AI/物聯網/智慧電網簡介

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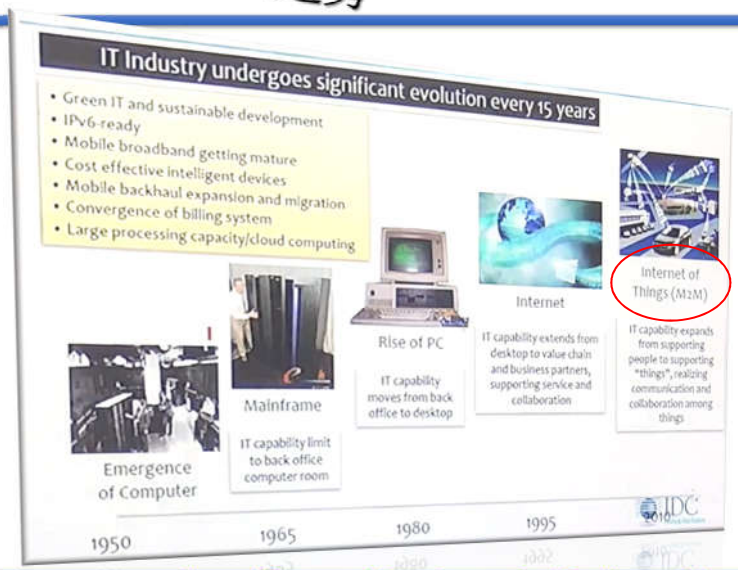
課程說明

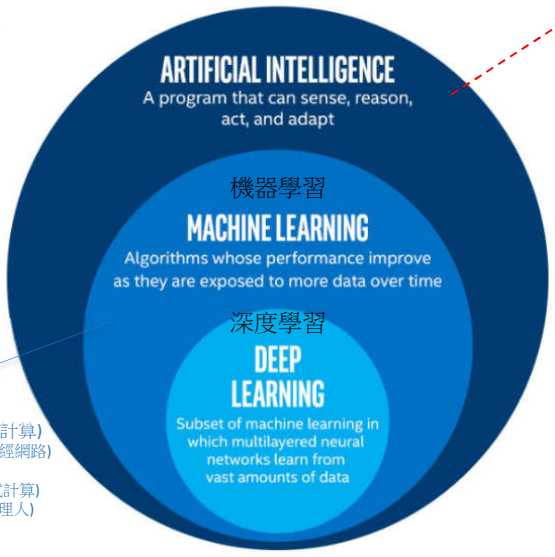
- 教學大綱與進度
  - https://aps.ntut.edu.tw/course/tw/ShowSyllabus.jsp?snum=314337&code=12275

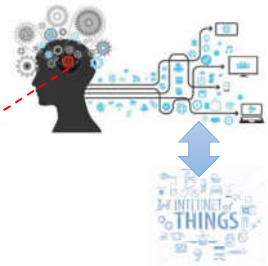
資訊科技IT的發展趨勢



What is the next significant evolution?

AI發展

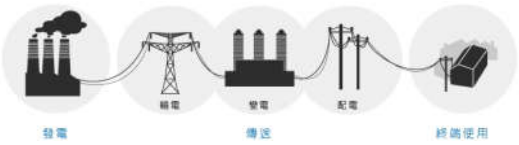




- ***Computational Intelligence*** (智慧計算)
  - **Artificial Neural Networks** (類神經網路)
  - Fuzzy theory (模糊理論)
  - Evolutionary Algorithms (演化式計算)
  - Multi-Agent Systems (智慧型代理人)
  - …

