

교과목번호	430.659	강좌번호	004	교과목명	컴퓨터 및 VLSI 특강 (Machine Learning)	학점	3
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담당교수	성명 : 정 교 민 (직 : 조교수)	Homepage : http://milab.snu.ac.kr
	E-mail : kjung@snu.ac.kr	전화번호 : 02-880-1937
	강의 시간 : Mon & Wed 5:00pm-6:30pm, Bldg 301, Room 102	

수업목표	In this class we will study basic concepts and algorithms of machine learning, and their applications. We will cover advanced topics and recent developments of machine learning techniques at the later part of the lecture. The topics will include decision theory, VC dimension, linear models, overfitting, EM algorithm, Support Vector Machine, Graphical models, Sampling methods, PCA, Hidden Markov Models, Neural Networks and Deep learning.
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교재 및 참고문헌	<ol style="list-style-type: none"> 1. Textbook1 : Learning From Data, by Yaser S. Abu-Mostafa, AML Book, 2012. 2. Textbook2 : Pattern Recognition and Machine Learning , by Christopher M. Bishop, Springer, 2007. 3. Reference : An Introduction to Statistical Learning: with Applications in R, by Gareth James and Daniela Witten, Springer Texts in Statistics, 2013.
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	출석	과제	중간	기말	프로젝트	발표	합계
평가방법	10 %	20 %	30 %	30 %	10 %	0 %	100 %
	비고	There will be one term project.					

수강생 참고사항	<ol style="list-style-type: none"> 1. The lectures will be given in English. 2. You can write your homework and exam answers in English or Korean. 3. Prerequisites : Undergraduate level algorithm or data structure, linear algebra and basic Mathematics, Programming skill in an advanced language. 4. Lecture plan is subject to change based on the lecture progress.
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부정행위자 에 대한 처리	학칙에 의거 처리.
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	주(기간)	강의내용
강의 계획	1주	Introduction, Concepts of machine learning
	2주	Decision theory, basic information theory, decision tree
	3주	VC dimension
	4주	Linear Models, logistic regression
	5주	Overfitting, regularization, and validation
	6주	Expectation Maximization, k-means clustering
	7주	Support vector machines
	8주	Midterm Exam
	9주	Graphical models, Markov Random Fields
	10주	Sampling methods, MCMC
	11주	Dimensionality reduction, PCA, collaborative filtering
	12주	Sequential data, Hidden Markov Models
	13주	Neural Networks
	14주	Deep learning and applications
	15주	Final Exam