COMP9517: Computer Vision

2024 T3 Lab Preparations

Python

As mentioned in the first lecture, **we assume you are familiar with programming in Python** or are willing to learn it independently. You do not need to be an expert, as you will further develop your skills during the course, but you should at least know the basics. If you do not yet know Python, we assume you are familiar with at least one other programming language such as C, in which case it should be relatively easy to learn Python.

To **learn or brush up your Python skills**, see the following free online resources. Especially if you already know C or similar programming languages, there is no need to go through all the linked resources in detail. Just quickly learn the syntax and the main features of the Python programming language. The rest will follow as you go.

The **minimum version to be used is Python 3** but you can also use Python 4 and are encouraged to do so. In the labs this is collectively referred to as Python 3+.

Python For Beginners
https://www.python.org/about/gettingstarted/

W3Schools Python Tutorial
https://www.w3schools.com/python/

LearnPython.Org
https://www.learnpython.org/

Harvard's Introduction to Programming with Python
https://cs50.harvard.edu/python/

Google's Python Class
https://developers.google.com/edu/python/

FreeCodeCamp's Python in 4 Hours Full Course on YouTube (40M+ Views)
https://www.youtube.com/watch?v=rfscVS0vtbw

Jupyter

In all labs in this course, **you are required to submit your code in the form of a Jupyter Notebook** (.ipynb file). Submissions in any other form will not be marked.

For each lab, **make sure your notebook includes not only your code, but also all output of your code, and answers to any questions** (in the form of comments). In other words, all cells in your notebook must have been executed so that the marker does not have to execute them

again to see the results. Incomplete notebooks will result in a deduction of points.

The **easiest way to install Python and Jupyter Notebook in one go is via Anaconda**. See the following free online resources for further information.

Anaconda
https://www.anaconda.com/

Install Python and Jupyter Notebook With Anaconda
https://www.youtube.com/watch?v=WUeBzT43JyY

Install Jupyter Notebook Without Anaconda
https://www.youtube.com/watch?v=9tPS-7TWjq0

OpenCV

In this course, **we use OpenCV for implementing and testing computer vision algorithms**. OpenCV is a library of programming functions mainly for computer vision. The library is cross-platform and licensed as free and open-source software under Apache License 2. It also supports training and execution of machine/deep learning models. Originally written in C, with new algorithms developed in C++, it has wrappers for languages such as Python and Java. As stated above, we will focus on programming in Python in this course. See the links below for OpenCV tutorials and documentation.

The **minimum version to be used is OpenCV 3** but you can also use OpenCV 4 and are encouraged to do so. In the labs this is collectively referred to as OpenCV 3+.

About OpenCV
https://opencv.org/about/

OpenCV Tutorials
https://docs.opencv.org/4.x/d9/df8/tutorial_root.html

OpenCV Installation Tutorials
https://docs.opencv.org/4.x/df/d65/tutorial_table_of_content_introduction.html

OpenCV Wiki
https://github.com/opencv/opencv/wiki

OpenCV Documentation
https://docs.opencv.org/