COURSE DETAIL

MACHINE INTELLIGENCE II

Country
Germany

Host Institution
Technical University Berlin

Program(s)
Technical University Berlin

UCEAP Course Level
Upper Division

UCEAP Subject Area(s)
Computer Science

UCEAP Course Number
110

UCEAP Course Suffix
A

UCEAP Official Title
MACHINE INTELLIGENCE II

UCEAP Transcript Title
MACH INTELLIGENC II

UCEAP Quarter Units
5.50

UCEAP Semester Units

3.70

Course Description

Participants learn basic concepts, their theoretical foundation, and the most common algorithms used in machine learning and artificial intelligence. After completing the module, participants understand strengths and limitations of the different paradigms, are able to correctly and successfully apply methods and algorithms to real world problems, are aware of performance criteria, and are able to critically evaluate results obtained with those methods. More specifically, participants are able to demonstrate: 1) Understanding regarding basic concepts of neural information processing 2) Knowledge of unsupervised machine learning methods 3) Application to problems of statistical modeling, explorative data analysis, and visualization. Topics include

1) Principal Component Analysis, Kernel-PCA

2) Independent Component Analysis (Infomax, FastICA, Second Order Blind Source Separation)

3) Stochastic Optimization

4) Clustering, Embedding, and Visualisation (Central and Pairwise Clustering, Self-Organizing Maps, Locally Linear Embedding)

5) Density Estimation, Mixture Models, Expectation-Maximization Algorithm, Hidden Markov Model

6) Estimation Theory, Maximum Likelihood Estimation, Bayesian Model Comparison

Language(s) of Instruction
English

Host Institution Course Number
0434 L 867

Host Institution Course Title

MACHINE INTELLIGENCE II

Host Institution Campus

Host Institution Faculty

Host Institution Degree

Host Institution Department
Institut für Softwaretechnik und Theoretische Informatik

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