Research - A Gentle Introduction to Image Analysis with CNNs in Python

Convolutional Neural Networks (CNNs) are used in a wide variety of applications such as image classification, image segmentation, object detection, and image generation (with GAN). In this course, you will learn how a CNN works and how it can be applied in practice in image classification and image segmentation by using Python programming.

Objectives

Acquire the key competencies that are needed to apply CNN methods to do image classification and image segmentation

Target audience

Any PhD students, post-docs, researchers of UNIL who would like to use CNNs in their research

Content

At the end of the course, the participants are expected to:

- Understand how CNNs work
- Be able to use CNNs to do image classification and image segmentation in Python

Length

1 day

Organization

Once per year

Location

In presential

Practicals

The practicals can be done on the UNIL JupyterLab (available only for this course for one week after the course), on your laptop (but you will need to install the required libraries), or on the UNIL cluster called Curnagl. See the [installation page](#) for more information.

Prerequisites

- Basic knowledge of deep learning: we assume that you know how simple feedforward neural networks work, including how to interpret accuracy and loss curves (for example by attending the course "A Gentle Introduction to Deep Learning with Python and R").
- Be confortable with Python programming

IMPORTANT: To do the practicals
- On UNIL JupyterLab: You need to be able to access the eduroam wifi with your UNIL account or via the UNIL VPN
- On your laptop: No account requirement
- On Curnagl: Please register using your UNIL email address
- Note that in all cases you need to bring your own laptop

[Course dates and registration](#)