

EC-452 Machine Learning

Course Details

Course Code EC-452

Title Machine Learning

Credit ours 3 (3-0)

Objectives

- i. Develop comprehension understanding of Pattern classification problem.
- ii. Understand the foundations of deep learning architecture including relevant aspects of linear algebra, probability and numerical methods.
- iii. Design and implement and train neural network architecture for pattern classification.
- iv. Understand design and application of convolutional and recurrent neural networks.

Outcomes

- i. The student will develop knowledge of systematic and random uncertainties linear algebra, numerical computations and machine learning basic algorithms and neural networks.
- ii. Develop capability for analysis of neural networks and their impact of their associated technical features like steepest descent, backpropagation and regularization tools.
- iii. Design deep networks for specific applications of Machine learning with the objective of optimization of decision boundaries in the presence of specific constraints.

Details of Course

- i. Machine Learning Introduction course
- ii. Linear Algebra
- iii. Probability and Information Theory

- iv. Numerical Computations
- v. Machine Learning Basics 1
- vi. Machine Learning Basics 2
- vii. Deep Feedforward Networks
- viii. Regularization for Deep Learning
- ix. Optimization for Training Deep Models
- x. Convolutional Networks
- xi. Recurrent Networks
- xii. Practical Methodology
- xiii. Applications 1
- xiv. Applications 2

Recommended Reading

- i. Deep Learning, by I. Good Fellow, Y. Bengio, A. Courville, Wiley-Interscience, 2000, ISBN: 978-0471056690.
- ii. Machine Learning by Tom M. Mitchell McGraw Hill 1997. ISBN. 0070428077