Tutorials: Introduction, Biometric Pipeline
Image Based Biometry

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Agenda

- Introduction
- Tutorials
- Scientific Assignments
- Previous Achievements

Prerequisites

We are going to use:

- mostly Python (with a bunch of libraries and frameworks).

You should already be familiar with:

- basics of computer vision,
- basics of scientific writing.

Introduction

This is primarily research-oriented course, meaning:

- expect a lot of figuring out how something works and trying to re-implement it,
- expect to run and rerun experiments many many times,
- expect to spend quite some time debugging,
- expect to "waste" time developing things that just don't work and never will – but that is OK!

Lab Sessions – The Plan

Classroom work:

- $\frac{1}{3}$ lectures and exam,
- $\frac{2}{3}$ lab sessions and seminars:
  - $\frac{2}{3}$ tutorials (assignments, figuring out things):
  - $\frac{1}{3}$ seminars (reading and discussing papers).

Lab Sessions – In Practice

Classroom work:

- You are going to get materials on a weekly basis to help you understand general ideas and help you with your assignments. It will be your task to transfer this to a specific solutions and derive new conclusions.
- All the materials are going to be provided through `ucilnica.fri.uni-lj.si`.

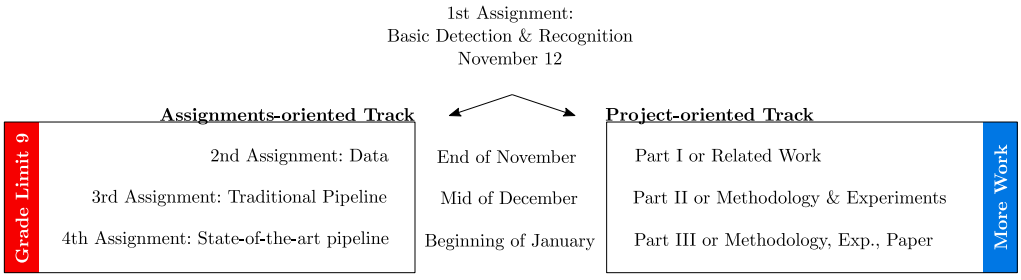
Lab Sessions – Contents

This is a research oriented course. What "research" means?
The contents (not in this order):

- Biometric pipeline, modalities, performance measures, protocols.
- How to read papers and search for literature.
- Biometric segmentation and detection.
- Biometric recognition.
- How to write papers, publishing process.

Scientific Assignments

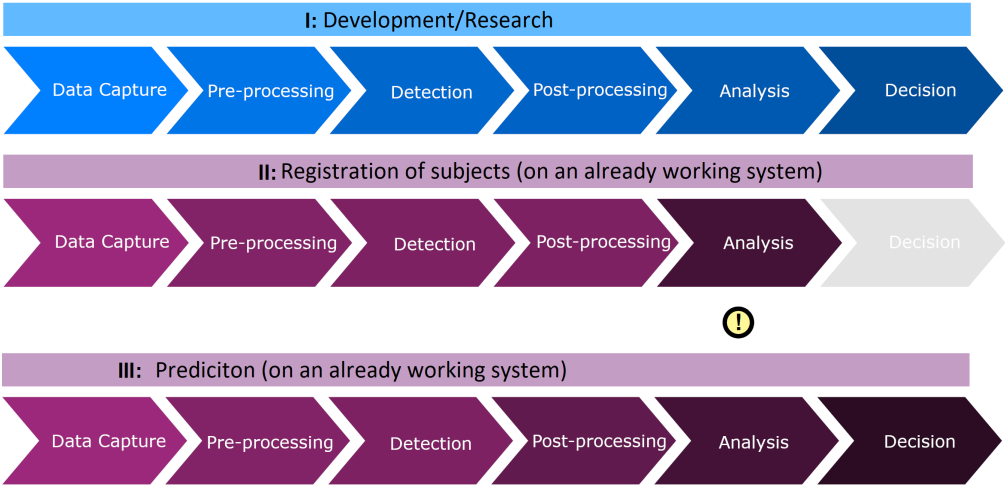
Due to the diverse backgrounds, assignments fork into two tracks, with each assignment/part worth 20 points. Dates may change, you can be two days late.



For the especially interested students:

- If you do not have MSc topic yet and would like to work on a topic from biometrics, let us know!
- If you would like to work in our lab and get 3 credit points, let us know!

What we are going to be dealing with



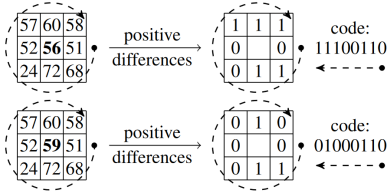
What did our colleagues from previous years achieve?

- Many conference & journal papers (some MSc derivations and papers from that).
- Some physical implementations too, such as:
  - `https://www.youtube.com/watch?v=4GmSdNFZ4AM`
  - `https://www.youtube.com/watch?v=0-C0EATdLYI`

Towards 1st Assignment

- What does it mean to recognize someone?
- How do we do that?
- Can we compare images directly (pixel-by-pixel)?

Figure: Local Binary Patterns [1]. Image taken from [2].



T. Ahonen, A. Hadid, and M. Pietikäinen, "Face recognition with local binary patterns," in *European conference on computer vision*. Springer, 2004, pp. 469–481.

C. Silva, T. Bouwmans, and C. Frélicot, "An extended center-symmetric local binary pattern for background modeling and subtraction in videos," in *International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications, VISAPP 2015*, 2015.