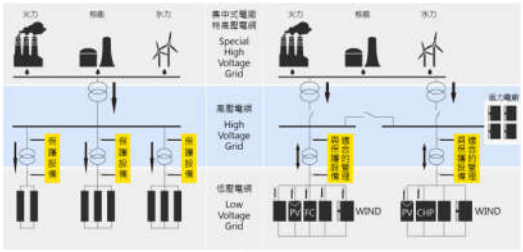
Smart Grid發展

- 傳統電網--集中式發電且**單向**電力潮流

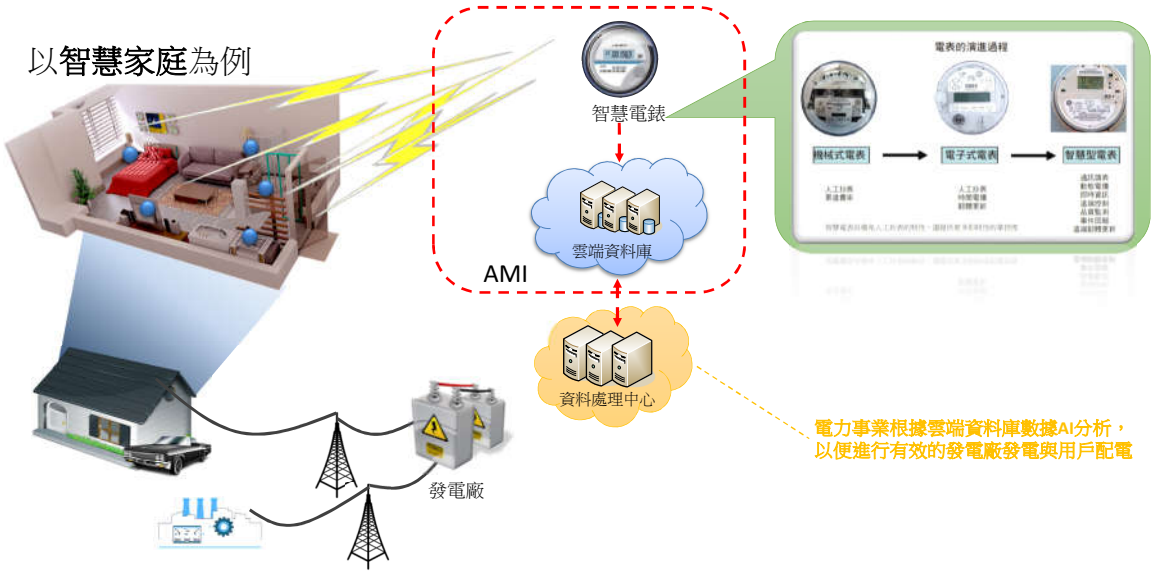


http://www.smart-grid.org.tw/content/smart_grid/smart_grid.aspx

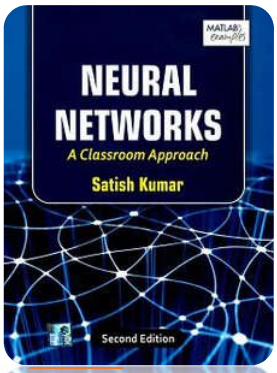
- 智慧電網--分散式發電且**雙向**資訊化、自動化及智慧化

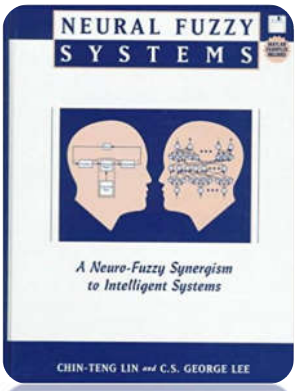


以**智慧家庭**為例

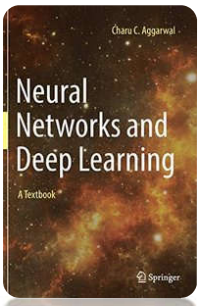


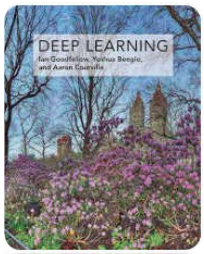
書籍
Artificial Neural Networks/Deep Learning





199x – 200x

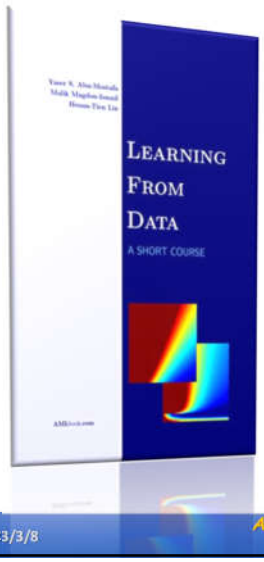




...

