

# Deep Learning and Computer Vision

## Regularization, Data augmentation and transfer learning

The aim of this exercise is to code a CNN that provides the best results you can on a classification task. The idea is to test the different tools studied during the lecture and to measure their impact on the provided dataset.

This dataset is constituted by 10 categories of flowers.

It contains 800 color images: 600 (60 per category) are in the training set and 200 (20 per category) in the validation set. The train/validation split is provided.

The images have different sizes, so it is required to resize them to 128x128.

For this exercise, you have to:

- Work only with images whose sizes are 128x128.
- Train your network only on the training set (not on the validation set).
- Cite the references of any code found online and be able to explain it.

You have to improve the performance of the provided network step by step.

You have to **submit a report** for this exercise (groups from 1 to 3 students).

The deadline is **March 28<sup>th</sup>** for the report.

Each time you have an idea to improve the results, you have to create a new section in your report in which you:

- Give some details about your idea.
- Explain why do you think it could be good to test this idea.
- Provide the code for this idea.
- Provide the results.

At least, the next steps have to be explored (maybe not in this order):

- Your own architecture trained from scratch.
- Some regularization tools.
- Data augmentation.
- Fine tuning a pre-trained CNN.