

電腦視覺

授課老師: 楊景明

聯絡資訊

授課老師:

- 研究室: 理學大樓 812
- Email: albert.yang@nchu.edu.tw

助教:

- 實驗室: science building (理學大樓) 902 room
- Email: 7112056461@smail.nchu.edu.tw

強烈建議先透過 email預約!!

成績計算

期中考 (20%)

期末考 (20%)

小考 + 課堂練習 (50%)

出席 (10%)

Couple of Notes

- Late assignment submissions
 - Submission time will be the basis for grading
 - The maximum score for late submissions is 80 points
 - Do not withdraw the submission at will
- Makeup quiz
 - Leave must be completed before the class, based on the records in the leave system
 - Must provide valid documents
- Makeup exam
 - Leave must be completed at least three hours before the class, based on the records in the leave system
 - Must provide valid documents
 - Midterm exam: grades will be combined with the final exam.

什麼是電腦視覺？

電腦視覺(Computer Vision)是一個**跨學科**的研究領域，涉及到計算機科學、機械學習、人工智能和其他領域。它旨在讓計算機具有**從數字圖像或視頻中解釋和理解視覺信息的能力**，就像人類一樣。



Source: <https://www.infolks.info/blog/demystifying-computer-vision/>

電腦視覺任務

圖像分類 (Image Classification)

物件定位 (Object Localization)

物件偵測 (Object Detection)

圖像分割 (Segmentation)



Apple



Donkey

Source: <https://www.infolks.info/blog/demystifying-computer-vision/>

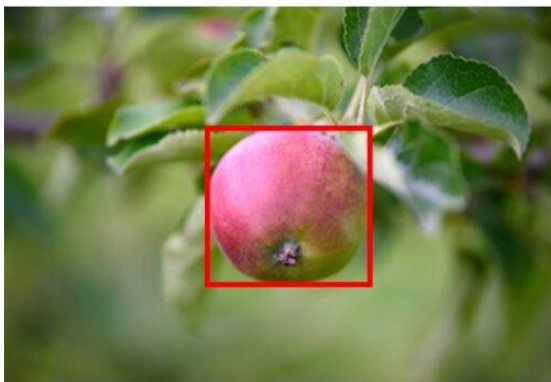
電腦視覺任務

圖像分類 (Image Classification)

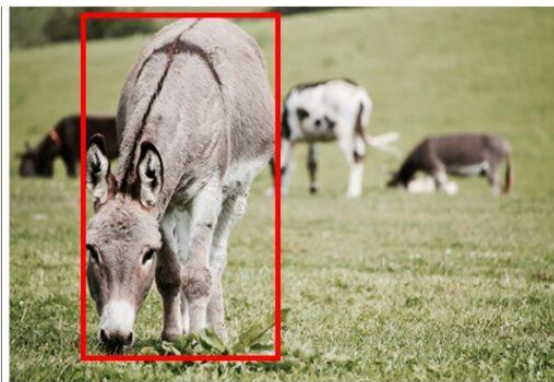
物件定位 (Object Localization)

物件偵測 (Object Detection)

圖像分割 (Segmentation)



Apple



Donkey

Source: <https://www.infolks.info/blog/demystifying-computer-vision/>

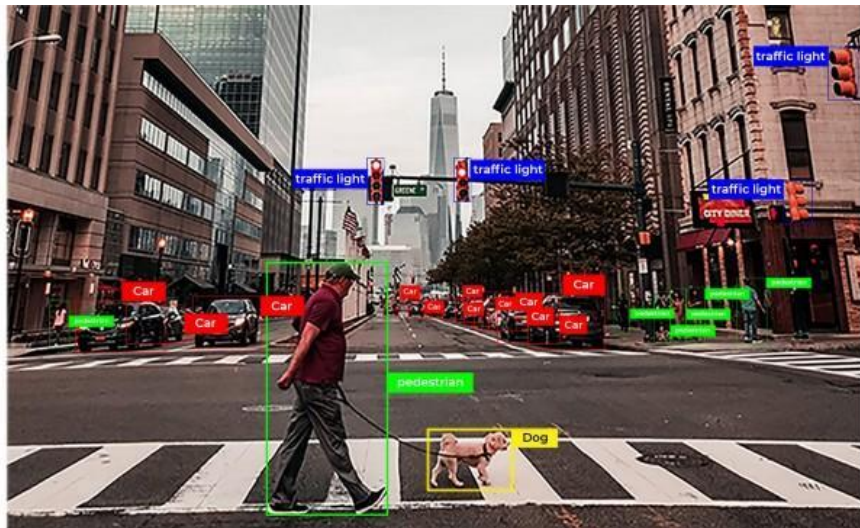
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And more...

