Approximation approaches - from Fourier analysis to deep learning [221660-0553], Summer 2020/21

Course Outline

Instructors:

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Course Organization: Individual meetings (online) by appointment

Course Content

Number	Lecture
1	Mathematical Foundations of Deep Learning (Chapters 6 to 8)
2	Basics of Deep Learning Modelling (Chapters 6 to 8)
3	Convolutional Neural Networks (Chapter 9)
4	Autoencoders and Variational Autoencoders (Chapters 14 and 20.10.3)
5	Generative Adversarial Networks (Chapter 20.10.4)
6	Recurrent Neural Networks (Chapter 10)
7	Recursive Neural Networks (Chapter 10)

Textbooks

- Goodfellow I., Bengio Y., Courville A. (2016), Deep Learning (http://www.deeplearningbook.org/)
- Boyd S., Vandenberghe L. (2018), Introduction to Applied Linear Algebra – Vectors, Matrices, and Least Squares (http://vmls-book.stanford.edu/)
- Hastie T., Tibshirani R., Friedman J. (2013), The Elements of Statistical Learning (http://www-stat.stanford.edu/~tibs/ElemStatLearn/)

Course Evaluation

Students evaluation will be based on the report from building a deep learning model (75 points) and homework (25 points). Grading depends on the points obtained from the report and additional tasks (50 points):

Points		Grade
From	To	
0	49	Fail (2.0)
50	59	Sufficient (3.0)
60	69	Sufficient Plus (3.5)
70	79	Good (4.0)
80	89	Good Plus (4.5)
90	100	Very good (5.0)

Deadline: **11th June 2021**