Department of Informatics

Professor: R. Ingold
Teaching Assistants: A. Scius-Bertrand

Assignment 1

Deadline: Tuesday, February 28, 2023 (end of day)

Objective

In this assignments, you will create a small Python project that can load an image, apply certain image transformations, and save it back as an image.

Task: Up-scaling an Image

(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

(b) Create a Python program that can load and save image files (see pillow package). (If you want to use an IDE, we recommend PyCharm. Students can get PyCharm Professional for free via https://www.jetbrains.com/community/education)

(c) Add a up-scaling functionality to your Python program. Create a function that can up-scale an image without using a package (define your own implementation). Your algorithm should increase the image's height and width by factor 2 e.g., a 300x450 image becomes a 600x900 image. Apply your algorithm to the images provided on ILIAS: https://ilias.unibe.ch/goto_ilias3_unibe_fold_2680142.html

(d) Invite me to our GitHub.com repository. My GitHub e-mail address are anna.scius-bertrand@unifr.ch.

(e) Submit the link to your GitHub repo, a brief description of your up-scaling algorithm, and the up-scale images via ILIAS: https://ilias.unibe.ch/goto_ilias3_unibe_exc_2680095.html

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