Python Course

Exercises #1

Purpose

Install and test the development environment that you will use during the course. Use the linked websites and Developer Command Prompt to execute the instructions. You will perform tests after each installation step to verify if the item has been correctly installed. It is extremely important to install Python 3.8 and OpenCV 3.4 to ensure that all exercises and assignments codes will work correctly on your computer.

Prerequisites

Install Python

All the material was prepared using Python 3.8. Any version greater than 3.6 should work.

- Download Python
- Run the installer and tick the **“Add Python to PATH”** option.
- Install

Verify the installation by opening CMD and running ‘python --version’. This should print “Python 3.8.5”

Install Git

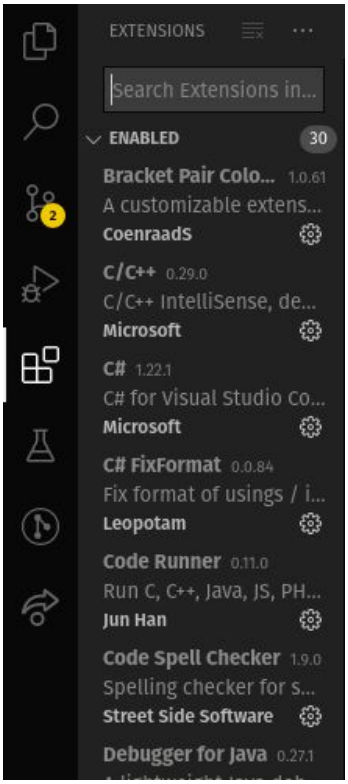
In order to download and upload your changes to GitHub, you need a local installation of Git on your system. Download and install Git from this link.

Verify your installation by opening the command line (CMD) and running **‘git --version’.** In my case, this prints out **‘git version 2.25.1’.** It’s OK if your version is not the same.

Install VS Code and Extension

You need a code editor to edit and run the code. My personal preference is VS Code, but there are other alternatives like PyCharm and Visual Studio.

Download and install VS Code. We'll use an extension called Live Share to edit and run code simultaneously. Also, install the Python extension for VS Code. You can access the extensions tab inside VS Code.



The extension tab

Install Packages with Pip

In order to install packages with pip, use the "pip install {package}" command. If that doesn't work, try "python -m pip install {package}".

- pip install numpy
- pip install imutils
- pip install cython
- pip install pillow
- pip install matplotlib
- pip install opencv-python

Cloning The Repository

In order to have a local copy of the project on your system, you have to clone it from Github. If you directly clone my repository, **you won't be able to directly save your changes on Github.**

Instead, fork my repository by clicking the "Fork" button on the top right. This will create a copy of my repository in your account. Then clone your own repository yo your local machine. Doing so lets you directly push to your copy of the repository.

Running Scripts

You can run a Python file (.py) by running **'python {fileName}'**. The current directory has to be the folder that contains the .py file. On some systems, you might have to specify the version of Python as **'python3 {fileName}'.**

Test Installations

Test all the dependencies by running the 'testDependencies.py' script.

- python testDependencies.py

This has to print out the versions of the required dependencies. Your versions might be different than mine. In my case it prints out:

1.18.3

0.5.3

7.0.0

3.2.1

4.2.0

Run The Examples

Run all the scripts except "**ex_101.py**". Examine the code that provides the functionality.

Solve Exercise 101

Complete the “ex_101.py” script so that the webcam video is displayed in grayscale. The program should quit when the user hits “q”. The video should also be saved to the outputs folder as **‘grayscale.mov’**.

Hint: Look at the **‘recordVideo.py’** and **‘convertImage.py’** files for clues.