會看圖片的機器學習
Convolutional Neural Network (CNN)

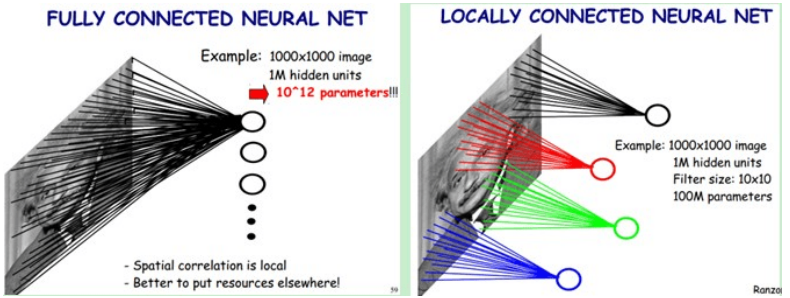
究竟會看圖片的機器學習，如何提升交易品質？

什麼是CNN？

- CNN 是尤以下幾個不同的layers組成的：
  - Convolution Layer
  - Pooling
  - Full connected network

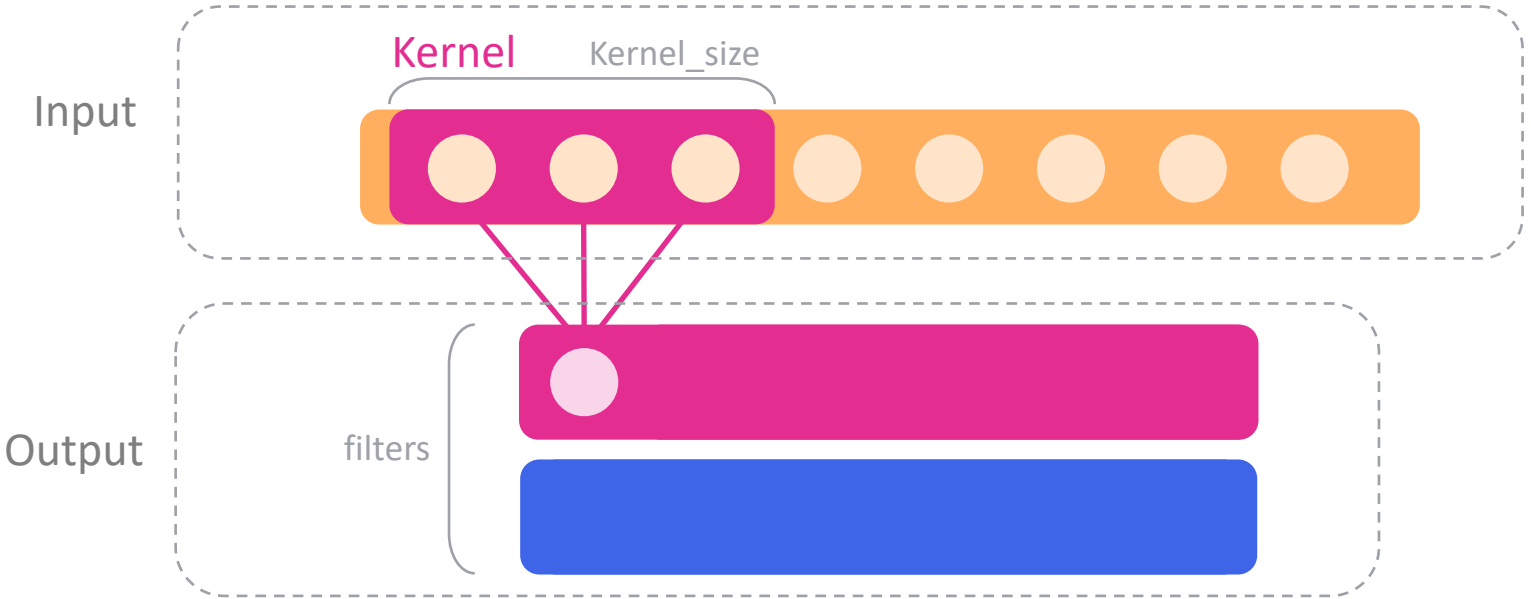
為什麼使用 Convolutional Layer

- 減少神經網路的複雜度
- 避免overfitting
- 以數據來製作指標，而非人為嘗試



Convolution Layer

- layers.Conv1d(filters=2, kernel_size=3)



