Course overview

Jong-Han Kim

EE787 Machine learning
Kyung Hee University

Course description

This course is about:

- fundamental concepts and theories in machine learning
- supervised and unsupervised learning, regression and classification
- loss function selection and its effect on learning
- regularization and robustness to outliers
- numerical experiments on data from a wide variety of engineering and other discplines

This course is NOT about:

- deep learning applications (CNN, RL,...) or tools (tensorflow...)
- optimization theory

Course info.

Instructor:

- Jong-Han Kim (`jonghank@khu.ac.kr`)

Lectures:

- Tue/Thr 13:30-14:45 at Rm.211-1

Office hours:

- Tue/Thr 15:00-16:00 at Rm.516, or by appointments if you cannot meet them

Prerequisites:

- previous exposure to linear algebra, probability, and programming
- working knowledge on optimization will be a plus

Course info.

Course material:

- complete notes will be provided
- the course material is reproduced from the *EE104: Introduction to machine learning* by Sanjay Lall and Stephen Boyd at Stanford university, under their kind permission

Reference textbooks:

- there are no required textbooks
- *Introduction to applied linear algebra - vectors, matrices, and least squares* by Boyd and Vandenberghe will be a useful reference

Course requirements

Homeworks:

- several sets of occasional homeworks
- problems may include: various regressor/predictor design problems, outlier detection, power demand prediction, speech data classification, recommendation systems design, and more...
- we will be using the Julia programming language
- you are encouraged to work in groups, however everyone should turn in his/her own works

Grading policy:

- no exams
- you will be evaluated by your homework assignments

Julia

Julia language:

- we will be using Julia, which excels in high performance technical computing, for homework assignments
- you are not expected to have a strong background in programming (with Julia or otherwise), because the program you will write will use only a tiny subset of Julia's (many and powerful) features
- we encourage you to install Julia on your local machine

Reference webpages:

- the official Julia webpage: `http://julialang.org`
- an easy-to-use online platform of Julia: `http://juliabox.com`
- a variety of Julia product packages: `http://juliacomputing.com`
- an excellent source of Julia examples on applied linear algebra: `http://vmls-book.stanford.edu`