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: tcc888818@gmail.com

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 (30%)

期末專題 (20%)

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.

問卷與研究參與同意書

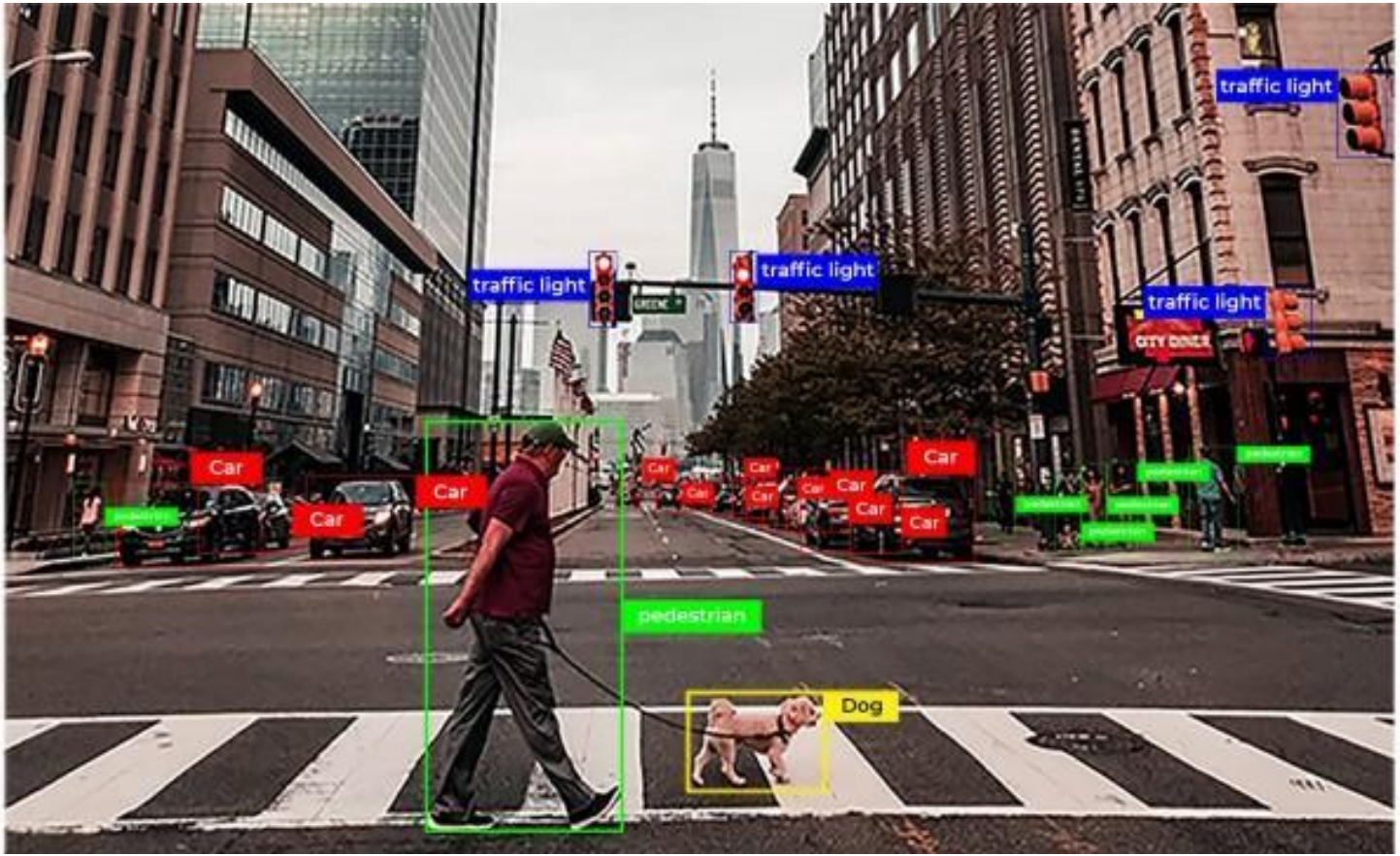
- 學習問卷
  - 時間：week 2 & week 15
  - 形式：google forms
- 研究參與同意書
  - 時間：week 2
  - 形式：紙本

問卷與研究參與同意書

- 同意與否皆不會影響上課權益
- 學習記錄在未來有機會用於資料分析與系統改善(皆會去識別化)
- 同意參與以及完成兩次問卷填寫會有小禮物
- 問卷結果不會影響成績

什麼是電腦視覺？

電腦視覺是一個跨領域的研究領域，涉及電腦科學、機器學習、人工智慧等領域。它的目的是讓電腦能夠像人類一樣解釋和理解數位影像或影片中的視覺資訊。



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)

