How to set up the computer exercises in xML

This tutorial will talk you through the steps to set up the programming-environment in order to work on the computer exercises in the xML lecture.
We will

- Step 1: Install `conda`, a package manager
- Step 2: Create a new virtual environment and install packages into it
- Step 3: Open the `xml_ce1.ipynb`

Note: This will use Windows 10. Fortunately, for Mac OS and Linux the steps are conceptually identically where you replace the `Anaconda Prompt` with your already built-in terminal.
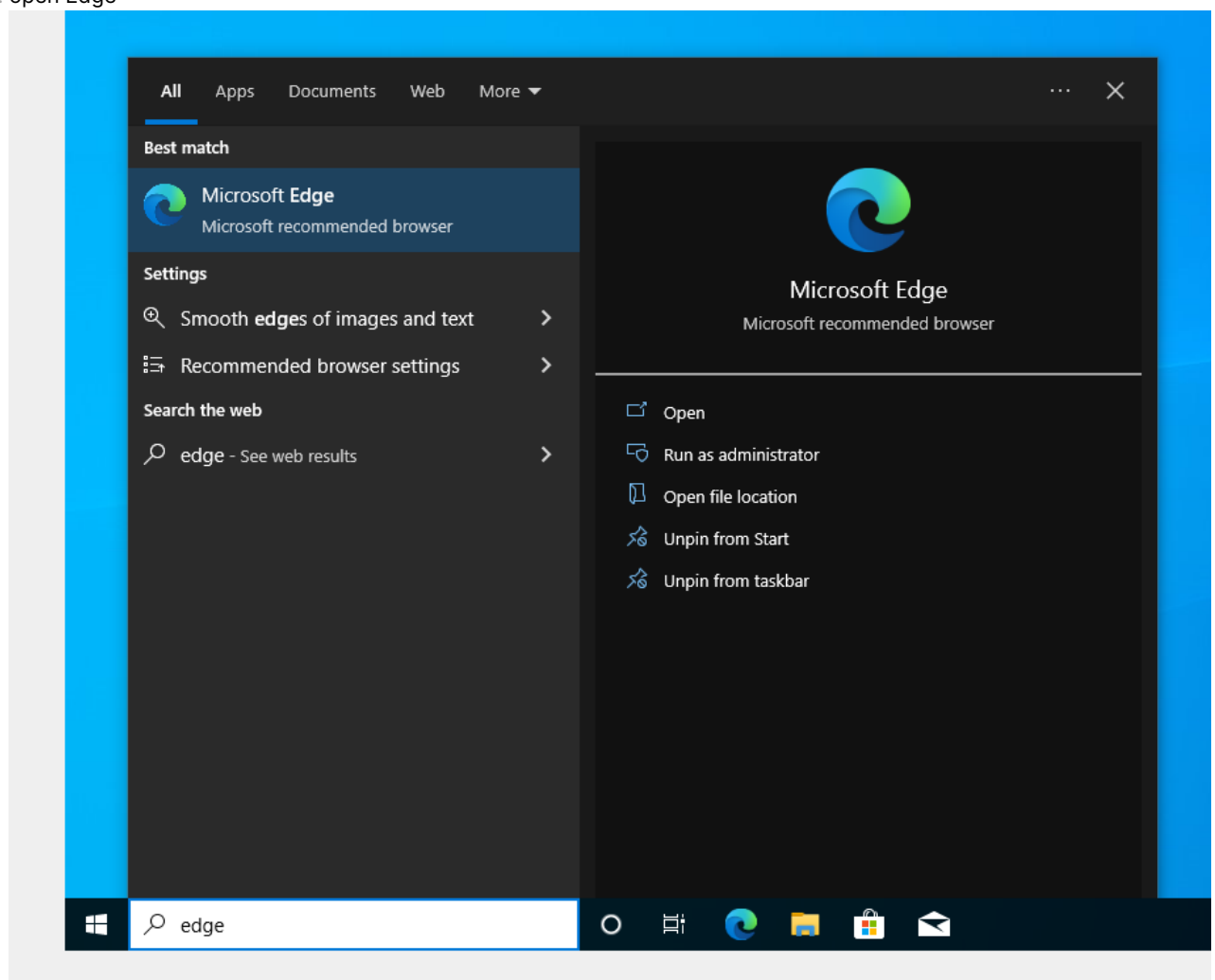

