



Installation of Anaconda

Anaconda is a software package that combines a full installation of python and essential machine learning packages on a variety of platforms. For a long time it was very costly to get and maintain a complete and functional installation of python. Incompatibilities were to be expected after one or two updates of python modules at the latest. Anaconda solves this problem and offers additional virtual installations. This allows different versions of python and other modules to be installed on the same computer without disturbing each other.

Download of Anaconda

Visit the page of anaconda at <https://docs.anaconda.com/anaconda/install/> (<https://docs.anaconda.com/anaconda/install/>) and look for your operating system. Select a version of anaconda with **python 3.9** and the GUI or command line installer. Follow the installation instruction.

Installation of git

Git is a version control system for software. The examples for the course are stored in this Git repository. From there we will clone the current version of the examples. To do this, install git in anaconda. Open a anaconda terminal (or some other system terminal) and run the following command:

```
conda install -c anaconda git
```

Check the installation

After installation of anaconda, please verify the installation following the recommended procedure here: <https://docs.anaconda.com/anaconda/install/verify-install/> (<https://docs.anaconda.com/anaconda/install/verify-install/>).

Clone the folder with the exercises

The best way for cloning is to use **git**. With git, a clone can be created that makes corrections and improvements easily accessible later. First install **git** in the Anaconda System (if not already existing).

```
conda install -c anaconda git
```

Next CD into a folder of your choice and then clone the complete git repository onto your computer into the folder **mlexercises**.

```
git clone https://github.com/ditomax/mlexercises.git mlexercises
```

Create the anaconda environment

To use Anaconda with python we create an environment called **ml**. To do this, we go to the directory with the application examples in the terminal and enter the following command in the anaconda terminal (anaconda prompt):

```
conda env create -f environment.yml
```

Next, activate the environment in the terminal with the following command:

```
conda activate ml
```

Update the exercises using git

The data and the notebooks of the exercise may change. To get up to date the following commands are sufficient, which are executed in the directory of the exercise with active conda environment **ml**:

```
git pull origin master  
conda activate ml  
conda env update --file environment.yml
```

NOTE: if you modify a notebook, git produces an error message at this point. In order to save your work, please **rename your modified file** to another name and the retry the update.

Check anaconda, python and jupyter notebooks

Go to the directory with the exercises, make sure that the correct environment is running (**ml**) and start jupyter with the command:

```
jupyter notebook
```

Next, a browser window should open and list all notebooks in the mlexercise folder. Open the notebook **00 Exercise Setup Anaconda**.

Execute the python code below.

In []:

```
import base64
base64_message = 'V2lsbGtvbW1lbiBiZWkgcHl0aG9uIGF1ZiBBbmFjb25kYSE='
base64_bytes = base64_message.encode('ascii')
message_bytes = base64.b64decode(base64_bytes)
message = message_bytes.decode('ascii')
print(message)
```

Run notebook in google colab

You can also run the exercises in google colab. You need to get a student account to do this.

 Open in Colab

(<https://colab.research.google.com/github/ditomax/mlexercises/blob/master/00%20Exercise%20Setup%20Analysis.ipynb>)

In []: