Full Syllabus

Course Title

Deep learning

Lecturer

Raja Giryes

Semester

Winter

Course requirements

The course Introduction to machine learning or computer vision. Python programing capabilities are also required.

Final grade components

20% homework, 80% final project

Course schedule

Class no. / Date	Subject and Requirements (assignments, reading materials, tasks, etc.)
1	Introduction to deep learning, brief survey of the field and basic structures of neural networks
2	Neural networks raining, loss functions, the backpropagation algorithm
3	Acceleration techniques and optimizers, data augmentation and regularization methods
4	Different network structures. Object detection methods
5	Semantic segmentation approaches
6	Neural networks for temporal data, using neural networks for natural language processing
7	Techniques for natural language processing, attention methods, transformers
8	Generative adversarial networks (GANs)
9	Neural networks for image processing and computational imaging
10	Neural architecture search, domain adaptation, adversarial attacks
11	Training neural networks for 3D data
12	Unsupervised and self-supervised learning, auto-encoders
13	Few-shot learning, online and incremental learning

Required course reading

Self-learning of pytorch (https://www.udacity.com/course/deep-learning-pytorch--ud188)

Optional course reading

Comments

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Topics might changes a bit throughout the semester