Convolution Layer

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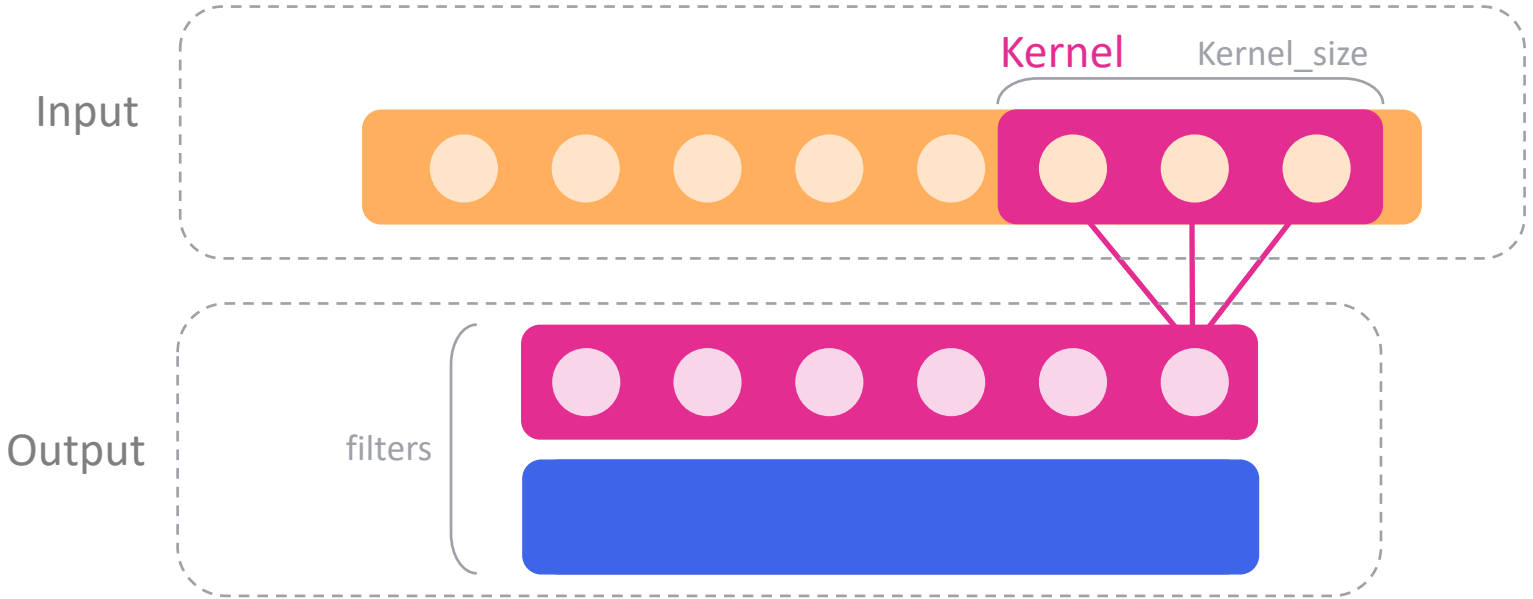

