Department of Informatics

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A2023 Image Processing

Assignment 1

Deadline: Tuesday, October 3, 2023 (end of day)

Objective

In this assignment, you will create a small project that can load an image, apply a simple image transformation, and save it back as a new image.

Task: Flipping Images

(a) Create a private git repository for your project on GitHub.com. Students can get a free Pro account via https://education.github.com/students. Invite us to our GitHub.com repository. Our GitHub e-mail addresses are anna.scius-bertrand@unifr.ch and rolf.ingold@unifr.ch.

(b) Create a program that can load and display an image files (in Python see pillow package).

(c) Complete your program with a function that can flip an image horizontally and/or vertically. Write your own algorithm (without using a library). Test your algorithm on an image of your choice or one of the on ILIAS provided images: https://ilias.unibe.ch/goto_ilias3_unibe_fold_2851666.html. Save the result.

(d) Submit on ILIAS these three files:

- The original image where you applied your flip algorithm,
- One flip image horizontally and vertically,
- A text file with your name, surname, the link to you GitHub, a brief description of your flipping algorithm.

Please take care of these conditions, otherwise your exercise may not be read and considered as failed. If you have any questions you can contact me by email.

Resources

- Tutorial "Create a Reproducible Research Environment": https://github.com/lvoegtlin/ICDAR_CRRE_Tutorial

Especially the first two parts about Git and Conda environments are helpful:
https://github.com/lvoegtlin/ICDAR_CRRE_Tutorial/tree/master/Part_1
https://github.com/lvoegtlin/ICDAR_CRRE_Tutorial/tree/master/Part_2

- pillow tutorial – Working with images in Python:
  https://pillow.readthedocs.io/en/stable/handbook/tutorial.html
- NumPy quickstart guide – Working with matrices in Python:
  https://numpy.org/doc/stable/user/quickstart.html