201x – present

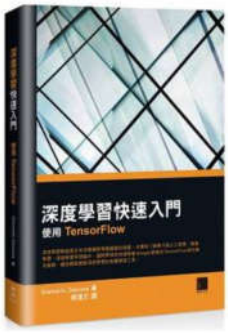
Learning from Data (201x)

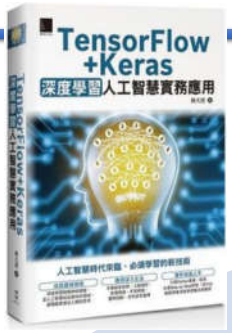


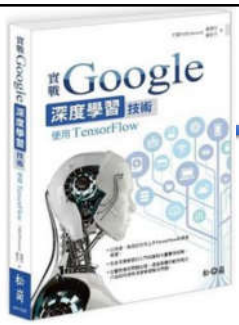
providing a complete introduction to/*short course* on ***Machine Learning*** and techniques that enable computational systems to adaptively improve their performance with experience accumulated from observed data

Yaser S. Abu-Mostafa, Malik Magdon-Ismail, Hsuan-Tien Lin

Deep Learning (程式實作應用)(參考)



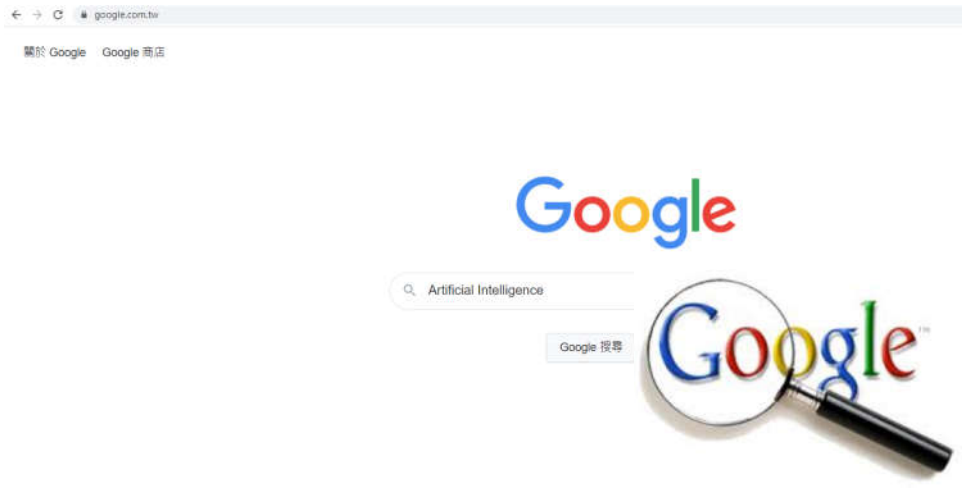




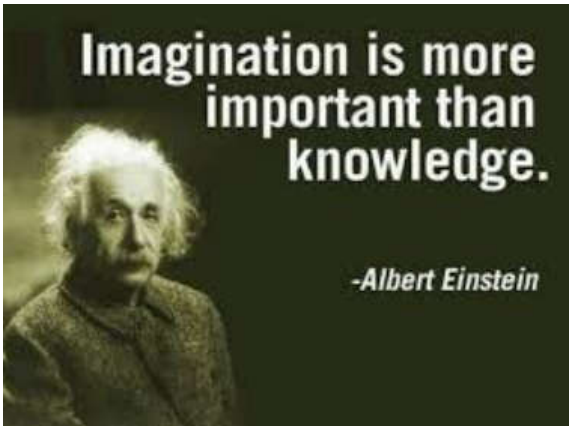
TensorFlow+Keras 深度學習人工智慧實務應用

實戰Google深度學習技術：使用TensorFlow

深度學習快速入門：使用TensorFlow



"I THINK,
THEREFORE
I AM"
RENE DESCARTES


Imagination is more important than knowledge.
-Albert Einstein

表：AI核心人才平均薪資

BIG DATA
Deep Learning

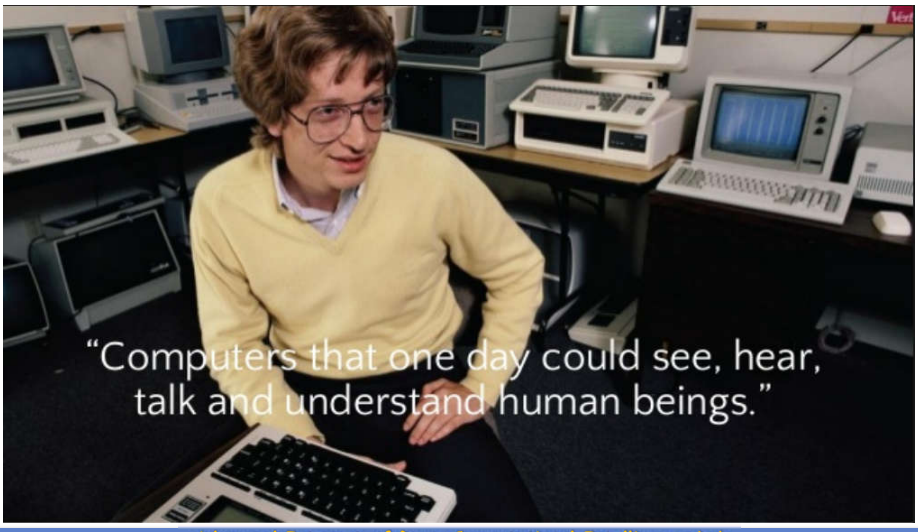
職稱	平均年薪（台幣）
頂尖AI工程師	300 萬
資料科學家	122 萬
演算法工程師	88 萬
機器人工程師	83 萬
數據分析師	75 萬
機器視覺工程師	73 萬
數據工程師	70 萬