Convolution Layer

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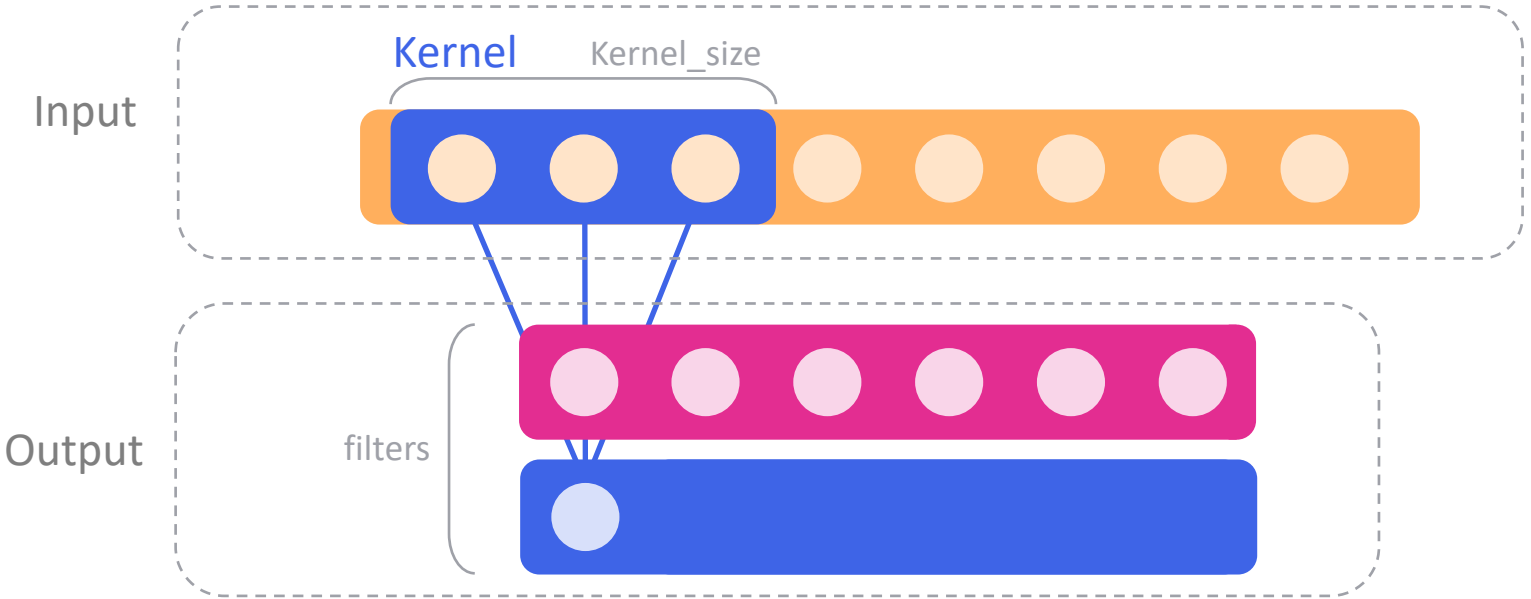
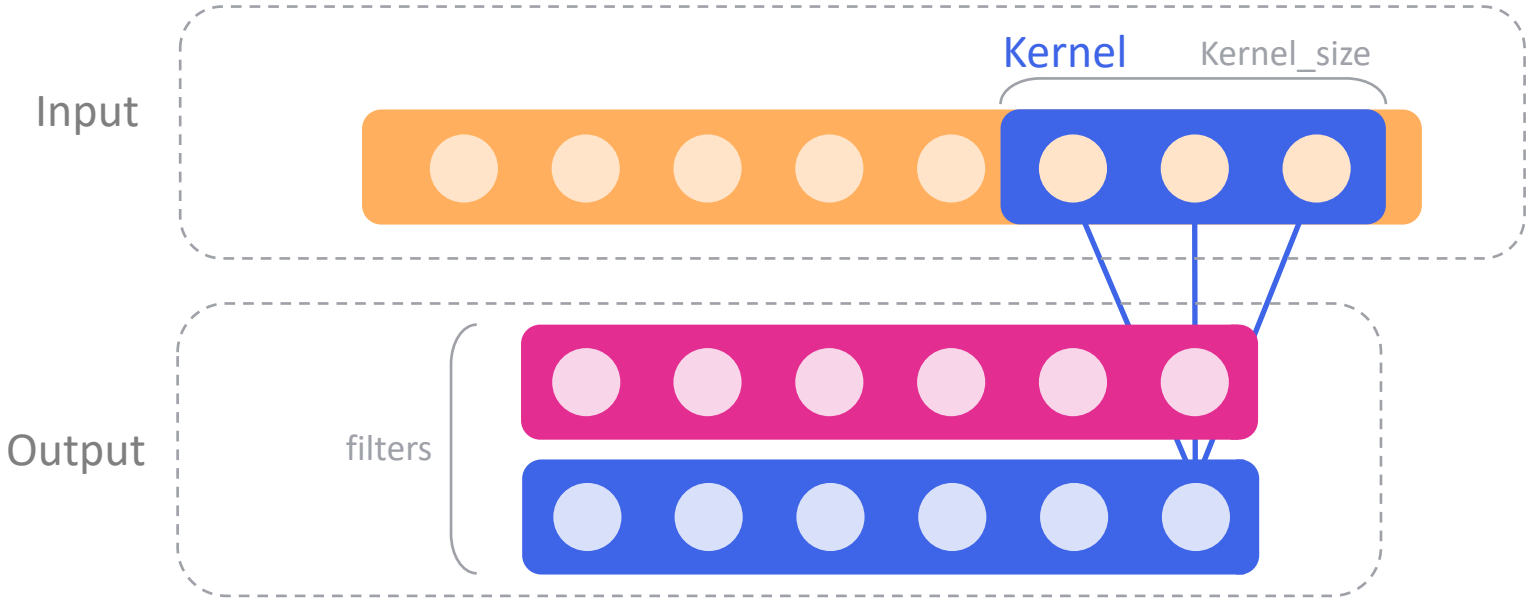


Convolution Layer

- layers.Conv1d(filters=2, kernel_size=3)