Let's start

Step 1: Installing Conda

How to - Installing conda

This will use Windows 10. Fortunately, for Mac OS and Linux the steps are conceptually identically where you replace the `Anaconda Prompt` with your already built in terminal. Also, `git` is pre-installed.


Let's start

1. open Edge

2. go to `https://docs.conda.io/en/latest/miniconda.html#windows-installers` and download the `Python 3.9` version for your OS.

Side-note:

Additional installation instructions and further information regarding `conda` is available here https://conda.io/projects/conda/en/latest/index.html
for all operating systems

- Mac OS
- Linux
- Windows

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3. Open the `.exe` and go through the wizard, leave everything as default
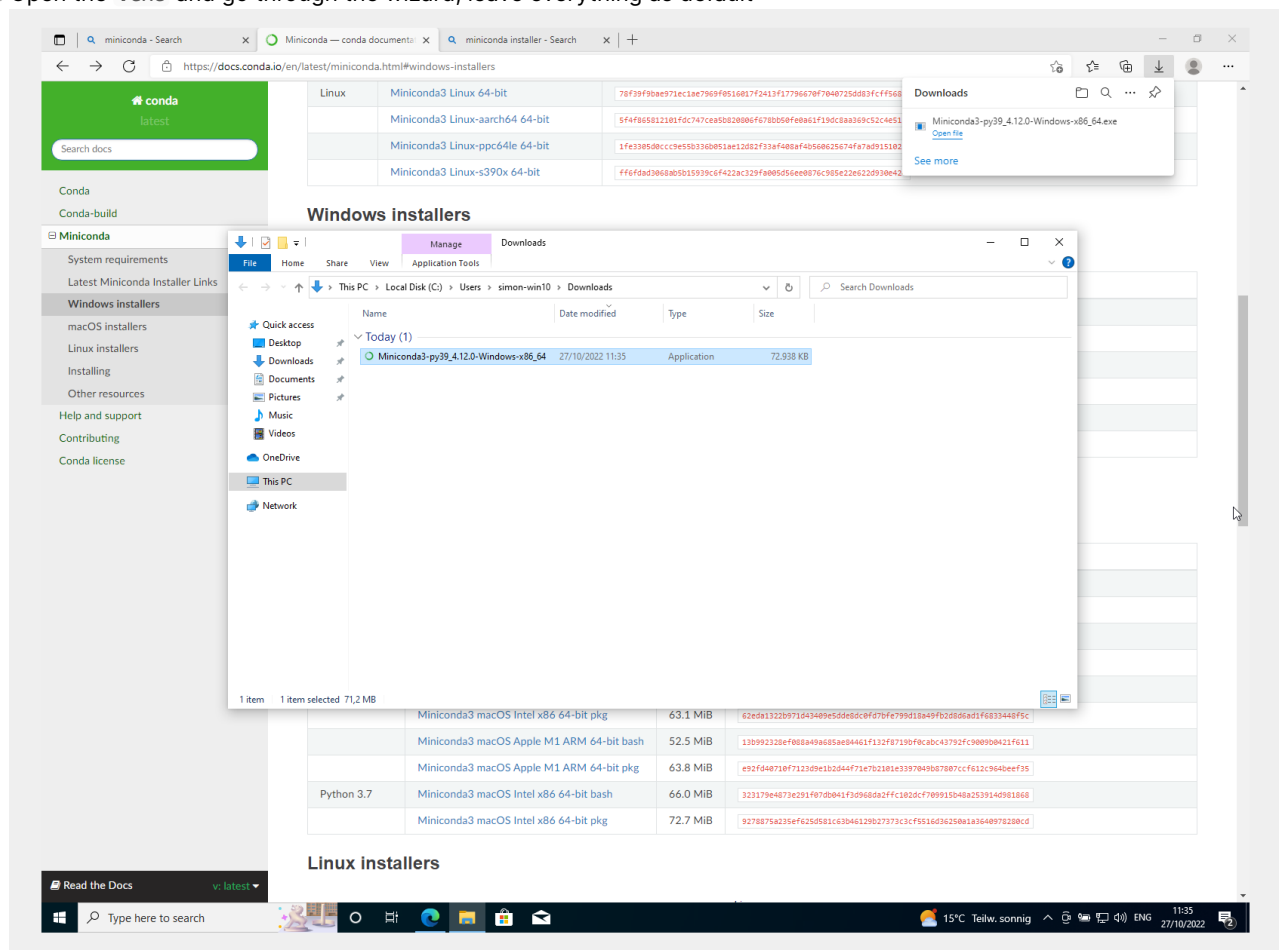
4. Type `Anaconda Prompt` in the windows search and open the application