SMALL DATA
Machine Learning

資料來源：104人力銀行

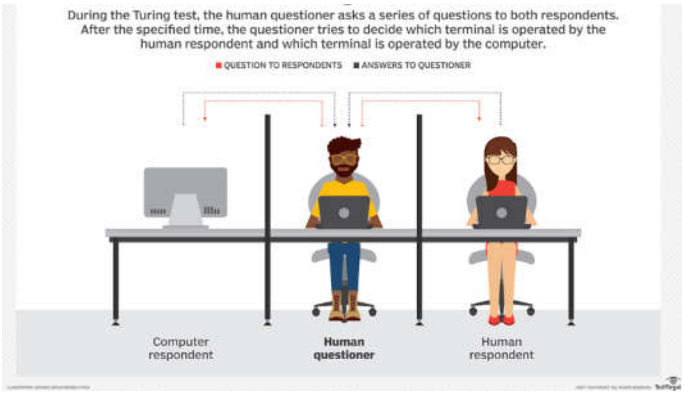
2019年為台塑企業的「AI元年」

AI--Bill Gates, 1991



"Turing test"

- a test of a machine's ability to exhibit intelligent behavior that is equivalent to, or indistinguishable from, that of a human -- by Alan Turing in 1950



計算機之父－
艾倫圖靈

電影《模仿遊戲》
在二戰中幫助盟軍破譯納粹德國軍事密碼的真實故事

"AI"

Strong AI

- 於1980年，由約翰瑟爾(John Searle)提出

Weak AI

machines can demonstrate intelligence, but do not necessarily have a mind, mental states, or consciousness

VS

intelligent machines that intelligence matches or exceeds **human** intelligence

Google Duplex: An AI System for Accomplishing Real-World Tasks Over the Phone：
https://ai.googleblog.com/2018/05/duplex-ai-system-for-natural-conversation.html

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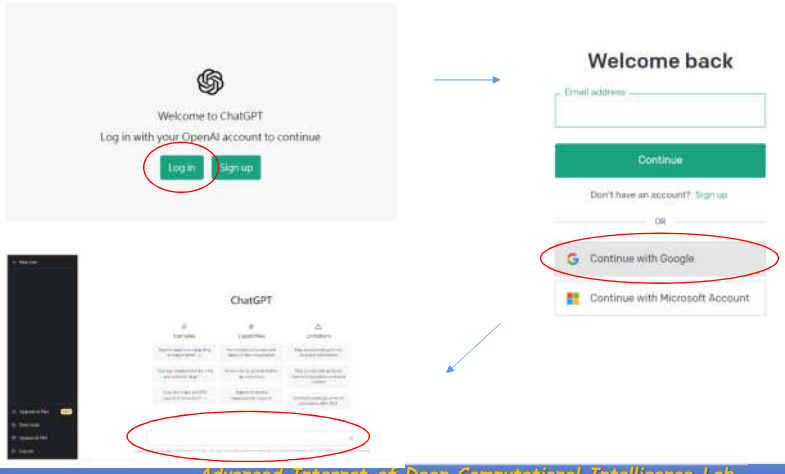
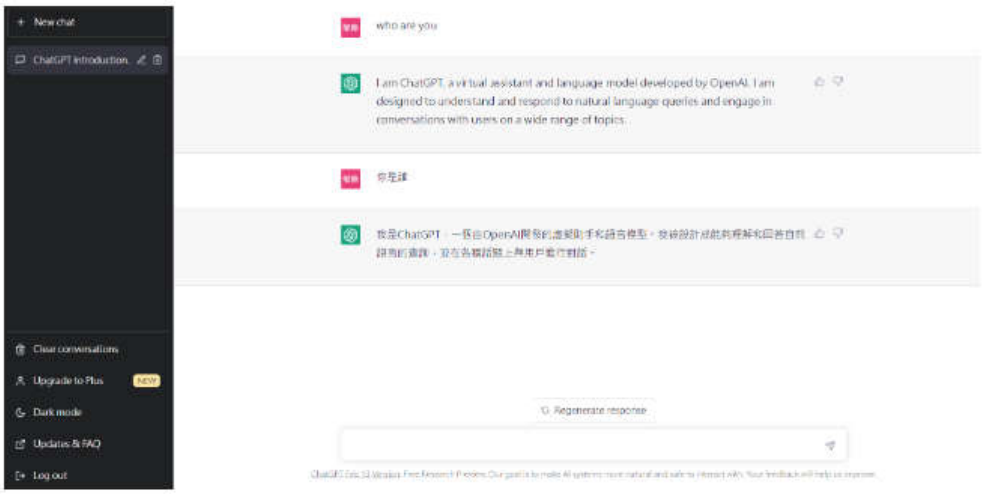
處)

