

課程中文名稱 Title of Course in Chinese : 人工智慧文本分析

課程英文名稱 Title of Course in English : **Artificial Intelligence for Text Analytics**

應修系級 Major : 資訊管理研究所1 , 財務金融英語碩士學位學程1 , 財務金融英語碩士學位學程2 , 智慧醫療管理英語碩士學位學程1 , 電子商務碩士學分學程 ,

授課教師 Instructor : 戴敏育

選修類別 Required/Elective : 選

全半學年 Whole or Half of the Academic Year : 半學年

學 分 Credit(s) : 3 學分

時 數 Hour(s) : 3 小時

教師網址 Instructor's Website : <http://web.ntpu.edu.tw/~myday/>

教師專長 Instructor's Specialty : 電子商務 (Electronic Commerce), 金融科技 (Financial Technology), 人工智慧 (Artificial Intelligence), 大數據分析 (Big Data Analytics), 資料探勘與文字探勘 (Data Mining and Text Mining)

課綱附檔 Attachments :

先修科目 : 無

Prerequisites : None

教學目標 :

1. 瞭解人工智慧文本分析基本概念與研究議題。
2. 具備人工智慧文本分析實務操作能力。
3. 進行人工智慧文本分析相關之資訊管理研究。

Course Objectives :

1. Understand the fundamental concepts and research issues of Artificial Intelligence for Text Analytics.
2. Equip with Hands-on practices of Artificial Intelligence for Text Analytics.
3. Conduct information systems research in the context of Artificial Intelligence for Text Analytics.

內容綱要 :

[Artificial Intelligence for Text Analytics] This is an EMI Full English Course.

This course introduces the fundamental concepts, research issues, and hands-on practices of Artificial Intelligence for Text Analytics. Topics include Introduction to Introduction to Artificial Intelligence for Text Analytics, Foundations of Text Analytics: Natural Language Processing (NLP), Python for Natural Language Processing, Natural Language Processing with Transformers, Text Classification and Sentiment Analysis, Multilingual Named Entity Recognition (NER), Text Similarity and Clustering, Text Summarization and Topic Models , Text Generation, Question Answering and Dialogue Systems, Deep Learning, Transfer Learning, Zero-Shot, and Few-Shot Learning for Text Analytics, and Case Study on Artificial Intelligence for Text Analytics.

Course Outline :

[Artificial Intelligence for Text Analytics] This is an EMI Full English Course.

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學生核心能力關連(Student's Core Competence) :

(八大核心能力為百分比 ; 合計100% ; Total 100%)

財務金融英語碩士學位學程 110年 系核心能力：

Communication: Each student will be able to demonstrate proficiency in oral and written communication. 10 %

Teamwork: Each student will demonstrate the ability to work well in teams. 5 %

Professionalism: Each student will have the ability to address and analyze business problems and provide suggestions to the related fields. 70 %

Business values: Each student will be aware of sustainable and ethical issues and their implications. 10 %

Global awareness: Each student will gain global awareness by participating in related activities. 5 %

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資訊管理研究所 110年 系核心能力：

資訊科技新知探索與系統開發應用 80 %

網路行銷企劃能力 10 %

論文寫作與獨立研究能力新知 10 %

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智慧醫療管理英語碩士學位學程 110年 系核心能力：

透過跨領域的學習來培養學生創新思考並解決問題的素養。 20 %

訓練學生智慧醫療管理的專業素養 20 %

來自不同文化的學生在學習及討論的過程中，了解彼此的差異、尋求共識，建立溝通協調的能力。 10 %

藉由與不同國籍同學之間的合作培養團隊合作精神。 5 %

培養學生關注醫療、商業倫理素養 5 %

培養學生關注人工智慧議題的專業倫理素養 20 %

養成學生對於不同領域之議題之思辨力 10 %

培養跨領域專業人才以因應未來國際趨勢 10 %

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校四大基本素養

Four Fundamental Qualities

專業 Professionalism		人際 Interpersonal Relationship		倫理 Ethics		國際觀 International Vision	
創意思考 與問題解 決 (Creative thinking and Problem- solving) 40 %	綜合統整 (Comprehensive Integration) 40 %	溝通協調 (Communication and Coordination) 10 %	團隊合作 (Teamwork) 5 %	誠信正直 (Honesty and Integrity) 0 %	尊重自省 (Self- Esteem and Self- reflection) 0 %	多元關懷 (Caring for Diversity) 0 %	跨界宏觀 (Interdisciplinary Vision) 5 %