Convolution Layer

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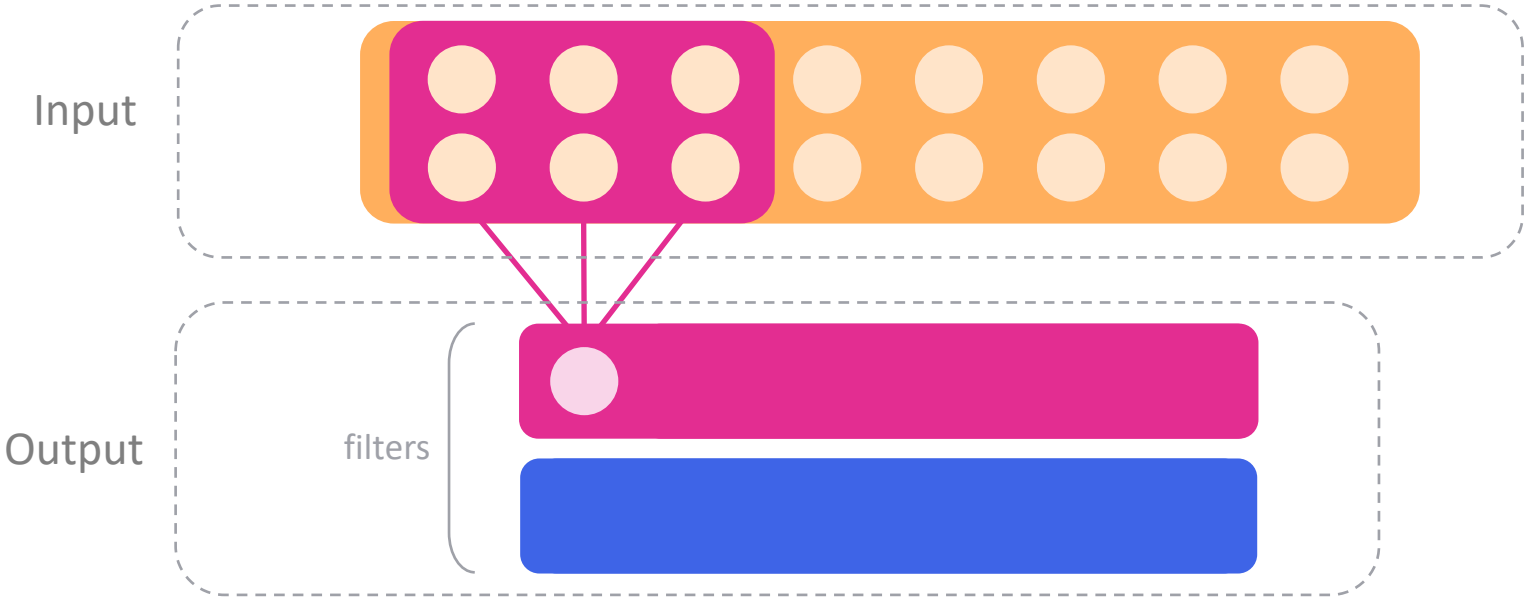
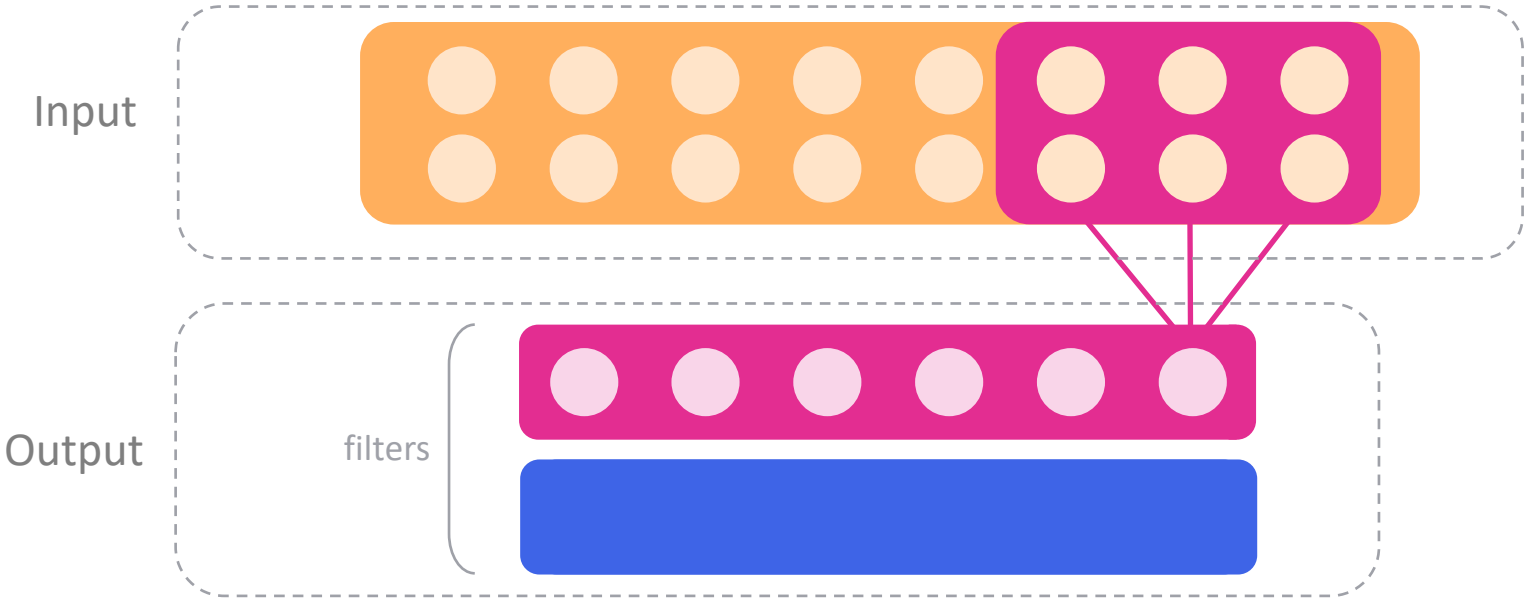


