



教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	機器學習		學年/學期 Academic Year/Semester		113/1			
課程名稱(英文) Course Name in English	Machine Learning							
科目代碼 Course Code	AIIA50120	系級 Department & Year	碩士	開課單位 Course-Offering Department	資訊工程學系			
修別 Type	選修 Elective	學分數/時間 Credit(s)/Hour(s)	3.0/3.0					
授課教師 Instructor	/顏士淨							
先修課程 Prerequisite								

課程描述 Course Description

介紹機器學習的概念和常見傳統機器學習演算法，然後介紹資料分析處理，視覺化等步驟，同時也介紹類神經網路和深度學習，實作相關的套件包括WEKA, scikit-learn tools和tensorflow等，以實作方式讓學生熟悉機器學習方法。本課程也會搭配專題製作，讓同學透過實作瞭解機器學習技術如何應用。

課程目標 Course Objectives

介紹機器學習的概念和常見傳統機器學習演算法，然後介紹資料分析處理，視覺化等步驟，同時也介紹類神經網路和深度學習，實作相關的套件包括scikit-learn tools和tensorflow等，以實作方式讓學生熟悉機器學習方法。

Introduce the concept of machine learning and common traditional machine learning algorithms, and then introduce the steps of data analysis and processing, visualization, etc., and also introduce neural network and deep learning. Implementation-related packages include scikit-learn tools and tensorflow, etc. The hands-on approach familiarizes students with machine learning methods.

系專業能力 Basic Learning Outcomes		課程目標與系專業能力相關性 Correlation between Course Objectives and Dept.'s Education Objectives
A	統合資工知識技術之能力Ability to integrate knowledge and technologies of computer science and information engineering.	●
B	設計技術理論驗證實驗之能力Ability to design and conduct science experiments and to validate hypotheses.	●
C	資訊軟硬體設計開發之能力Ability to design and develop computer software and hardware.	●
D	團隊專案開發之能力Ability to design and develop team projects.	●
E	批判性思考與創新研發之能力Ability of analytical thinking, creative research planning, and innovative development.	○

圖示說明 Illustration : ● 高度相關 Highly correlated ○ 中度相關 Moderately correlated

授課進度表 Teaching Schedule & Content

週次 Week	內容 Subject/Topics	備註 Remarks
1	Introduction	
2	Vacation	
3	Machine Learning Concept	
4	Decision Tree & Random Forest	

5	Regression& Support Vector Machine	
6	KNN & Bayesian Classifier	
7	Ensemble learning & Time series analysis	
8	Unsupervised Learning	
9	MLP	
10	Data preprocess	
11	Exam.	
12	SKlearning tools	
13	SKlearning Supervised learning	
14	SKlearning Unpervised learning	
15	SKlearning MLP	
16	CNN	
17	Project oral report	
18		

教 學 策 略 Teaching Strategies

課堂講授 Lecture 分組討論 Group Discussion 參觀實習 Field Trip
 其他Miscellaneous:

教 學 創 新 自 評 Teaching Self-Evaluation

創新教學 (Innovative Teaching)

問題導向學習 (PBL) 團體合作學習 (TBL) 解決導向學習 (SBL)
 翻轉教室 Flipped Classroom 磨課師 Moocs

社會責任 (Social Responsibility)

在地實踐 Community Practice 產學合作 Industry-Academia Cooperation

跨域合作 (Transdisciplinary Projects)

跨界教學 Transdisciplinary Teaching 跨院系教學 Inter-collegiate Teaching

業師合授 Courses Co-taught with Industry Practitioners

其它 other:

學期成績計算及多元評量方式 Grading & Assessments

配分項目 Items	配分比例 Percentage	多元評量方式 Assessments						
		測驗 會考	實作 觀察	口頭 發表	專題 研究	創作 展演	卷宗 評量	證照 檢定
平時成績(含出缺席) General Performance (Attendance Record)	5%	✓	✓					
期中考成績 Midterm Exam	25%			✓			✓	
期末考成績 Final Exam	0%							
作業成績 Homework and/or Assignments	50%		✓				✓	
其他 Miscellaneous (專案)	20%				✓			

評量方式補充說明 Grading & Assessments Supplemental instructions

作業一周內補交70%計算，超過一周，因請假或其他因素在第15周前補交50%計算。
其他補交一律不予計分。

教科書與參考書目 (書名、作者、書局、代理商、說明)

Textbook & Other References (Title, Author, Publisher, Agents, Remarks, etc.)

TensorFlow + Keras深度學習人工智慧實務應用，林大貴著，博碩出版社。

Python 深度學習 (Python Deep Learning)

Valentino Zocca, Gianmario Spacagna, Daniel Slater, Peter Roelants 著、劉立民、吳建華、陳開輝 譯

Python 深度學習 (Python Deep Learning)

出版商:博碩文化

出版日期:2018-01-04

課程教材網址(含線上教學資訊,教師個人網址請列位於本校內之網址)

Teaching Aids & Teacher's Website (Including online teaching information.

Personal website can be listed here.)

其他補充說明 (Supplemental instructions)