商學院學習目標(College Learning Goals)：

Ethics/Corporate Social Responsibility

Global Knowledge/Awareness

Communication

Analytical and Critical Thinking

系所學習目標(Department Learning Goals)：

Information Technologies and System Development Capabilities

Internet Marketing Management Capabilities

Research capabilities

教學進度(Teaching Contents)：

週別 (Weekly Schedule)	日期 (Date)	教學預定進度 (Tentative teaching schedule) (若有調整，依教師實際授課為準; Adjustments are made according to instructor's actual teaching schedule)	教學方法與教學活動 (Teaching methods and activities)
Week 1	20220222	Introduction to Artificial Intelligence for Text Analytics	講授Lecture 討論Discussion 實習Practicum
Week 2	20220301	Foundations of Text Analytics: Natural Language Processing (NLP)	講授Lecture 討論Discussion

			實習Practicum
Week 3	20220308	Python for Natural Language Processing	講授Lecture 討論Discussion 實習Practicum
Week 4	20220315	Natural Language Processing with Transformers	講授Lecture 討論Discussion 實習Practicum
Week 5	20220322	Case Study on Artificial Intelligence for Text Analytics I	討論Discussion
Week 6	20220329	Text Classification and Sentiment Analysis	講授Lecture 討論Discussion 實習Practicum
Week 7	20220405	Tomb-Sweeping Day (Holiday, No Classes)	
Week 8	20220412	Midterm Project Report	討論Discussion
Week 9	20220419	Multilingual Named Entity Recognition (NER), Text Similarity and Clustering	講授Lecture 討論Discussion 實習Practicum
Week 10	20220426	Text Summarization and Topic Models	講授Lecture 討論Discussion 實習Practicum
Week 11	20220503	Text Generation	講授Lecture 討論Discussion 實習Practicum
Week 12	20220510	Case Study on Artificial Intelligence for Text Analytics II	討論Discussion
Week 13	20220517	Question Answering and Dialogue Systems	講授Lecture 討論Discussion 實習Practicum
Week 14	20220524	Deep Learning, Transfer Learning, Zero-Shot, and Few-Shot Learning for Text Analytics	講授Lecture 討論Discussion 實習Practicum
Week 15	20220531	Final Project Report I	討論Discussion
Week 16	20220607	Final Project Report II	討論Discussion
Week 17	20220614	Self-learning	其他Others
Week 18	20220621	Self-learning	其他Others

評量方式(Evaluation Methods) :

課堂之前測(Pre-test) 0 %

課堂之隨堂測驗(Quiz) 0 %

期中考-筆試(Mid-Term) 0 %

期末考-筆試(Final Exam) 0 %

個案分析報告(Case Report) 10 %

課堂參與(Class Participation) 10 %

個人報告(Individual Presentation) 60 %

團體報告(Group Presentation) 10 %

作業(Assignment) 10 %

其他評量方式(Other Evaluation Methods)

指定用書(Required Texts) :

Lewis Tunstall, Leandro von Werra, and Thomas Wolf (2022), Natural Language Processing with Transformers: Building Language Applications with Hugging Face, O'Reilly Media.

參考書目(Reference Books) :

Denis Rothman (2021), Transformers for Natural Language Processing: Build innovative deep neural network architectures for NLP with Python, PyTorch, TensorFlow, BERT, RoBERTa, and more, Packt Publishing

Savaş Yıldırım and Meysam Asgari-Chenaghlu (2021), Mastering Transformers: Build state-of-the-art models from scratch with advanced natural language processing techniques, Packt Publishing.

Sudharsan Ravichandiran (2021), Getting Started with Google BERT: Build and train state-of-the-art natural language processing models using BERT, Packt Publishing.

Sowmya Vajjala, Bodhisattwa Majumder, Anuj Gupta (2021), Practical Natural Language Processing: A Comprehensive Guide to Building Real-World NLP Systems, O'Reilly Media.

其他參考資料(Other References) :

Dipanjana Sarkar (2019), Text Analytics with Python: A Practitioner's Guide to Natural Language Processing, Second Edition. APress.

Benjamin Bengfort, Rebecca Bilbro, and Tony Ojeda (2018), Applied Text Analysis with Python: Enabling Language-Aware Data Products with Machine Learning, O'Reilly.

Charu C. Aggarwal (2018), Machine Learning for Text, Springer.

Gabe Ignatow and Rada F. Mihalcea (2017), An Introduction to Text Mining: Research Design, Data Collection, and Analysis, SAGE Publications.

Aurélien Géron (2019), Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems, 2nd Edition, O'Reilly Media.

Frederick Kaefer and Paul Kaefer (2020), Introduction to Python Programming for Business and Social Science Applications, SAGE Publications

Vic Anand, Khrystyna Bochkay, and Roman Chychyla (2020), Using Python for Text Analysis in Accounting Research, Now Publishers.

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