

國立台灣科技大學 114學年 第2學期 課程大綱

Spring 2026 NTUST Course Outline

授課教師：王靖維

Instructor:Ching-Wei Wang

課程名稱：進階電腦視覺與機器學習

Course Title : Advanced Computer Vision and Machine Learning

2026/6/22

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| 課程代號： BE5048701<br>Course Code<br>學分數： 3<br>Credits   | 必選修：選修/半學年<br>Required/Elective:Elective/Half Yr.<br>先修課程：<br>Prerequisites |
| 節次教室： R2(TR-836) R3(TR-836) R4(TR-836)<br>Time/Location   |   |
| 專業核心能力：<br>Core Professional Competencies   |   |
| 課程網址：<br>Course Website   |   |
| 課程宗旨： 本課程將講授進階電腦視覺與機器學習理論與技術，提供學生從事影像分析的基石。<br>Course Objectives The key aim of this course is to equip students with advanced computer vision and machine learning knowledge necessary to become successful engineers or scientists.   |   |
| 課程大綱： 1. Automatic Global Thresholding Algorithms (Binarization, Pixel Classification)<br>Outline of Lectures 2. Automatic Local Thresholding Algorithms (Binarization, Pixel Classification)<br>3. Color Images, Spectral Techniques<br>4. Discrete Fourier Transform in 2D<br>5. Geometric Operations<br>6. Inception, ResNet, DenseNet<br>7. Transformers and Multi-Head Attention |   |
| 授課方式： 講授 Lecture：40%<br>Method of Instruction 分組討論 Group discussion：15%<br>案例研討 Case study：15%<br>操做練習 Practical exercises：30%<br>講授 Lecture：N/A%   |   |
| 教科書： Candidate journal list or a journal with IF>10: The selected paper must be published within 3 years.<br>Textbooks<br>Medical Image Analysis<br>Nature Medicine<br>Nature Methods<br>Nature<br>IEEE Trans on Medical Imaging<br>IEEE TPAMI  |   |
| 參考書目：<br>References   |   |

Candidate journal list or a journal with IF>10: The selected paper must be published within 3 years.

Medical Image Analysis  
Nature Medicine  
Nature Methods  
Nature  
IEEE Trans on Medical Imaging  
IEEE TPAMI

修課須知： Two TAs will be available.  
Notice

評量方式： Two team presentations with course assignments.  
Grading

備註說明： Requirement: English, Math and basic programming skills.  
Notes