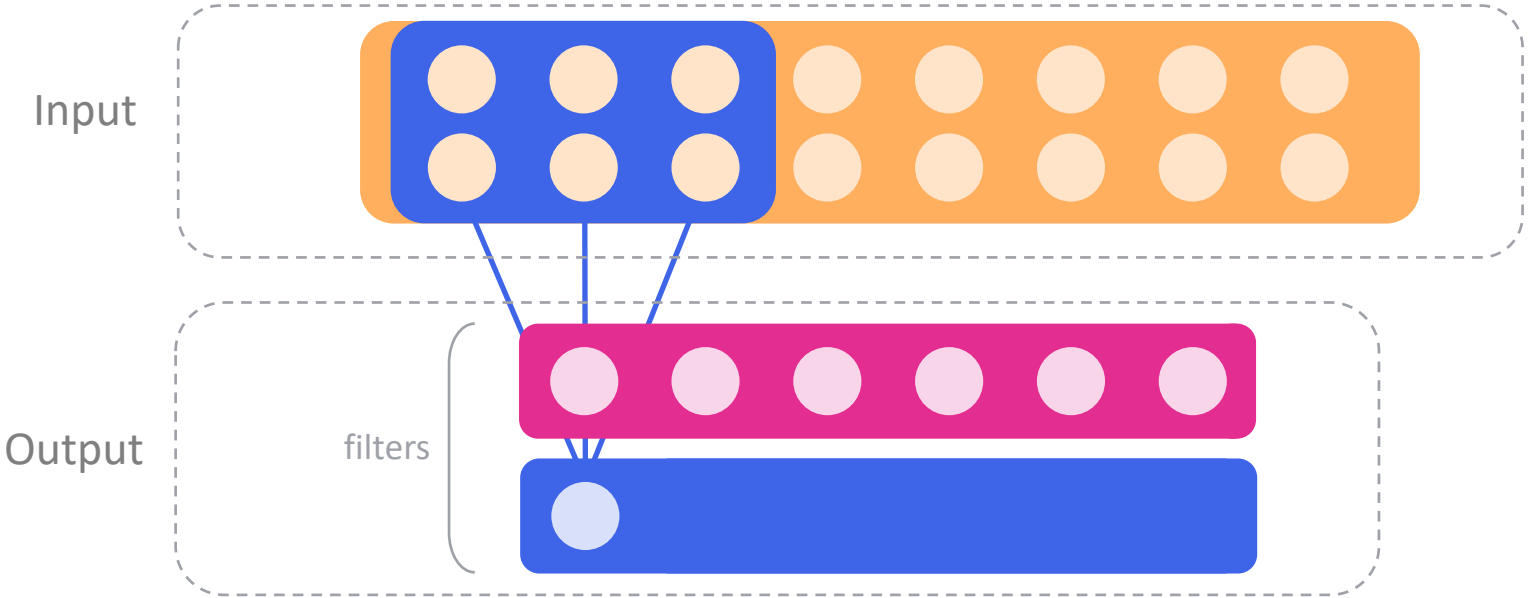
Convolution Layer

- layers.Conv1d(filters=2, kernel_size=3)



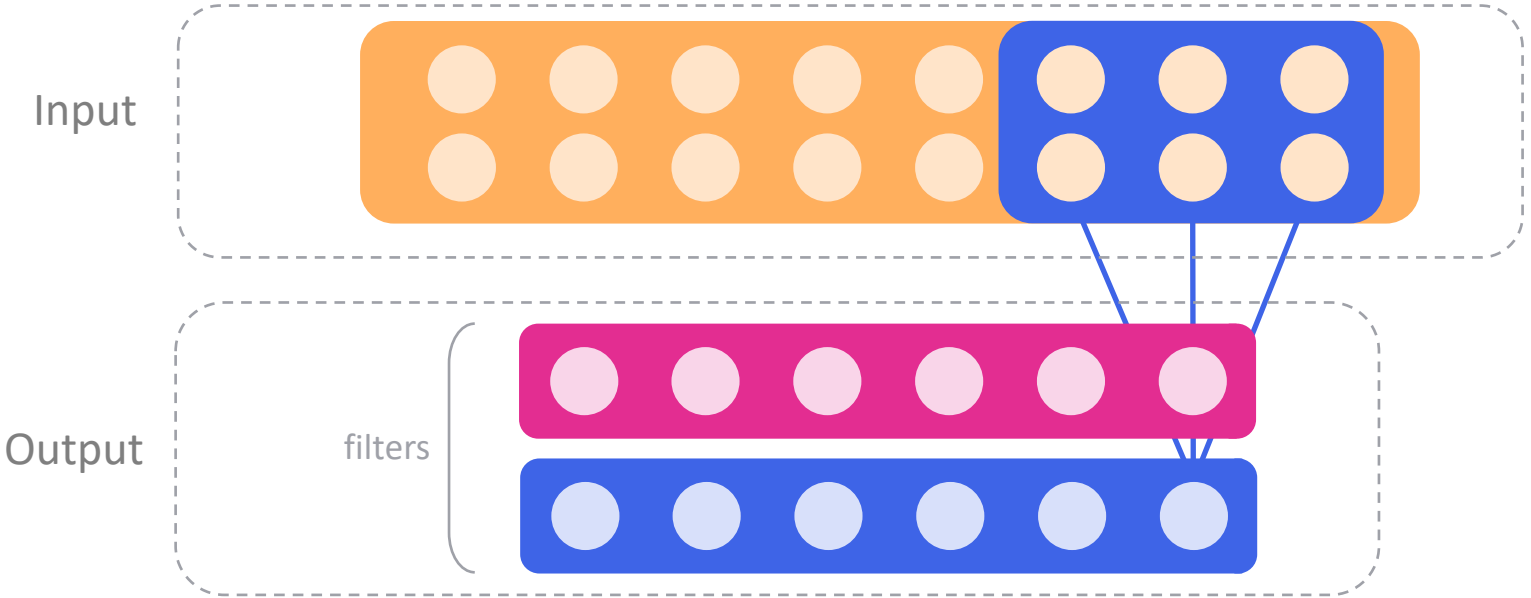
Convolution Layer

- layers.Conv1d(filters=2, kernel_size=3)



