



Deep Learning for Visual Computing

Introduction

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Deep Learning

Deep Learning

- ▶ Has revolutionized Computer Vision & Machine Learning
- ▶ Achieves human-like performance on some tasks ([example](#))
- ▶ Enables novel applications ([example 1](#), [example 2](#))

Implemented using [Convolutional Neural Networks](#)

Goals

Goal is to teach you

- ▶ How Deep Learning works
- ▶ How it can be used to solve various problems
- ▶ How to apply Deep Learning in practice

Lecture Topics

Introduction

- ▶ Recap of computer vision and image processing
- ▶ Machine learning: overview, parametric models, optimization
- ▶ Feedforward neural networks, backpropagation

Convolutional neural networks

- ▶ Classification and regression networks
- ▶ Fully convolutional networks
- ▶ Generative adversarial networks

Guest lectures

Assignments

Apply what you've learned in the lecture

Several small assignments in groups of two

- ▶ Code in Python 3 and [PyTorch](#) (reference available)
- ▶ Write short report explaining what you did

Code at home or on our servers (details later)

Prerequisites

Be a Master's or PhD student

Proficiency in Python

Basic knowledge of statistics, linear algebra, calculus

Basic knowledge of image processing and machine learning

Schedule

Available on the [course website](#)

- ▶ Check frequently for updates

Usually Wednesdays, 10:15 to 11:45 at [SR Argentinierstraße](#)

Grading

Assignments (50%)

Written exam (50%)

- ▶ 60 minutes
- ▶ List of questions available
- ▶ German or English

Both must be positive to pass

Support

After lectures

Mail: dlvc@cvl.tuwien.ac.at

Registration

Register via TISS until 9th at 23:00

Form a group via TISS until 12th at 23:00

- ▶ Group registration will open next week

Questions

Questions?