INIT/AERFAI Summer School on MACHINE LEARNING

Beniccasim, Spain
June 2013

Valencia

Lectures

- Session 1 - Learning Theory
  Dr. Gábor Lugosi – University Pompeu Fabra (Spain)

- Session 2 - Learning with Multiple Classifier Systems
  Dr. Gavin Brown – University of Manchester (UK)

- Session 3 - Kernel Methods for Learning
  Prof. John Shawe-Taylor – University College London (UK)

- Session 4 - Dissimilarity Representation for Classification
  Prof. Robert P.W. Duin – Delft University of Technology (The Netherlands)

Lectures (2)

- Session 5 - Transfer Learning and Adversarial Learning
  Prof. Dr. Tobias Scheffer – University of Potsdam (Germany)

- Session 6 - Learning from Streaming Data
  Dr. João Gama – University of Porto (Portugal)

- Session 7 - ROC Analysis and Performance Evaluation Metrics
  Prof. Peter A. Flach – University of Bristol (UK)

- Session 8 - Statistical Analysis of Experiments
  Prof. Francisco Herrera – University of Granada (Spain)

Session 1 - Learning Theory

- Quick introduction of ML
- Empirical risk minimization
- Inequalities
- Random projections
- ...and much more math...


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Session 2 - Learning with Multiple Classifier Systems

- Combining voters – estimating possible error
- Sequential (voting)
  - Bagging : Bootstrap AGGregatING
  - Random/Rotation forests
- Parallel combination (fix error of predictor)
  - Boosting

Session 3 - Kernel Methods for Learning

- ...so much non trivial math :-/

Session 4 - Dissimilarity Representation for Classification

- Not what is common in data but what is different
- Distances

Session 5 - Transfer Learning and Adversarial Learning

- ...looking for smart students :)
- Taking drugs – overlap
- Bayesian methods
- Minimizing risk
- SVN – finding minimum


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Session 6 - Learning from Streaming Data

- ...finally presentation for humans :)
- Huge amount of data in non-static world
- Incorporating, detecting changes, forgetting
- Landmark / Sliding Window
- Top-K elements problem
- Air quality monitoring – rising an alarm when condition exceeds limits

Session 7, Session 8 - Statistical Analysis of Experiments

- Confidence bands
- Testing hypotheses
- Correlation
- Enroll in subjects Statistics I, II
- ...I was lying on the beach that time ;-)

Thank You for your attention!

Peñíscola