Instagram 濾鏡

車牌辨識

自駕車

運動分析

臉部辨識

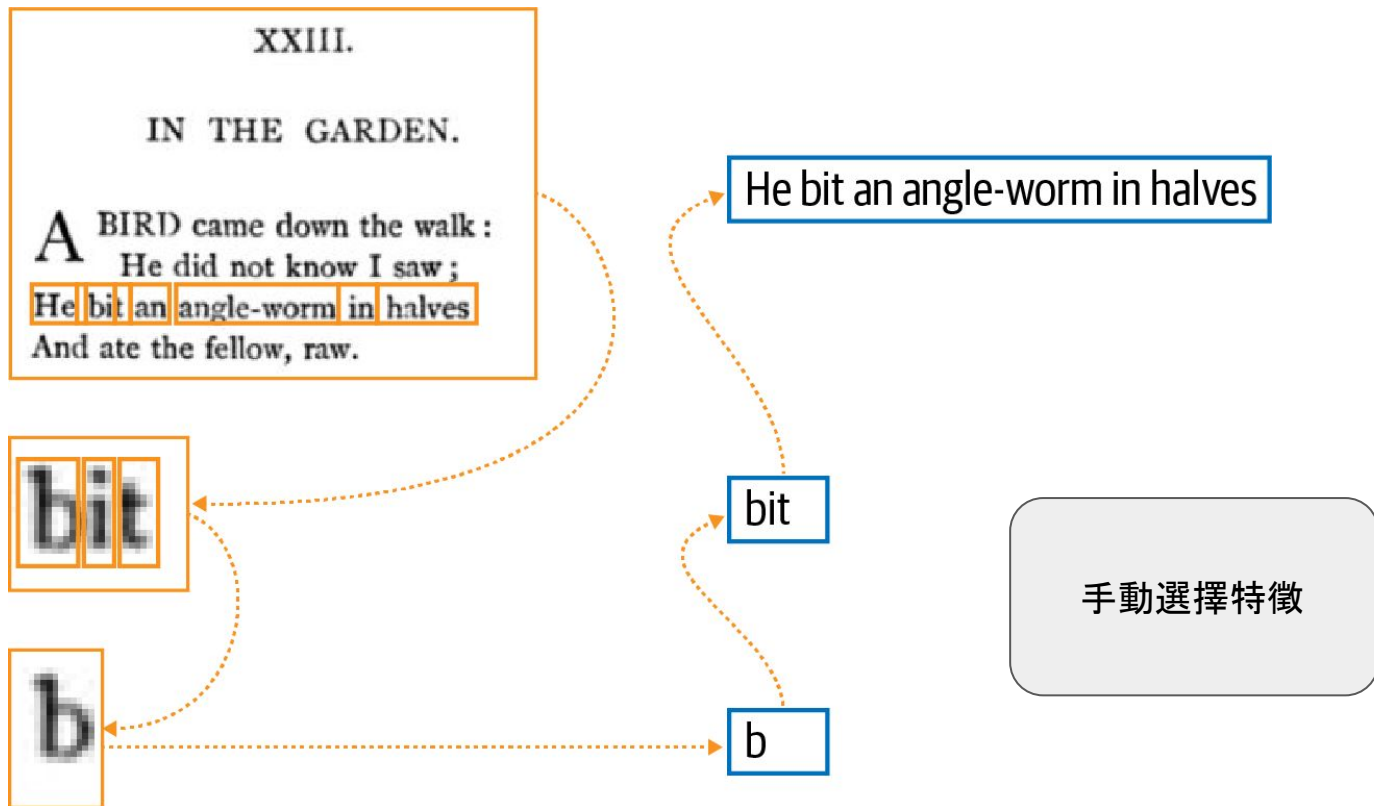
Deep Fakes (換臉)

人體姿態辨識

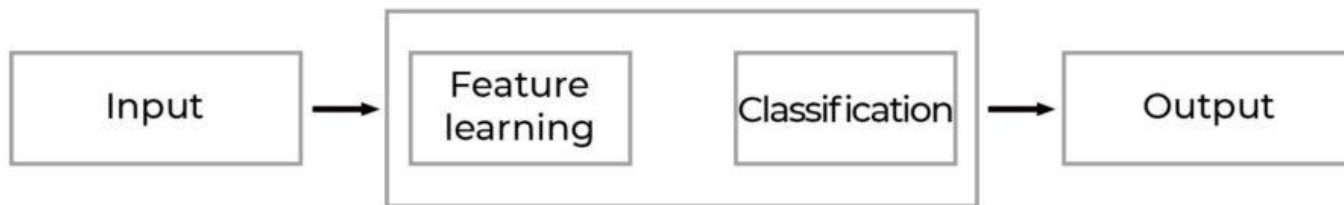
圖像生成

...

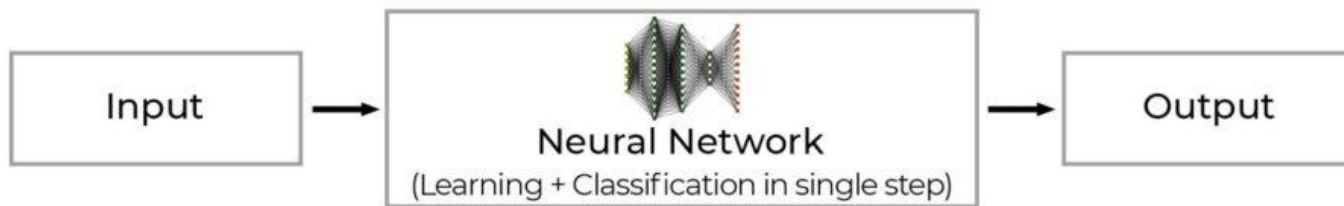
傳統電腦視覺



傳統電腦視覺VS現代電腦視覺



Feature Engineering
Traditional Approach



Feature Engineering
Deep Learning Approach

Syllabus (May Change in the Future)

Computer Vision Models

Object Detection

Convolutional Neural Networks

Segmentation

Model Performance and Improvement

Advanced Computer Vision Tasks

Advanced Computer Vision Models

Autoencoders and GAN

Preprocessing, Transfer Learning,
Fine-Tuning

Schedule

2024/10/10: Holiday

2024/10/31: Midterm exam

2024/12/26: Final exam