MATH 7740 - Statistical Learning Theory
Fall 2018
Marten Wegkamp

Learning theory has become an important topic in modern statistics. I intend to give an overview of various topics in classification, starting with Stone's (1977) stunning result that there are classifiers that are universally consistent.

Other topics include classification, plug-in methods (k-nearest neighbors), reject option, empirical risk minimization, VC theory, fast rates via Mammen and Tsybakov's margin condition, convex majorizing loss functions, RKHS methods, support vector machines, lasso type estimators, low rank multivariate response regression, random matrix theory and current topics in high dimensional statistics.

Textbook: I will use my own notes.

Grading: Your grade will be based on a few homework assignments and a final project that can be done in a small group.

Prerequisites: mathematical statistics (MATH 6730 or equivalent) and measure theoretic probability (MATH 6710) or permission by the instructor.

Suggested texts:

DEVROYE, L., GYORFI, L. and LUGOSI, G. (1996). A Probabilistic Theory of Pattern Recognition. Springer, New York.

GIRAUD, C. (2014). Introduction to High-Dimensional Statistics. Chapman & Hall.