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

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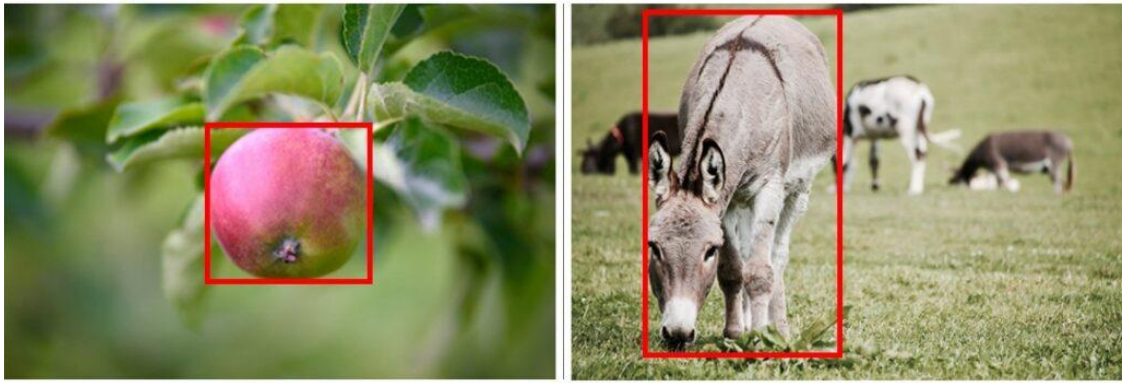

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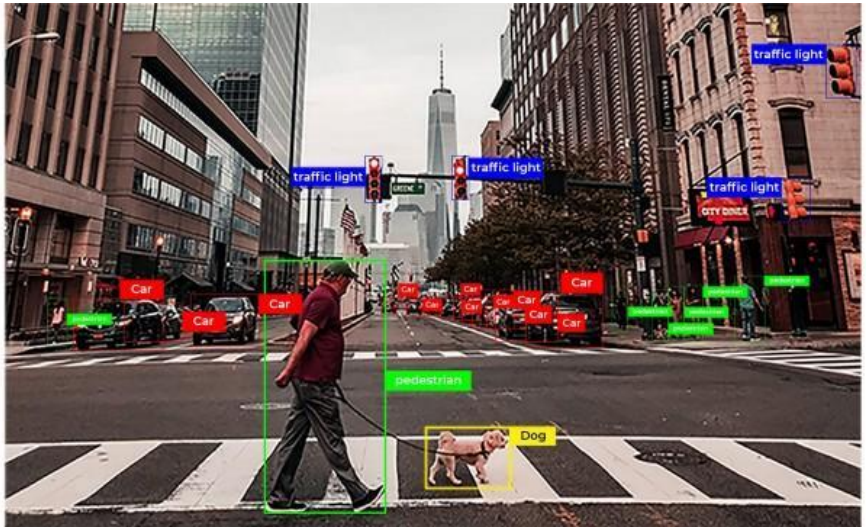

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And more…

Instagram 濾鏡

車牌辨識

自駕車

運動分析

臉部辨識

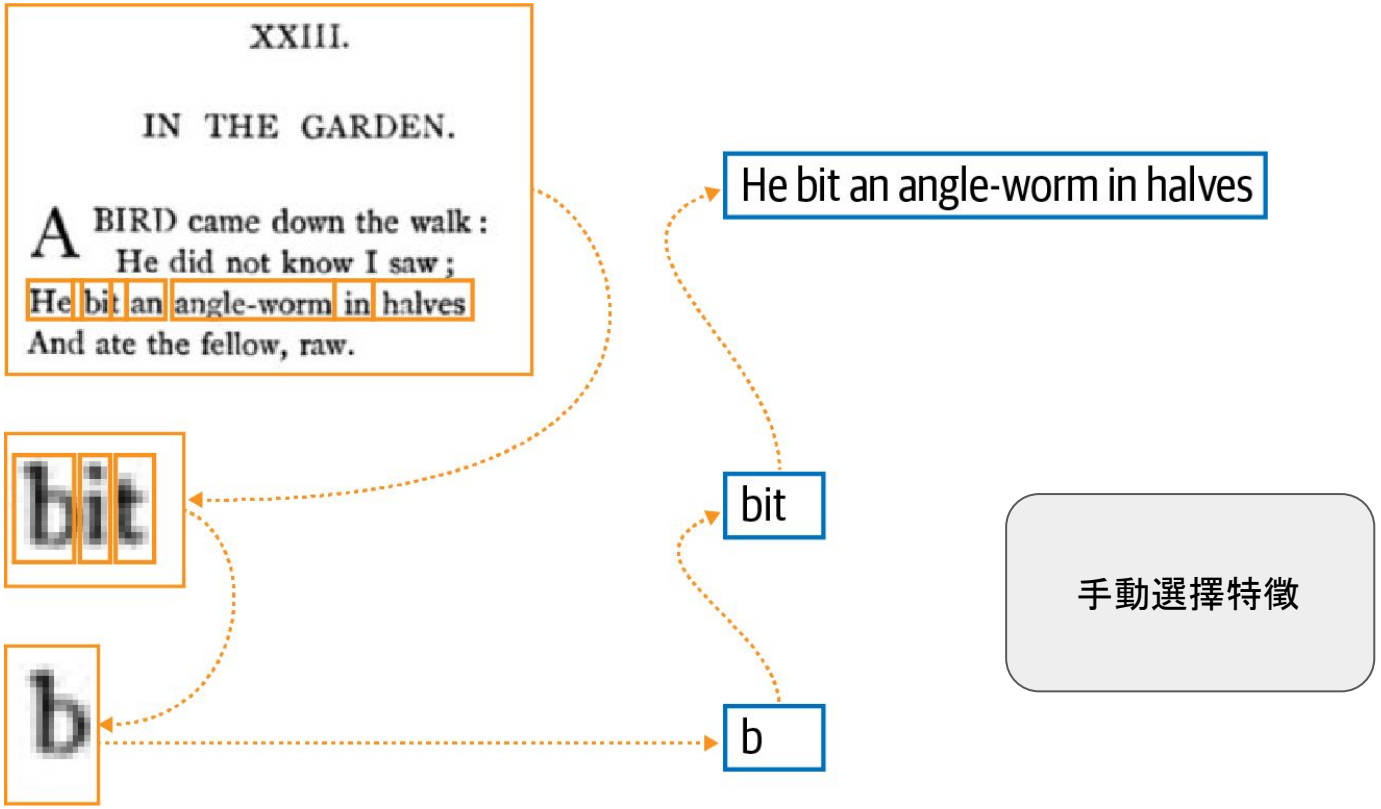
Deep Fakes (換臉)

