



Full Syllabus



Course Title	
Deep learning	
Lecturer	
Raja Giryes	
Semester	
Spring	
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