Computer Vision Systems Programming VO

Introduction

Christopher Pramerdorfer

Computer Vision Lab, Vienna University of Technology

Lecture Topics

Three parts:

- ▶ Computer Vision (CV) software and resources
- ▶ Models vs. algorithms
- ▶ Selected CV applications with commercial success

Popular software packages:

- Matlab
- NumPy + SciPy + scikit-learn
- OpenCV, PCL
- ...

CV programming resources (throughout lecture):

- ► Online tutorials
- ► Link collections

How to approach CV problems systematically:

- ▶ Difference between models and algorithms
- ▶ How to model and solve CV problems
- ▶ Numerical optimization

CV applications with commercial success:

- ▶ Face detection and panorama stitching in cameras
- ▶ Pose estimation from 3D data for gaming (Kinect)
- ▶ Face recognition
- ▶ ...

We will see:

- ▶ How they work
- ▶ How they are implemented

Lecture Location and Schedule

Location: Seminarraum 183/2, Favoritenstr. 9
Time: Wed 10:15 – 11:45 s.t.

Schedule: `http://www.caa.tuwien.ac.at/cvl/teaching/`
`wintersemester/cvsp_vo/index.html`

Prerequisites

Basic image processing and computer vision knowledge:

- ▶ What is linear filtering?
- ▶ What is a camera matrix?

Some knowledge of probability is recommended:

- ▶ What is a normal distribution?
- ▶ What is Bayes' rule?

Grading

There will be an oral exam (about 15 minutes)

Dates will be posted on `http://www.caa.tuwien.ac.at/cvl/teaching/wintersemester/cvsp_vo/index.html`

Associated Lab Exercise

We recommend the associated lab exercise to:

- ▶ Explore a CV topic of your choice in more detail
- ▶ Get used to software packages covered in this lecture