Computer Vision Systems Programming VO

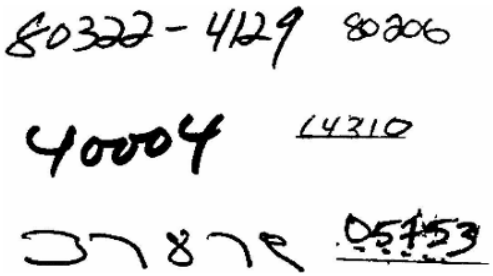
Introduction

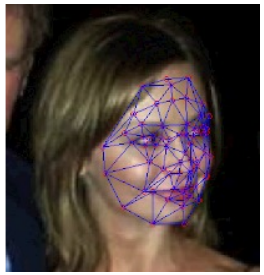
Martin Kampel, Christopher Pramerdorfer

Computer Vision Lab, Vienna University of Technology

Lecture Topics

Computer Vision from an applied point of view





Images from LeCun et al. 1989, Shotton et al. 2011, Taigman et al. 2013

Lecture Topics
Introduction

What exactly is Computer Vision (CV)?

Relation to other fields

- Image processing, statistics ...

Brief image processing recap

"man in black shirt is playing guitar."

Image from http://cs.stanford.edu/

Lecture Topics
Tools for CV development

Programming languages

- Matlab, Python, C++
- Pros and cons
- Tips for language selection

Popular libraries

- OpenCV, NumPy, Caffe, scikits

Code snippets and weblinks

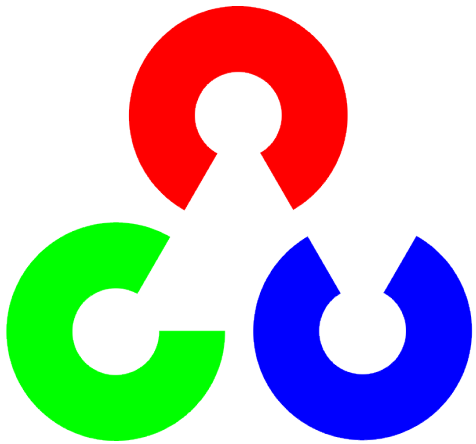


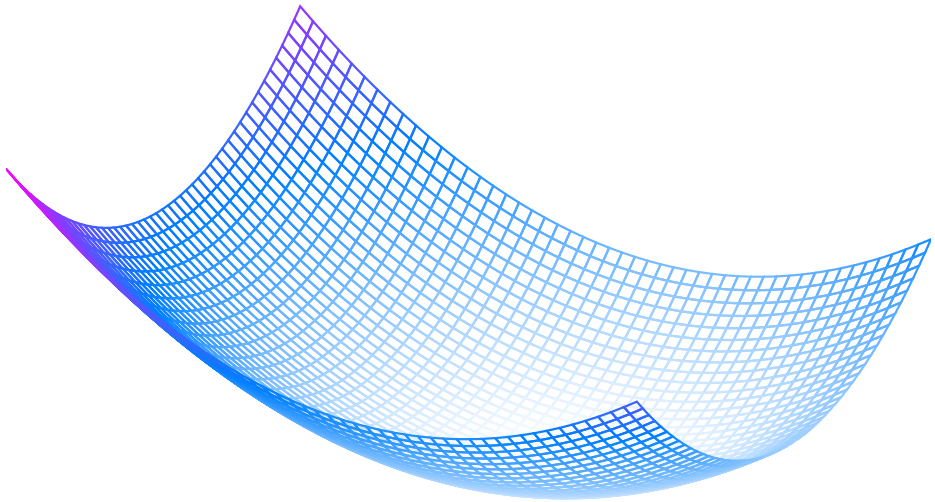
Image from opencv.org

Lecture Topics

Tips for approaching CV problems

Searching for existing solutions to a given problem

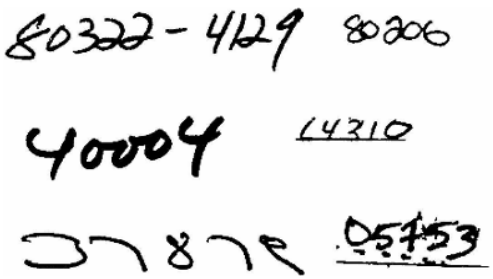
How to model and solve CV problems systematically

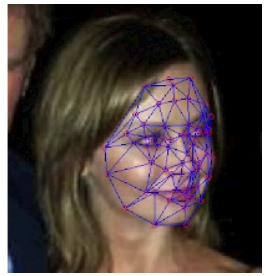


Lecture Topics
Selected CV Applications

Popular and (hopefully) interesting CV applications

- Face and smile detection in cameras
- Player pose estimation from 3D data for gaming (Kinect)
- Image recognition via deep learning





Images from LeCun et al. 1989, Shotton et al. 2011, Taigman et al. 2013

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/course/computer-vision-systems-programming-vo/`

Follow `@tuwcvsp` on Twitter for updates

Prerequisites

Completed entry-level course such as

- “Einführung in Visual Computing” [186.822]
- “Computer Vision” [183.585]

Grading

Oral exam

- 15 minutes
- Four random questions from a public list
- German or English

Several time slots after lecture (December)

- More slots on request

Associated Lab Exercise

We recommend the associated lab exercise to

- Explore a CV topic of your choice in more detail
- Apply what you will learn in this lecture

Bibliography

LeCun, Yann et al. (1989). *Backpropagation applied to handwritten zip code recognition*. Neural computation.

Shotton, Jamie et al. (2011). *Real-Time Human Pose Recognition in Parts from a Single Depth Image*. CVPR.

Taigman, Yaniv et al. (2013). *Deepface: Closing the gap to human-level performance in face verification*. CVPR.