Introduction to Machine Learning

Introduction

- **Professor: 이지형(Lee, Jee-Hyong)**
  - 제 2공학관 27308A호실, x7154, john@skku.edu
- **Textbook: None**
- **Auxiliary books**
  - Pattern Recognition and Machine Learning, C. Bishop, 2006.
    - PDF version is available
  - Machine Learning, T. Mitchell, McGraw Hill, 1997
  - Introduction to Machine Learning, 2nd Edition, E. Alpaydin, The MIT Press, 2010
- **Prerequisite:**
  - C/Java Programming, Probability & Statistics, Linear Algebra, Calculus ..

Contents

- k-Nearest Neighbor (Classification, Regression)
- Regression (Linear, Polynomial …)
- Cross Validation
- Probability, Naïve Bayesian, Maximum Likelihood
- Neural Network, RBF Neural Network, Deep Learning
- Support Vector Machine, Support Vector Regression
- Decision Tree, Regression Tree
- Dimensionality Reduction: PCA
- k-Means Clustering, Gaussian Mixture Model
- Graph Clustering
- Hidden Markov Model
- Meta Learning: Bagging, Boosting, Adaboost

- Set Clustering (Latent Semantic Analysis, PLSA, LDA)
- Feature Selection
- Association Rule Mining
- Semi-supervised Learning
- Reinforcement Learning
- Sampling & MCMC

Tentative Schedule

- Introduction, k-Nearest Neighbor
- Polynomial Regression, Kernel Regression
- Cross Validation
- Probability, Naïve Bayesian, Maximum Likelihood
- Gradient Descent Method, Logistic Regression
- Neural Network
- Support Vector Machine, Support Vector Regression
- Decision Tree, Regression Tree, Random Forest
- k-Means Clustering, Gaussian Mixture Model
- Matrix Manipulation, Dimensionality Reduction
- Hidden Markov Model
- Meta Learning: Bagging, Boosting, Adaboost

Some Notices

- **Evaluation(Tentative):**
  - HW: 20%, Mid: 40%, Final: 40%

- **Warning:**
  - You can discuss with your friends for your HWs
  - But, do it by yourself
  - If copies are found, both will have a MINUS score not a zero

- **All notices and homework will be posted on www.icampus.ac.kr**

Tentative !!

ACM-SAC Attendance
"No Classes"

"No In-person Classes"
But
"Pre-recorded Classes"

Mid-Term Exam
One of both

Final Exam

Sun	Mon	Tue	Wed	Thu	Fri	Sat
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22