Computer Vision Systems Programming VO

Introduction

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Lecture Topics

Three parts

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

Lecture Topics

Computer Vision Software and Resources

CV programming languages and libraries

- Matlab
- Python (NumPy, SciPy, scikit-learn, ...)
- C++ (OpenCV, Shark, Caffe, ...)

Lecture Topics

Computer Vision Software and Resources

CV programming resources (throughout lecture)

- Online tutorials
- Link collections

Lecture Topics
Models vs. Algorithms

How to approach CV problems systematically

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

Lecture Topics
Selected CV Applications

CV applications with commercial success

- Face detection and panorama stitching in cameras
- Player pose estimation from 3D data for gaming (Kinect)
- Face and object 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 covered in this lecture