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Exercise 0: Getting Started

due **before** yyyy-mm-dd

Python will be the language we use for the exercises (version ≥ 3.11), primarily because Python has an extensive and lively ecosystem of libraries for data science, machine learning and computer vision. This getting started page contains some recommendation on how to set up your programming environment. This page merely severs as an example, and it is **not** necessary to follow the instructions here step by step (i.e. if you are already an expert, feel free to set up your environment your own way).
We will use extensively these libraries:

- `NumPy`, and `SciPy` for matrix manipulation
- `OpenCV` for image processing
- `PyTorch` for deep learning (later)

Do not worry if you are not familiar with these libraries (or with Python in general). Working through the exercises will help you to master these tools. If you do not know what a function does, simply search online for its documentation. There are also plenty of good tutorials. For example, here is a short introduction to `NumPy`: `http://cs231n.github.io/python-numpy-tutorial/`.
We recommend using Anaconda to manage Python libraries. Download it here and follow the instructions: `https://www.anaconda.com/distribution/`. Jupyter Notebook is already included in Anaconda distribution. If you choose not to use Anaconda, follow the instruction here to install Jupyter Notebook `https://jupyter.org/install`.
If you have not already installed OpenCV, we recommend you use the pre-built package for Python, instead of compiling it from source. There are several versions available, see below for an example.
We recommend using Linux (Ubuntu is a good first choice if you're getting started with Linux), but other platforms are also supported by Anaconda.
In a Linux command line, you can do all necessary setup using the following commands:

```
wget https://repo.anaconda.com/miniconda/Miniconda3-latest-Linux-x86_64.sh
bash ./Miniconda3-latest-Linux-x86_64.sh -b
eval "$($HOME/miniconda3/bin/conda shell.bash hook)"

conda create --yes --name cv_exercise python=3.11 numpy scipy scikit-image scikit-learn imageio matplotlib jupyter notebook
conda activate cv_exercise
conda install --yes opencv3 -c menpo

# Now dowload and extract the exercise1.zip file somewhere
# Navigate to that folder and then start the Jupyter Notebook server as follows:
jupyter notebook
```

It can be a good idea to collaborate with your fellow group members to make sure that everyone manages to set up their environment. Use the Moodle forum created for this purpose.

The following table contains the versions of the dependencies we used to develop the exercises. If your environment does not work as expected, cross-check the versions of your installed packages with the table below.

Dependency	**Version**
python	3.11
numpy	1.24.2
scipy	1.10.1
scikit-image	0.20.0
scikit-learn	1.2.2
imageio	2.27.0
matplotlib	3.7.1
jupyter	1.0.0
notebook	6.5.4
opencv-python	4.7.0.72
torch	2.0.0
torchvision	0.15.1
tensorboard	2.12.2