機器學習
FUNDAMENTALS OF STATISTICAL MACHINE LEARNING

基本素養 Basic Literacy

■ 畢業生應具備科技人文素養、資訊工程倫理與終身學習的態度
graduates should equip with the attitude of technological/cultural literacy, information engineering ethics, and life-long learning

■ 畢業生應具備專業外語能力及良好國際觀
graduates should equip with both the professional foreign language proficiency and excellent global view

核心能力 Competence

■ 畢業生應具備資訊專業理論知識
graduates should equip with professional theoretical knowledge in informatics

□ 畢業生應具備資訊專業理論推導、分析、歸納之能力
graduates should equip with the capability of professional theory derivation, analysis, and induction in informatics

□ 畢業生應具備資訊領域獨立發掘問題、策劃實驗、解決問題之能力
graduates should equip with the informatics ability to identify problems independently, to implement experiments, and to solve problems

□ 畢業生應具備資訊領域設計、驗證及實作整合之能力
graduates should equip with the informatics ability in designing, verification, and integrating engineering practices

□ 畢業生應具備資訊領域創新思考之能力

開課系所 Department/Institute: 資訊所 Computer Science and Information Engineering
開課教師 Instructor: 洪昌鈺 Horng, Ming-Huwi
開課學年 Academic Year: 0112
開課學期 Semester: 1
開課序號 Serial Number: 319
課程屬性碼Course No (Attribute Code): CSIE7061
課程系統碼Course System Number: P76H300
分班碼 Class Code:
學分數 No. of Credits: 3
課程語言 Medium of Instruction: 中文 Chinese

課程網址 Course Website:

無

先修課程或先備能力 Prerequisite Course(s):

基礎統計能力及資料分析能力

教師聯絡資訊 Contact with Teacher

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graduates should equip with the informatics capability in innovative planning

☐ 畢業生應具備專業簡報及論文撰寫之能力
graduates should equip with the ability in professional presentation and thesis writing

☐ 畢業生應具備良好溝通協調與團隊合作之能力
graduates should equip with fair ability in communication, coordination, and team-work collaboration

課程概述 Course Description

This course introduces information theory and probabilistic inference as a basis for statistical machine learning. Emphasis will be on mastering the basic theoretical concepts. Additionally, applications in genomics and other fields will be introduced to motivate the material.
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課程學習目標 Course Objectives

- To learn many statistic data analysis capability
- To learn machine learning capability
- Data Processing and data mining

課程進度 Progress Description

	進度說明 Progress Description
1	機器學習基本及模型評估方法
2	監督式學習: KNN算法及邏輯回歸算法
3	監督式學習: 貝氏分類器及決策樹模型
4	監督式學習: 決策樹模型
5	監督式學習: Bagging法及隨機森林
6	放假
7	實機實作: 資料分類(1)

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助教資訊 Contact with Tutor

學習規範 Course Policy

同學應準時上課 ,出席考試及論文報告

評量方式 Grading

方法	百分比%
期中考 Midterm Exam	30
期末考 Term exam	30
個人口頭報告 Presentations	40

教學方法 Teaching Strategies

方法	百分比%
講授 Lecture	65
實作 Workshop	20
報告 Presentation	15

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課程教材 Course Material

投影片

參考書目 References

備註 Remarks

8	實機實作: 資料分類(2)
9	期中考
10	監督式學習: 集成學習與回歸XGBoost樹
11	監督式學習: Support Vector Machine(1)
12	非監督式學習: 資料分群
13	類神經網路基本概念與模型訓練技巧 (ANN)(2)
14	類神經網路基本概念與模型訓練技巧 (ANN)(2)
15	實機實作: 影像辨識
16	論文報告
17	論文報告
18	期末考

以上每週進度教師可依上課情況做適度調整。The schedule may be subject to change.

課程是否與永續發展目標相關調查 Survey of the conntent relevant to SDGs

本課程與SDGs相關項目如下：
This course is relevant to these items of SDGs as following:

- 都無相關 (no concerning item above)

有關課程其他調查 Other Surveys of Courses

1.本課程是否規劃業界教師參與教學或演講? 否
Is there any industry specialist invited in this course? How many times? No
2.本課程是否規劃含校外實習(並非參訪)? 否
Are there any internships involved in the course? How many hours? No
3.本課程是否可歸認為學術倫理課程? 否
Is this course recognized as an academic ethics course? In the course how many hours are regarding academic ethics topics? No
4.本課程是否屬進入社區實踐課程? 否
Is this course recognized as a Community

engagement and Service learning course? Which community will be engaged? No

教師上傳大綱內容

Machine_Learning (4).pdf