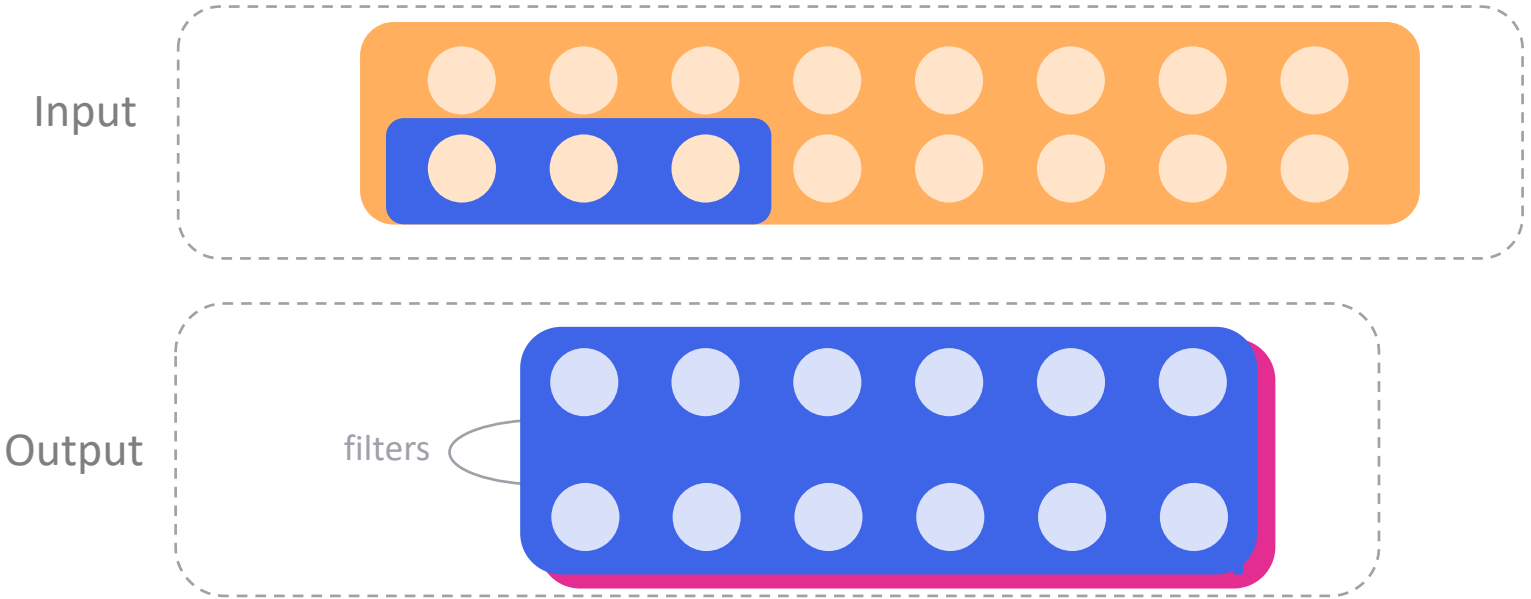
Convolution Layer

- layers.Conv1d(filters=2, kernel_size=3)



