



École doctorale de Physique en Île de France

ED564, PSL – UPMC – USPC – UPSaclay

<https://www.edpif.org>

INTRODUCTION TO STATISTICAL MACHINE LEARNING FOR PHYSICISTS

Prof. : Florent KRZAKALA

TP : Eric Tramel & Andre Manoel

Abstract : "This is a basic course in machine learning and statistical inference, with an emphasis on simple methods and practical exercises with python on real data sets. The course will combine (and alternate) between methodology with theoretical foundations and practical computational aspects with exercices.

The course includes topics in statistical theory that are now becoming important for researchers in many fields. The topics will be chosen from the following basic outline, which is subject to change.

* Statistical theory : Maximum likelihood, Bayes, Parametric versus Nonparametric Methods, Bayesian versus Non-Bayesian.

* Supervised learning : Linear Regression, Ridge, high Dimensional Data and Sparsity, Lasso, Compressed Sensing, Classification, Perceptron, kernel classification, random projections, Neural nets, boosting, Knn

* Unsupervised learning : Mixture Models, PCA, Kernel PCA, Spectral Methods, ...

-- 5 cours (2h) + 5 TP (2h) --

les lundis : 6, 13, 20, 27 mars - 3 avril | de 14h à 16h

les mardis : 7, 14, 21, 28 mars - 4 avril | de 10h à 12h

salle L363/L365

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