

Lab 1 - Computer Vision

Lab 1 will be held on the mornings of **Wednesday 2024/11/06** and **Friday 2024/11/08**. Roman is the TA in charge.

In this lab, we will cover the basics of **image and video manipulation** in Python. We will also discuss what are *features* in the context of Machine Learning, and how to **extract features from image data**.

The lab will have the following structure:

1. A theoretical introduction to **Digital Imaging** and **Computer Vision**.
2. A practical introduction to image and video manipulation in Python.
3. Exercise time for the students, with TA support.
4. A practical introduction to facial feature extraction in the context of emotion recognition.
5. Exercise time for the students, with TA support.

Prerequisites

You have a fully working installation of all the needed dependencies. You can run the Assignment 0 notebook without errors.

If you are new to Python, NumPy, PyPlot, or Pandas, you have worked through the Crash Course materials. You have asked questions to the TAs to resolve your doubts.

Intended Learning Outcomes

By the end of the lab session, students should be able to use Python libraries to...

1. Process image and video data.
 - Data from files: [ImageIO](#).
 - Data from the webcam: [OpenCV](#).
2. Extract face features from images and videos: [Py-Feat](#).

Book a Lab Session

There will be *up to* four sessions for Lab 1. You need to sign up ahead of time in Studium. We will initially open two sessions for registration, and will open more sessions if and when needed.

FAQ

I have a question! Who do I ask it to?

During the lab sessions, Roman will be in the room to answer any questions. The exercise time is the perfect opportunity for this.

Outside the lab sessions, we ask you to please ask any questions through the Studium Q&A pages. Often many students have similar questions, so it will save a lot of time for everybody if you ask there. There are no dumb questions!

Setup questions should be asked in the Python Q&A session!

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Can we work in a group?

The materials are intended for individual work and we encourage to at least give it a try by yourself, but you can collaborate with each other.

Are the lab sessions mandatory?

No, they are optional. However, each assignment is based on the materials taught in one lab session, and all skills will be relevant for the final project. Therefore, we highly recommend you attend a session.

Are the labs graded?

No, the lab sessions are not graded.

I missed my session or I didn't have time to finish all the work. Can I come to another session?

The people registered for each session will have priority, but assuming there is space for everybody you are welcome to join more than one session.

Will you publish solutions to the exercises?

Yes, we will publish solutions for all the exercises after the last session (on Friday 2024/11/08).

Lab Teacher



This lab is taught by Roman Denkin, a PhD student in the VI3/Image Analysis division of Department of IT

