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## ②国玄東華大學

## 課 網 Course Outline 資訊工程學系人工智慧與創新應用碩士班

中文課程名稱 Course Name in Chinese		高等電腦視覺					
英文課程名稱 Course Name in English		Advanced Computer Vision					
科目代碼 Course Code		AIIA50160	班 別 Degree	碩士班 Master's			
修別 Type		選修 Elective	學分數 Credit(s)	3. 0	時 數 Hour(s)	3.0	
先修課程 Prerequisite							
課程目標 Course Objectives							
<ol> <li>To understand the underlying principles of Computer Vision (CV).</li> <li>To design CV algorithms on various applications.</li> <li>To solve practical problems using CV methods.</li> </ol>							
系教育目標 Dept.'s Education Objectives							
1 1 1	<b>坚空廖科知识,美田惠</b> 娄姑皓						
1 7 1	訓練評析思考,創新解決問題 Exercise analytical thinking, enhance creative problem solving skills.						
1 3 1	學習團隊分工,強化溝通表達 Participate in teamwork, strengthen communication skills.						
系專業能力 Basic Learning Outcomes					力相關性 Correlat between Objectiv Dept.'s	課程目標與系專業能 力相關性 Correlation between Course Objectives and Dept.'s Education Objectives	
A 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 A	設計技術理論驗證實驗之能力 B 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.					•	
1 1) 1	D 图除專案開發之能力 Ability to design and develop team projects.						

批判性思考與創新研發之能力 E Ability of analytical thinking, creative research planning, and innovative development.	0						
圖示說明Illustration : ● 高度相關 Highly correlated ○中度相關 Moderately correlated							
課程大綱							
Course Outline							

- -CV Introduction
- Image Formation/Processing/Segmentation
- -Feature Detection and Matching
- -Image Alignment and Stitching
- -Motion Estimation, Tracking, & Structure from Motion
- -Detection & Recognition
- -Computational Photography
- -Stereo Correspondence, Depth Estimation, & 3D Reconstruction
- Image-based Rendering (IBR)
- -Augmented Reality (AR)
- -Deep Learning & YOLO
- -OpenCV & MediaPipe
- -CV Zone

資源需求評估(師資專長之聘任、儀器設備的配合・・・等)

Resources Required (e.g. qualifications and expertise, instrument and equipment, etc.)

Existing suitable full-time teachers

課程要求和教學方式之建議

Course Requirements and Suggested Teaching Methods

Coding is required in all homework and projects. Students should be able to implement CV algorithms using Webcam, OpenCV and Python.

Miscellaneous