Deep Learning for Visual Computing

Introduction

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Image from gomedici.com

Deep Learning

Deep Learning

- Has revolutionized Computer Vision & Machine Learning
- Achieves human-like performance on some tasks (example)
- Enables novel applications (example)
- Has lead to the current AI hype

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 recap: 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 Thursdays, 12:15 to 13:45 at HS 15

Grading

Assignments (50%)

Written exam (50%)

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

Both must be positive to pass

Support

Mail: dlvc@cvl.tuwien.ac.at

Registration

Register via TISS until 8th at 23:00

Form a group vis TISS until 15th at 23:00

- Group registration will open next week

Questions

Questions?