You should have working conda installation now.

Step 2: Installing Packages

Windows

In Anaconda Prompt copy-paste the following

```
conda create -n xML python=3.9
conda activate xML

# mamba > conda
conda install mamba

# install packages from conda-forge
mamba install -c conda-forge jupyterlab matplotlib pandas scikit-learn scipy statsmodels seaborn patsy numpy
```

```
shap alibi "tokenizers>=0.11.1,!=0.11.3,<0.13"

# some are not available; for those use pip
pip install imodels tqdm PyALE lime

# downgrade numpy
# because tensorflow 2.5 requires numpy <= 1.23
pip install numpy==1.23

# now executing `conda env list` you should see
# the environment called `xML`
```

MacOS (M1)

In built-in terminal (e.g. zsh) copy-paste the following

```
# create a new environment with intel packages.
CONDA_SUBDIR=osx-64 conda create -n xML python=3.9
conda activate xML
python -c "import platform;print(platform.machine())"
# ensure that installed packages use rosetta
conda config --env --set subdir osx-64

# mamba > conda
conda install mamba

# install packages from conda-forge
mamba install -c conda-forge jupyterlab matplotlib pandas scikit-learn scipy statsmodels seaborn patsy numpy
shap alibi "tokenizers>=0.11.1,!=0.11.3,<0.13" tensorflow=2.4

# some are not available; for those use pip
pip install imodels tqdm PyALE lime

# now executing `conda env list` you should see
# the environment called `xML`
```

If you have an Intel-based Mac. Try to use the same approach, i believe it should still work fine, but i can not test it myself. Let me know if it works though :)

Linux

Currently untested. Let me know if it works.

