



Deep Learning for Computer Vision

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Technische Universität München
Computer Vision Group

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What you will learn in this course

- How DL is applied to computer vision problems
- Practical experience with the most successful ML methods
 - Artificial Neural Networks
 - Convolutional Neural Networks
 - Long short-term memory (LSTM)
- Benefits/drawbacks of the methods when applied to concrete, relevant problems
- Practical project experiences
- Presentation skills

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Course Structure

- Three-week lectures
- One topic will be discussed each week
 - ANN
 - CNN
 - LSTM
- One exercise will be assigned each week, including practical/theoretical questions. Solutions will be discussed in the following week
- One-month practical project
 - 2-3 people per group, supervised by one tutor
 - access to lab computers and discussions with supervisors during class hours

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Format of Final Presentation

- 20min presentation, 5min –10min Q&A
- Recommended structure
 - Introduction, problem definition
 - Approaches
 - Experimental results and discussions
 - Conclusions

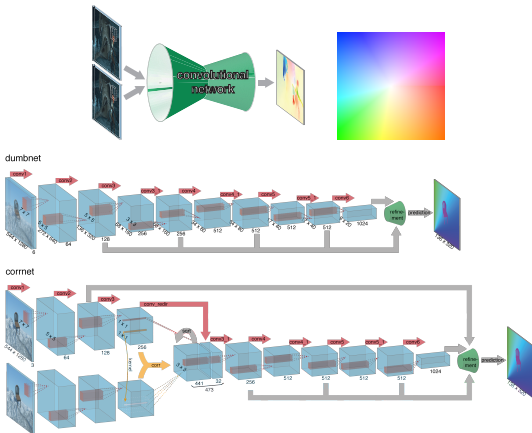


Evaluation Criteria

- Successful fulfillment of all exercises
- Gained expertise in the topics/project
- Quality of the project presentation
- Attendance of classes/exercises is mandatory! In case of sickness, medical attest is required.

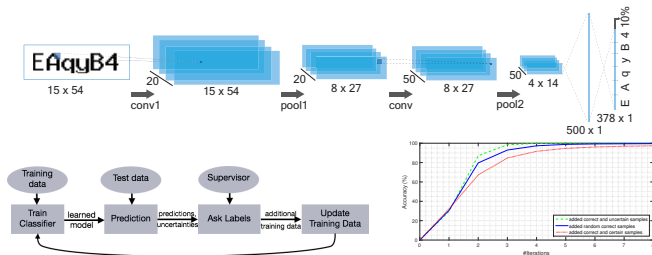
Cool Projects...

■ FlowNet



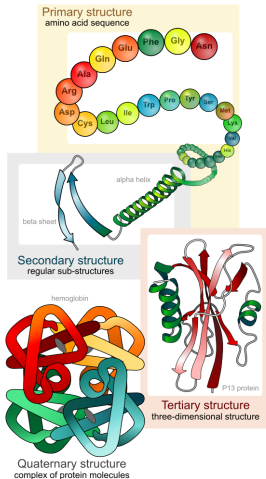
Cool Projects...

- CAPTCHA Recognition with Active Deep Learning



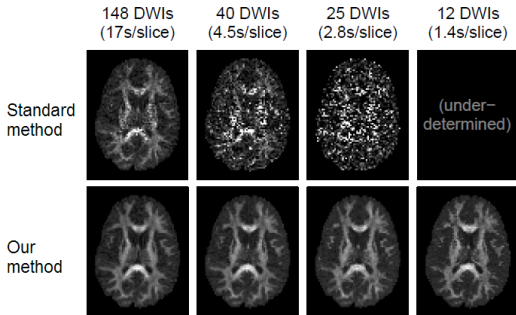
Cool Projects...

■ Biomedicine



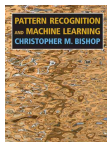
Cool Projects...

■ Diffusion MRI



Study Materials

- Pattern recognition and machine learning, by Christopher M. Bishop



- Machine learning: a probabilistic perspective, by Kevin P. Murphy



- <http://www.deeplearningbook.org/> by Ian Goodfellow, Yoshua Bengio and Aaron Courville