

Machine Learning Methods

Wednesday 12 July 2017 13:30 (1h 30m)

This session will cover the basics of machine learning and deep learning. We will discuss basic learning algorithms; overfitting and regularization; hyper parameter search (grid search, random search) and cross validation (stratified, k-fold); bias, variance trade-off and learning curves.

- Supervised learning: decision trees and random forests, bootstrap aggregation and boosting; deep feed forward neural networks, forward propagation, back propagation, dropout regularization, Stochastic Gradient Descent; why training on mini-batches; brief introduction to convolution networks
- Unsupervised learning: k-means clustering; locality sensitive hashing families, MinHash, Jaccard similarity. Case study: natural language processing

Bonus: deep recurrent neural networks, unfolding through time, BPTT; LSTM. Case study: analyzing time series data of variable length.

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