In built-in terminal copy-paste the following

```
conda create -n xML python=3.9
conda activate xML

# mamba > conda
conda install mamba

# install packages from conda-forge
mamba install -c conda-forge jupyterlab matplotlib pandas scikit-learn scipy statsmodels seaborn patsy numpy
shap alibi "tokenizers>=0.11.1,!=0.11.3,<0.13"

# some are not available; for those use pip
pip install imodels tqdm PyALE lime

# downgrade numpy
pip install numpy==1.23

# now executing `conda env list` you should see
# the environment called `xML`
```
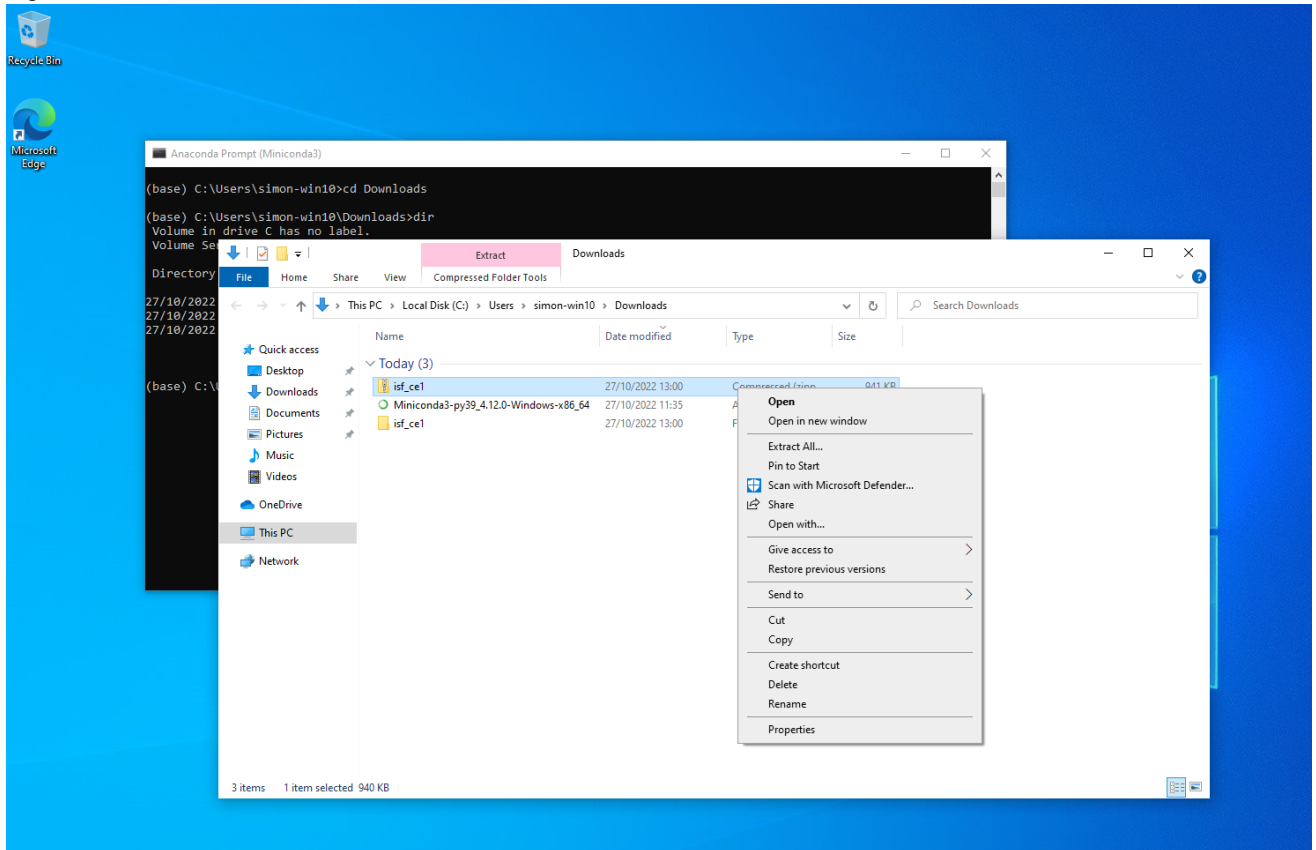
Step 3: Opening the exercise

1. Using e.g. `Edge` download the `xml_ce1.zip` into the `Downloads` directory.

2. Right-click the `isf_ce1.zip` and `Extract All...`

3. In `Anaconda Prompt` type `cd Downloads/xml_ce1` to change into the directory
4. In `Anaconda Prompt` type `conda activate xML`
5. In `Anaconda Prompt` type `jupyter lab`

A browser tab will open. Click on the `xml_ce1.ipynb` to open it.
■

This procedure has been tested on a vanilla install of Windows 10 Pro version H2.
This is the newest version as of 27.10.22