OpenAI--ChatGPT (1/2)

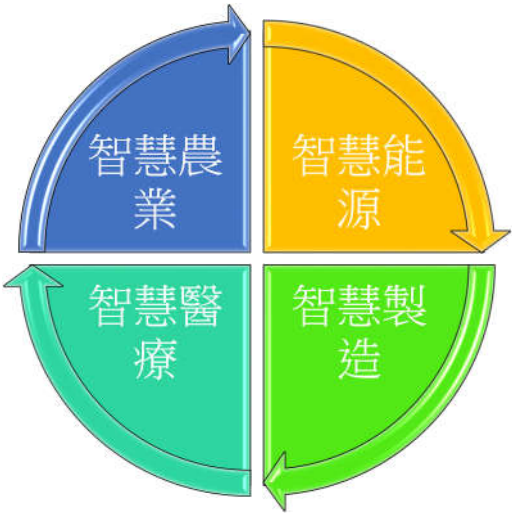
- https://openai.com/blog/chatgpt

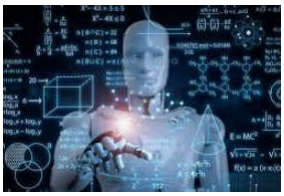


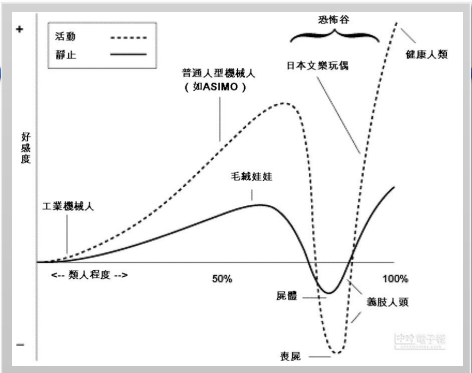
OpenAI--ChatGPT (2/2)



AI「熱門」應用領域--以「智慧製造」為例





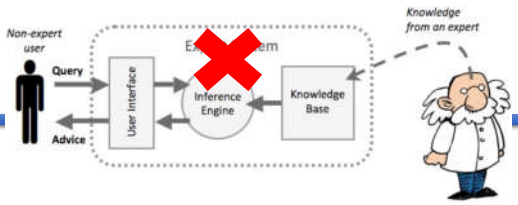


- **恐怖谷理論 (Uncanny Valley)**
  - 在1970年，由日本機器人專家森政弘提出
  - **一個關於人類對機器人和非人類物體的感覺的假設**
  - 根據森政弘的假設，隨著人類物體的擬人程度增加，人類對它的情感反應呈現增-減-增的曲線。**恐怖谷**就是**隨著機器人到達「接近人類」的相似度時，人類的好感度突然下降至反感的範圍。**「活動的類人體」比「靜止的類人體」曲線變動的幅度更大。

- Boston Dynamics (Spot)
  - https://www.youtube.com/watch?v=M8YjvHYbZ9w
  - https://tw.news.yahoo.com/%E6%B3%A2%E5%A3%AB%E9%A0%93%E5%8B%95%E5%8A%9B%E5%85%AC%E9%96%8B-spot-%E5%95%86%E7%94%A8%E7%B4%B0%E7%AF%80-%E6%A9%9F%E5%99%A8%E4%BA%BA%E6%99%82%E4%BB%A3%E8%A6%81%E4%BE%86%E4%BA%86-071624886.html

- https://www.youtube.com/watch?v=uU2xGjHS7LM
  - 機器人進化 施崇棠大解密！**AI只是工具，首重數據創新！**

