

STAT 680 Nonparametric Estimation
Fall 2011

Textbook:

Nonparametric Estimation and Gaussian Sequence Model by Iain Johnstone

Other References:

Introduction to Nonparametric Estimation by Alexandre Tsybakov

All of Nonparametric Statistics by Larry Wasserman

Class Time and Location

Thursday 4:00-6:00PM. *No class on October 6.*

Room 107, 24 Hillhouse Ave (Statistics department building)

Grade:

To pass this course, you need to give a presentation and attend at least 10 classes.

Weekly lecture notes will be provided.

Possible Topics

Kernel method

1. Density estimation and regression
2. Adaptive estimation
3. Optimal rate of convergence under different norms

Fourier method

1. Sobolev balls
2. Density estimation and regression
3. Sharp asymptotic minimaxity
4. Adaptive estimation

Wavelet method

1. Wavelet bases and Besov balls
2. Density estimation and regression
3. Minimax rates and sharp asymptotic minimaxity
4. Adaptive estimation

Gaussianization

1. Density estimation and regression in exponential families
2. General location models
3. Le Cam's asymptotic equivalence theory

High dimensional estimation