

元智大學電機工程學系（丙組）「影像偵測與辨識」深耕跨域微學程科目規劃表

Department of Electrical Engineering (Program C), Yuan Ze University

“Image Detection and Recognition” Advanced Cross-Domain Micro Program

Course Planning Table

(115學年度申請適用)

(For students applied in Academic Year 2026)

115.04.29 一一四學年度第七次教務會議通過

Passed by the 7th Academic Affairs Meeting, Academic Year 2025, on April 29, 2026

一、教學目標 Teaching Objectives：

自十八世紀蒸汽機開啟工業革命以來，人類文明歷經電力與資訊化的洗禮，現正邁入以大數據、物聯網與人工智慧為核心的第四次工業革命。2012年，影像辨識技術的突破成為這波人工智慧浪潮的引爆點，使機器首次能在視覺認知功能上與人類並駕齊驅，進而開啟了智慧自動化的新紀元。

影像辨識作為機器視覺的核心，其應用無所不在：從工業端的無人工廠與智慧檢測，到生活端的自動駕駛、醫療照護、無人商店及穿戴式AR裝置。凡人眼所能觸及之處，皆是影像辨識技術發揮的戰場。

本微學程旨在建構從影像擷取、色彩處理、特徵提取到AI智慧辨識的完整技術鏈。課程不僅涵蓋基礎影像處理與色彩學，更核心地導入機器學習與深度學習技術，訓練學生開發具備高精準度、強健性的視覺模型。透過理論與實務並重的訓練，學生將能把所學應用於學術研究、工業檢測及商業創新，成為引領智慧視覺應用發展的跨領域專才。

The Fourth Industrial Revolution, centered on Big Data, the Internet of Things (IoT), and Artificial Intelligence (AI), is driving a transformative era in human history. In 2012, breakthroughs in image recognition technology became the flashpoint for this AI revolution, enabling machines to reliably surpass or complement human visual capabilities for the first time.

As the cornerstone of Machine Vision, image recognition is ubiquitously applied across various sectors—from robotics and smart surveillance to autonomous driving, smart manufacturing, unmanned retail, wearable AR devices, and medical care. Wherever human vision is required, image recognition technology finds its purpose.

This micro-program provides a comprehensive curriculum spanning image acquisition, digital image processing, and AI-driven recognition. Beyond foundational image and color science, the program emphasizes Machine Learning and Deep Learning to equip students with the skills to develop robust, high-precision visual models. By bridging theory and practice, graduates will be empowered to apply their expertise in academia, industry, and commerce, enhancing their career versatility and fostering innovation in the startup ecosystem.

二、課程設計 Curriculum Design:

選修課程（組內）：至少 6 學分

Elective courses within program C: at least 6 credits

課號 Course ID	課程名稱 Course Name	學分 Credit(s)	學制 Degree structure	開課系所 Department Offered the Present Course(s)	備註 Remarks
EEC322	色彩與影像處理 Color and Image Processing	3	學士班 Undergraduate Program	電機系(丙組) Department of Electrical Engineering (Program C)	
EEC414	色度學 Colorimetry	3	學士班 Undergraduate Program	電機系(丙組) Department of Electrical Engineering (Program C)	

課號 Course ID	課程名稱 Course Name	學分 Credit(s)	學制 Degree structure	開課系所 Department Offered the Present Course(s)	備註 Remarks
EEC425	人工智慧與影像辨識 Artificial Intelligence and Image Identification	3	學士班 Undergraduate Program	電機系(丙組) Department of Electrical Engineering (Program C)	二選一 Choose one of the two options
EEC563	人工智慧與其應用 Artificial Intelligence and Its Applications	3	碩士班 Master Program		
EEC523	影像檢測技術 Image Inspection and Detection Technique	3	碩士班 Master Program	電機系(丙組) Department of Electrical Engineering (Program C)	
EEC561	機器學習與其應用 Machine Learning and Its Applications	3	碩士班 Master Program	電機系(丙組) Department of Electrical Engineering (Program C)	

選修課程 (組外) : 至少 3 學分

Elective courses outside program C: at least 3 credits

課號 Course ID	課程名稱 Course Name	學分 Credit(s)	學制 Degree structure	開課系所 Department Offered the Present Course(s)	備註 Remarks
EEB215	電腦視覺與影像處理概論 Introduction to Computer Vision and Image Processing	3	學士班 Undergraduate Program	電機系(乙組) Department of Electrical Engineering (Program B)	
EEA695	深度學習與視覺應用 Deep Learning and its Vision Applications	3	碩士班 Master Program	電機系(甲組) Department of Electrical Engineering (Program A)	

三、學程證書授予標準 Certificate Award Criteria :

1. 凡修畢規定課程、組內選修課程至少 6 學分以及組外選修課程至少 3 學分，合計修滿 9 學分 (含) 以上者，授與「影像偵測與辨識」深耕跨域微學程證書。

Students who complete the required courses, including at least 6 credits of elective courses listed as being within the program and at least 3 credits of elective courses listed as being outside the program, with total of 9 credits or more, will be awarded Certificate of the “Image Detection and Recognition” Advanced Cross-Domain Micro Program.

2. 須至少修習一門非學生所屬學系 (組、班) 之科目 (不可包含與他系合開之課程)
Students are required to take at least one course outside their own department (or program/class). (The courses co-offered with other departments are not included.)

四、領域別 Fields of Study :

人工智慧 Artificial Intelligence

五、學程召集人 Program Director :

陳念波老師 Professor Nien-Po Chen

六、負責規劃單位 Responsible Planning Unit :

電機工程學系(丙組) Department of Electrical Engineering (Program C)