



Kernel Methods for Statistical Learning

Kenji Fukumizu

The Institute of Statistical Mathematics /
Graduate University for Advanced Studies

September 6-7, 2012

Machine Learning Summer School 2012, Kyoto

Version 2012.09.04

The latest version of slides is downloadable at
<http://www.ism.ac.jp/~fukumizu/MLSS2012/>

Lecture Plan

- I. Introduction to kernel methods
- II. Various kernel methods
kernel PCA, kernel CCA, kernel ridge regression, etc
- III. Support vector machine
A brief introduction to SVM
- IV. Theoretical backgrounds of kernel methods
Mathematical aspects of positive definite kernels
- V. Nonparametric inference with positive definite kernels
Recent advances of kernel methods

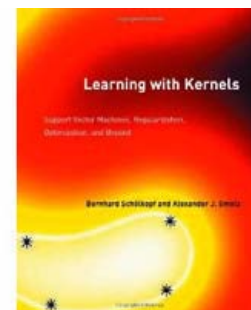
■ General references (More detailed lists are given at the end of each section)

– Schölkopf, B. and A. Smola. *Learning with Kernels*. MIT Press. 2002.

– Lecture slides (more detailed than this course)

[This page](#) contains Japanese information, but the slides are written in English.

Slides: [1](#), [2](#), [3](#), [4](#), [5](#), [6](#), [7](#), [8](#)



– For Japanese only (Sorry!):

- 福水「カーネル法入門
— 正定値カーネルによるデータ解析」
朝倉書店(2010)



- 赤穂「カーネル多変量解析
— 非線形データ解析の新しい展開」
岩波書店(2008)

