

课程大纲

COURSE SYLLABUS

1.	课程名称(中英文) Course Title(Chinese and English)	机器学习和人工智能 Machine Learning & Artificial Intelligence
2.	课程类别 Course Type	选修
3.	授课院系 Originating Department	电子与电气工程系
4.	课程学时 Credit Hours	48
5.	课程学分 Credit Value	3
6.	授课语言 Teaching Language	英语为主，辅以中文解释 English with Detailed Explanations in Chinese
7.	授课教师 Instructor(s)	王琦，郝祁
8.	先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	随机信号处理 Stochastic Signal Processing 优化方法 Optimization Methods
9.	教学目标 Course Objectives	
	Familiarize students with various fields of machine learning and artificial intelligence, methods for data regression and classification with or without supervision, and data-driven & model-based machine learning methods, as well as program development skills with linear models, kernel machines, neural networks, Bayesian networks.	
10.	教学方法及授课创新点 Teaching Methods and Innovations	
	<ol style="list-style-type: none"> 1. to obtain fundamental knowledge and concepts about machine learning and artificial intelligence in terms of statistics and algebra through lectures and assignments 2. to grasp skills of machine learning and complex computing problem solving with MATLAB languages and related libraries through labs and projects 3. to obtain insights for intelligent system design with pattern recognition, data modeling, and knowledge formulation through the final project, literature surveys and reports 	
11.	教学内容及学时分配 Course Contents and Course Schedule	

	week 01-01 CH01-CH01 (HW0 – Lab0) Course Introduction and Preliminaries week 02-02 CH02-CH02 (HW1 – Lab1) Probability Distribution week 03-03 CH03-CH03 (HW2 – Lab2) Linear Models for Regression week 04-04 CH04-CH04 (HW2 – Lab2) Linear Models for Classification week 05-05 CH05-CH05 (HW3 – Lab3) Neural Networks I week 06-06 CH05-CH05 (HW3 – Lab3) Neural Networks II week 07-07 CH06-CH06 (HW4 – Lab4) Kernel Methods week 08-08 CH07-CH07 (HW4 – Lab4) Sparse Kernel Machines week 09-09 CH01-CH04 (HW5 – Lab5) Review week 10-10 CH01-CH04 (HW5 – Lab5) Midterm-exam week 11-11 CH01-CH04 (HW6 – Lab6) Exam Revisit and Review week 12-12 CH08-CH08 (HW6 – Lab6) Graphical Models week 13-13 CH09-CH09 (HW7 – Lab7) Mixture Models and EM week 14-14 CH10-CH10 (HW7 – Lab7) Approximate Inference week 15-15 CH11-CH11 (HW8 – Lab8) Sampling Methods week 16-16 CH12-CH12 (HW8 – Lab8) Continuous Latent Variables week 17-17 CH13-CH13 (HW9 – Lab9) Sequential Data week 18-18 CH01-CH11 (HW9 – Lab9) Final Project Presentation
12.	课程考核 Course Assessment
	<p>评估形式 占考试总成绩百分比 % 违纪处罚 备注 Notes</p> <p>出勤 Attendance</p> <p>课堂表现 Class Performance</p> <p>小测验 Quiz 3</p> <p>课程项目 Projects 20</p> <p>平时作业 Assignments 7</p> <p>期中考试 Mid-Term Test 20</p> <p>期末考试 Final Exam 40</p> <p>期末报告 Final Presentation 10</p> <p>其它（可根据需要改写以上评估方式） Others (The above may be modified as necessary)</p>
13.	教材及其它参考资料 Textbook and Supplementary Readings
	<ol style="list-style-type: none"> 1. Pattern Recognition and Machine Learning, by C. Bishop, Springer (required) 2. Artificial Intelligence: Structures And Strategies For Complex Problem Solving, 6th Ed., by G. F. Luger, 机械工业出版社