MI-MVI tutorials 2017

Topics

- tutorial 1: Tensorflow
- tutorial 2: Neural Networks and Convolutional Neural Networks for Computer Vision
- tutorial 3: Recurrent Neural Networks for Natural Language Processing
- tutorial 4: Autoencoders
- tutorial 5: Generative Adversarial Networks (GANs)

Hodnocení

- semestrální práce: 50 bodů
- dobrovolná prezentace semestrální práce: 10 bodů
- nepovinný test: 10 bodů
- plusy z měšce
- zkouška: 30 bodů
- **podmínka k zápočtu: 35 bodů ze semestru**

Deep Learning

- focuses on the use of Deep Neural Networks to tackle problem in Computer Vision, Speech Recognition, Natural Language Processing, etc.
- main ideas were developed in 1980s
- explosion of interest in 2012
- the most popular area of AI together with Deep Reinforcement Learning

Additional resources:

- Deep Learning book
- Lectures from the University of Oxford
- Course from Stanford University

Deep Learning Frameworks

- main: Tensorflow, Torch / PyTorch, Caffe / Caffe2
- others: MXNet, Deeplearning4j, MatConvNet, …

source

Torch / PyTorch 

- developed by researchers who now work in Facebook AI Research and Google DeepMind
- Torch has an interface in Lua, PyTorch in Python
- PyTorch is gaining popularity in the Natural Language Processing community
- good for fast experiments
- now supported by Facebook AI Research

Caffe / Caffe2 

- developed at University of California, Berkeley
- popular in the Computer Vision community
- C++ and Python interface
- Caffe1 is not very user-friendly (I haven't tried Caffe2 yet)
- now supported by Facebook AI Research

Tensorflow

- developed by Google Brain
- designed for large-scale Machine Learning
- mature framework (unlike PyTorch)

- webpage
- documentation
- getting started
- course from Stanford University