Neural networks - Lab setup

This document contains instructions for setting your laptop for the labs of the Neural Network course. These assume you're working under Ubuntu 22 - it should work up to some adjustments if you're under other Ubuntu versions / Linux architectures / Mac OS (if you work on Windows, check section 6). If you run into some problems, you can ask the assistant to help you during the Install Party.

If you don't want to install things by yourself, then you can just show up at the Install Party and you will be provided with help to install a virtual box which is already configured.

1 Prerequisites

Make sure that python 3 is installed (with Ubuntu 22 you should have python 3.10). Install the pip3 package manager:

```
sudo apt install python3-pip
```

and the virtual environment manager:

```
sudo apt install python3-venv
```

Create a project folder somewhere called e.g., "Neural networks labs". This is where you will put all the lab material.

2 Virtual environment

The first step is to create a *virtual environment*.[1] Go to your project folder, right click and "Open in Terminal".

- Create a virtual environment:

  ```
  python3 -m venv env
  ```

- Activate it:

  ```
  source env/bin/activate
  ```

- When you're done, you can close it with:

  ```
  deactivate
  ```

[1] Virtual environments allow you to manage separate package installations for different projects. When you switch projects, you can simply create a new virtual environment and not have to worry about breaking the packages installed in the other environments. More info at `https://packaging.python.org/en/latest/guides/installing-using-pip-and-virtual-environments/`

3 Jupyter notebook

Jupyter notebook is a convenient way to work with Python scripts in your web browser. Activate your virtual environment and install Jupyter with:

```
pip3 install notebook
```

Then you can simply launch the notebook browser (with your environment still activated) as follows:

```
jupyter notebook
```

4 Packages

We now install all the necessary packages, which are assembled in a file called "requirements_NLP.txt" or "requirements_SC.txt". Activate your virtual environment and run the following command:

```
pip3 install -r requirements_NLP.txt
```

(of course, replace "NLP" with "SC" if appropriate).

5 Crash test

You can check if everything went well as follows.

1. Go to your project repository, open a terminal and activate your virtual environment.
2. Start a jupyter notebook.
3. Open the provided test file "test_install_NLP.ipynb" (or "test_install_SC.ipynb").
4. Execute the cell.

If there are no error message, then you're good to go.

6 Notes for Windows users

If you're working on Windows 10 or 11, a simple solution consists in using the Ubuntu distribution for Windows, using the *Windows Sybsystem for Linux* (WSL). You can find more info online, e.g., here. If you run into some problems, you can also ask the assistant to help you during the Install Party.

If you create a folder "Neural Networks lab" e.g., on the desktop, then the full paths are the following:

- under windows: `C:\Users\<WindowsUserName>\Desktop\Neural Networks lab`
- under Ubuntu subsystem: `/mnt/c/Users/<WindowsUserName>/Desktop/Neural Networks lab`

where `<WindowsUserName>` is your user name on Windows. If you're working under the Ubuntu subsystem, you can therefore use this path to navigate to your project, handle the virtual environment and execute the scripts.