Lab 1 – Registration and Introduction to the Lab

Goal: Opening of computer accounts, establishing house rules and introduction to the software used in the lab.

Introduction

Lab Software

Welcome to the image processing lab. In this lab you will implement image processing techniques that you will learn during the frontal course. Work in the lab will be carried out in Python 3.7.

Work in the lab is carried out in pairs, for each pair a private user account will be opened.

Due to time constraints, the lab will not include intensive Python coding, as a rule, py-files containing demos will be supplied where possible. However, knowledge of basic Python operations is required.

House Rules

No food or beverages are allowed in the lab.

Do not insert Flash drives, CD's or any other media into the computers.

Use of the Internet connectivity is restricted to web-based mail accounts for data transfer and the course website.

Mischievous conduct will not be tolerated.

No software is to be installed on the Lab's computers.

Work Submission and grading

Preliminary reports are to be submitted in Course site in **Moodle** until the corresponding lab.

Final reports are to be submitted, **electronically**, up to **two weeks** after the lab in **PDF** format and should include the python code. You can save your Jupyter notebook as PDF file and submit it in your final report.

Late submission will be awarded with penalty points.

Grading will be given according to completeness, clarity and quality of explanations. Since .py and .ipynb -files will be supplied, higher emphasis will be given to understanding of the demonstrated principles.

- **Preliminary Work**

    1. Make sure you are familiar with basic Python operations and the image processing toolbox, if not use online help of numpy and matplotlib to familiarize yourself [1, 2]. You can also access Help section using Jupyter Notebook.

    2. Find a bmp image that will be used in the lab. Send the image to your university (or other) web mail that you can access from the lab.

- **Description of the experiment**

    1. Open a new folder (lab1) under your home folder.

    2. Download lab1 archive from the course site and unzip it to your folder.

    3. Open a command window (cmd) and navigate to your folder from the command window.

    4. We use Anaconda for handling the python environment so we need to activate the right environment, type in your command window: *conda activate iplab_env*

    5. Start your Jupyter notebook with the command: *jupyter notebook.*

    6. This will launch a python notebook in the default web browser, with your folder files. Select the "Lab1.ipynb" file.

    7. Follow the instruction in Lab1 notebook.

    8. When you finish with the notebook save all your changes and outputs and launch Pychram.

        (You can save your output by pressing File->Download as…->html)

    9. Open the folder "lab1_pycharm" in Pycharm as a project.

    10. Run the **ImgLoad.py** file. Notice the data types used.

    11. Save the image you sent to your mailbox in the same folder.

    12. Edit the **ImgLoad.py** file: change the py-file to load your image.

    13. Run the image processing demos: demo1.py and demo2.py, demo3.py

    Edit demos to load your image and try to modify alpha parameter in demo2.py.

    (you don't need to submit the modified demos files and ImgLoad.py)

- **References**

    1. https://matplotlib.org/index.html
    2. https://docs.scipy.org/doc/numpy/user/quickstart.html