In this course…

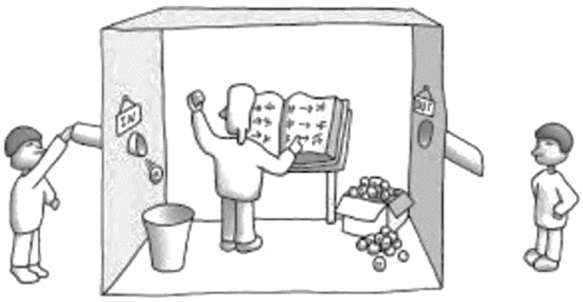


- An example…

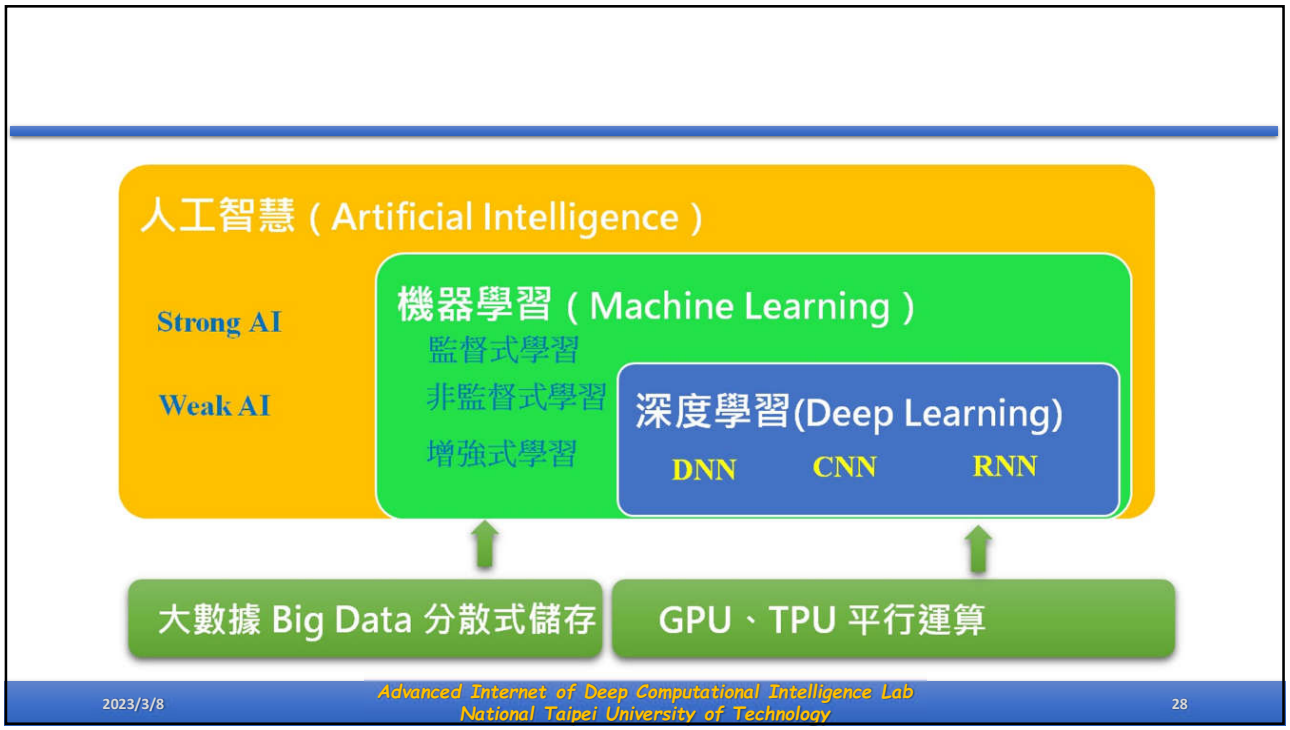
AI技術發展趨勢

- Chinese room argument -- 由約翰·希爾勒提出的一個思想實驗，藉以反駁強人工智慧的觀點

擁抱weak AI



- *The End*


人工智慧（Artificial Intelligence）
Strong AI
Weak AI
機器學習（Machine Learning）
監督式學習
非監督式學習
增強式學習
深度學習(Deep Learning)
DNN
CNN
RNN
大數據 Big Data 分散式儲存
GPU、TPU 平行運算
2023/3/8
Advanced Internet of Deep Computational Intelligence Lab
National Taipei University of Technology
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