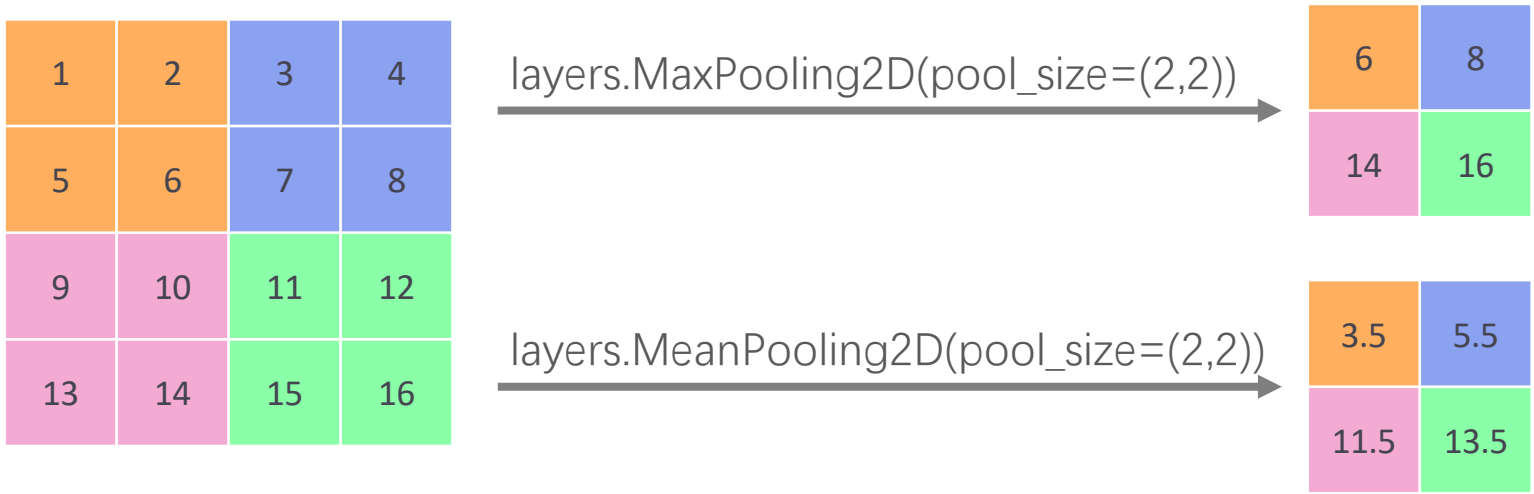
Convolution Layer

- layers.Conv2d(filters=2, kernel_size=(1, 3))