人體姿態辨識

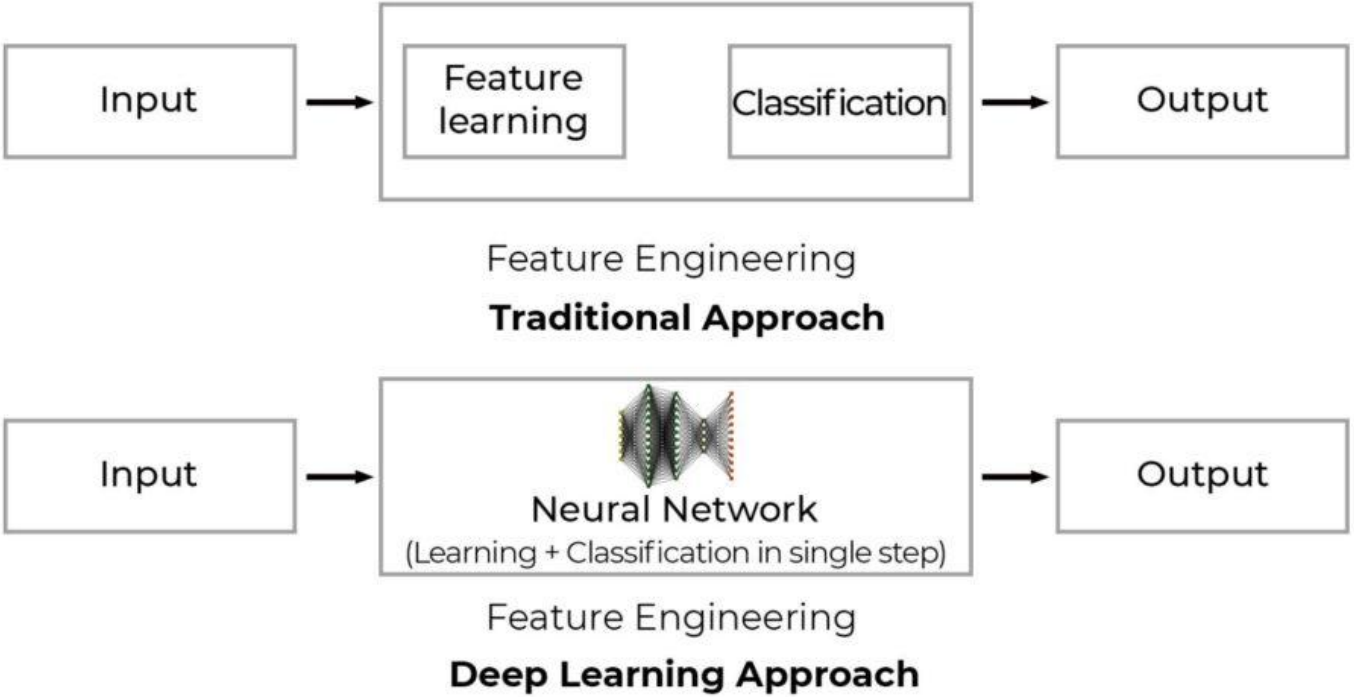
圖像生成

…

傳統電腦視覺


XXIII.
IN THE GARDEN.
A BIRD came down the walk :
He did not know I saw ;
He bit an angle-worm in halves
And ate the fellow, raw.
bit
b
He bit an angle-worm in halves
bit
b
手動選擇特徵

傳統電腦視覺VS現代電腦視覺



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Syllabus (May Change in the Future)

Computer Vision Models

Convolutional Neural Networks

Model Performance and Improvement

Advanced Computer Vision Models

Preprocessing, Transfer Learning, Fine-Tuning

Object Detection

Segmentation

Advanced Computer Vision Tasks

Autoencoders and GAN

Schedule

2024/9/17: Holiday
2024/10/29: Midterm exam
2024/12/24: Final exam