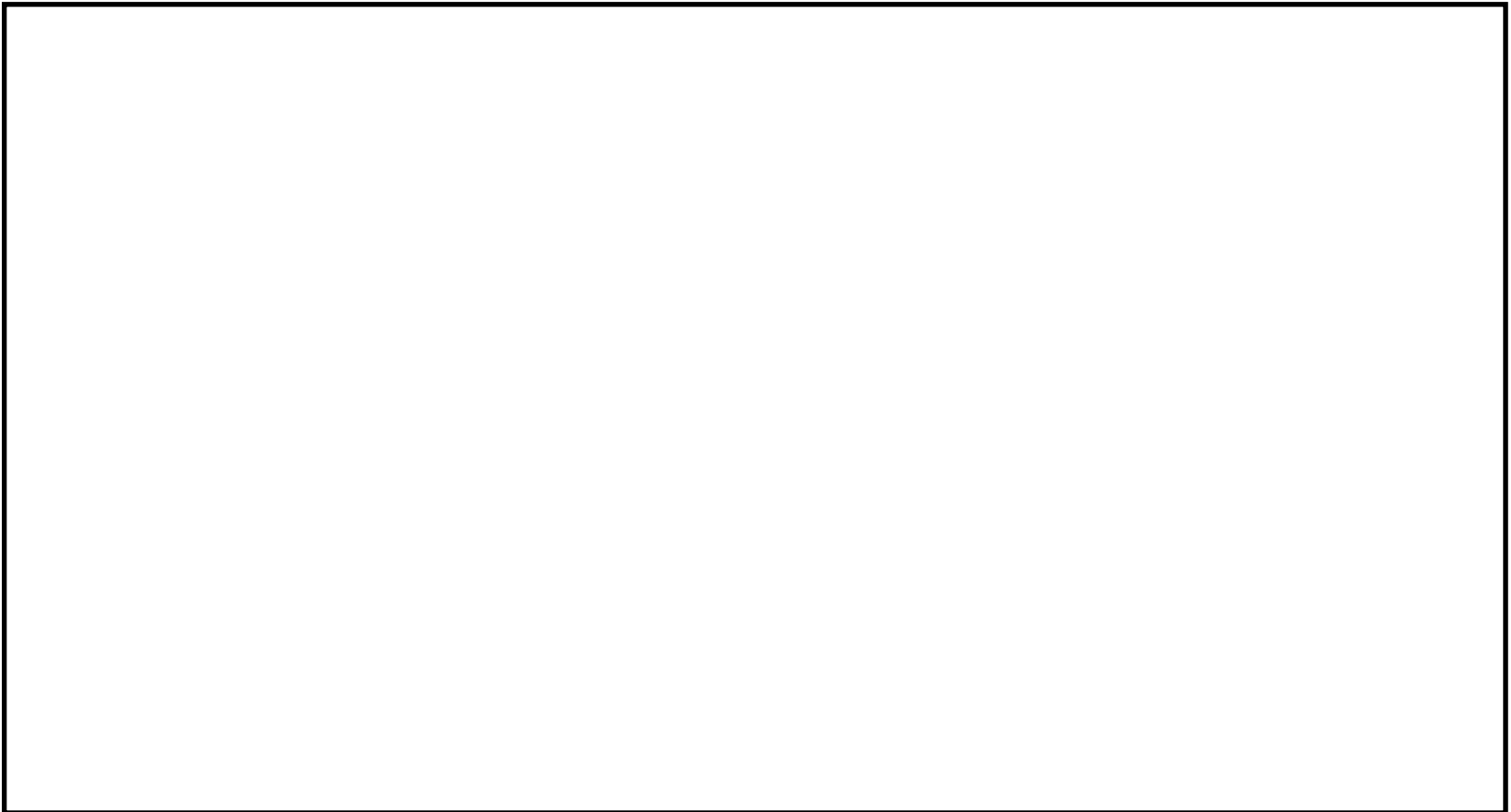
Evaluation

- In this lecture we are doing in regularly evaluation of each lecture

- We want **your** feedback for every **individual** lecture

- We evaluate the lecture each week

- We give feedback based on the evaluation the week after