

MLCC 2015 - A Machine Learning Crash Course

Instructors

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Credits: 5

Synopsis

Machine Learning is key to develop intelligent systems and analyze data in science and engineering. Machine Learning engines enable intelligent technologies such as Siri, Kinect or Google self driving car, to name a few. At the same time, Machine Learning methods help deciphering the information in our DNA and make sense of the flood of information gathered on the web, forming the basis of a new "Science of Data". This course provides an introduction to the fundamental methods at the core of modern Machine Learning. It covers theoretical foundations as well as essential algorithms. Classes on theoretical and algorithmic aspects are complemented by practical "hands on" lab sessions.

Syllabus

Organization: 20 hours course

Exam: There will be a final examination decided by the instructors

Program

- Class 1: Introduction to Machine Learning
- Class 2: Local Methods and Model Selection
- Class 3: Lab on LM: K-NN, PW for classification
- Class 4: Regularization Networks I: Linear Models
- Class 5: Regularization Networks II: Kernels
- Class 6: Lab on Regularization Networks
- Class 7: Dimensionality Reduction and PCA
- Class 8: Variable Selection and Sparsity
- Class 9: Lab PCA and Sparsity
- Class 10: Applications of Machine Learning

References

L. Rosasco. [Introductory Machine Learning Notes](#).

T. Hastie, R. Tibshirani, and J. Friedman. The Elements of Statistical Learning: Prediction, Inference and Data Mining. Springer Verlag, 2009

T. Poggio and S. Smale. The Mathematics of Learning: Dealing with Data. Notices of the AMS, 2003

MIT 9.520: Statistical Learning Theory and Applications, Fall 2013 (<http://www.mit.edu/~9.520/>).

Stanford CS229 Machine Learning (<http://cs229.stanford.edu>), also (<https://www.coursera.org/course/ml>)

Venue

DIBRIS, Via Dodecaneso 35, Genova

Course dates

22-26 June 2015