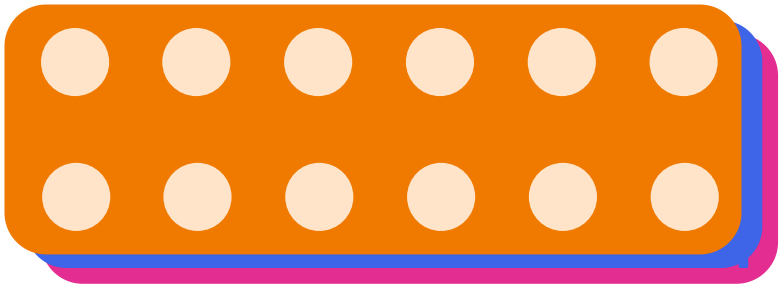


Pooling

- 降低複雜度



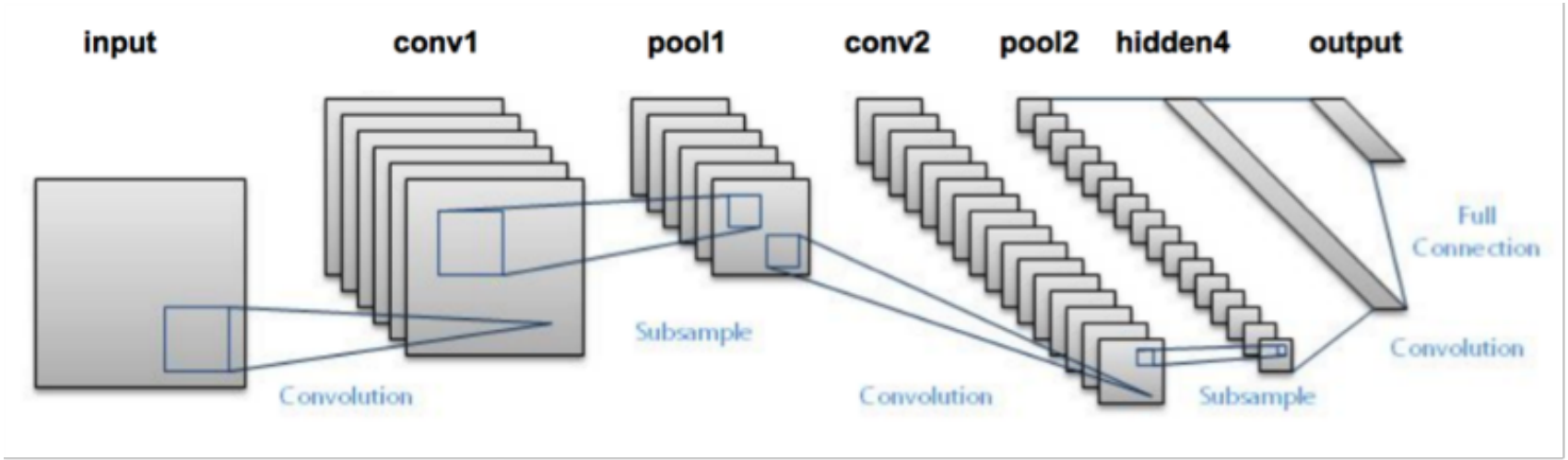
Full Connected Network



Full Connected Network

各種CNN神經網路

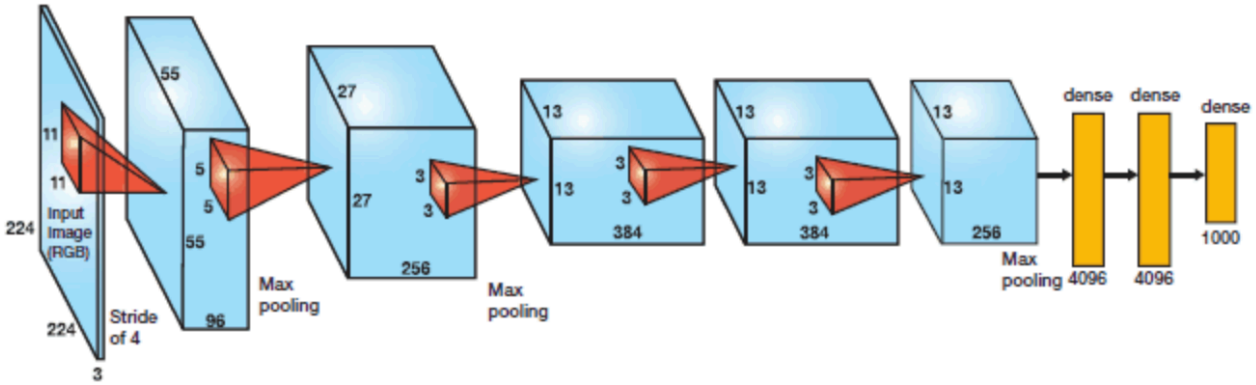
LeNet


input
conv1
pool1
conv2
pool2
hidden4
output
Full
Connection
Convolution
Subsample
Convolution
Subsample
Convolution

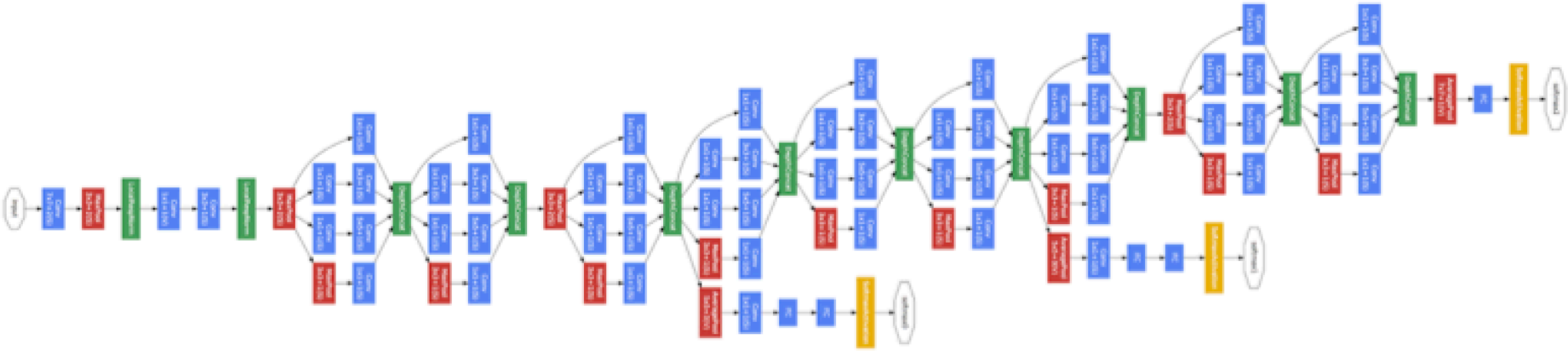
ImageNet 歷屆冠軍

AlexNet

This architecture was one of the first deep networks to push ImageNet Classification accuracy by a significant stride in comparison to traditional methodologies. It is composed of 5 convolutional layers followed by 3 fully connected layers, as depicted in Figure 1.

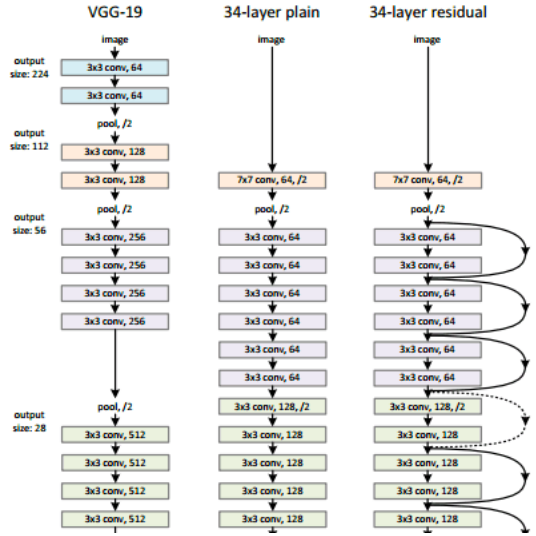


GoogLeNet



Convolution
Pooling
Softmax
Other

Residual Networks



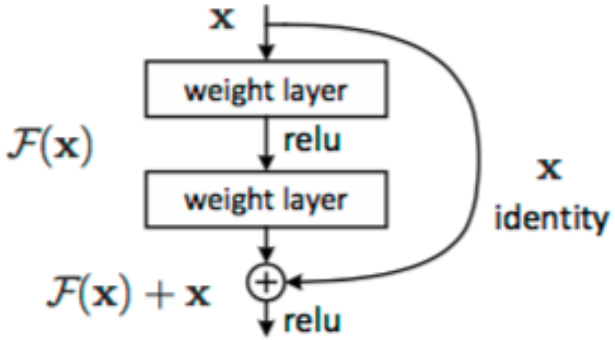


Figure 2. Residual learning: a building block.

重點整理

- Convolution Layer
- Pooling
- Full connected network
- 不同種類的CNN

謝謝您的收看

下個單元見！