

IBB Tutorials: Introduction, Biometric Pipeline

Ž. Emeršič, P. Peer

Agenda

Introduction

Lab Sessions

Scientific Assignments

For the interested

What we are going to be dealing with

Previous Achievements

Towards 1st Assignment

# Tutorials: Introduction, Biometric Pipeline Image Based Biometry

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## Agenda

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- Assignments
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  What we are
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going to be

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- Introduction
- ► Tutorials
- ► Scientific Assignments
- Previous Achievements



### Prerequisites

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Towards 1st Assignment 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

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Towards 1st Assignment 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

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#### Classroom work:

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

 $\forall$ 



#### Lab Sessions – In Practice

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#### 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

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Towards 1st Assignment 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

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### Scientific

#### Assignments For the

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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.

> 1st Assignment: Basic Detection & Recognition November 12

#### Assignments-oriented Track

2nd Assignment: Data

3rd Assignment: Traditional Pipeline

4th Assignment: State-of-the-art pipeline

End of November

Mid of December

Beginning of January

#### Project-oriented Track

Part I or Related Work

Part II or Methodology & Experiments

Part III or Methodology, Exp., Paper

More Work



## For the especially interested students:

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- ► 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!



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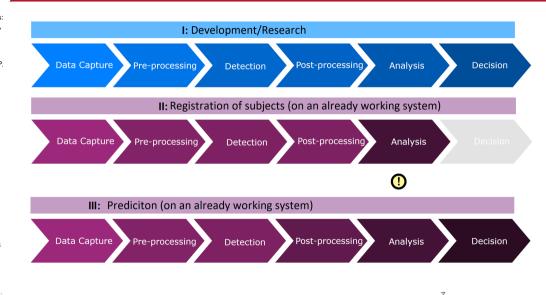
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10/12



### What did our colleagues from previous years achieve?

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- ▶ 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=O-COEATdLYI



### Towards 1st Assignment

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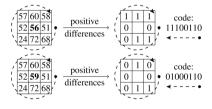
What we are going to be dealing with

Previous Achievement

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].





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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.