

Kaggle: Digit Recognizer

- 比賽敘述：以 42000 筆手寫數字圖片做為訓練資料，訓練模型來辨識另外 28000 筆手寫數字資料。
- 資料敘述：資料為 MNIST 的手寫數字資料，一張圖的大小為 28*28。
- 使用到 Python(Keras)。
- 此模型成功辨識 99.6%的測試資料。

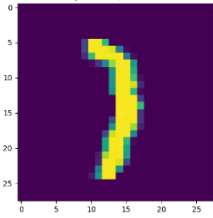
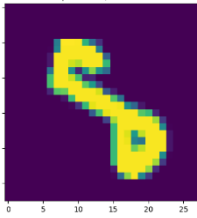
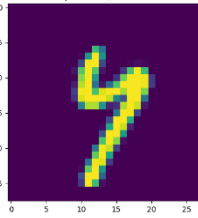
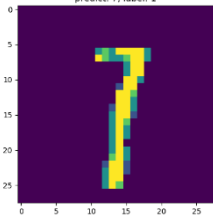
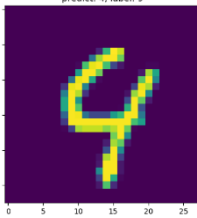
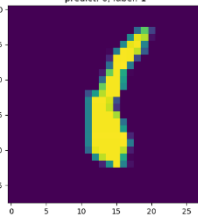
CNN 結構：

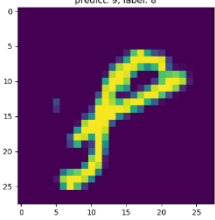
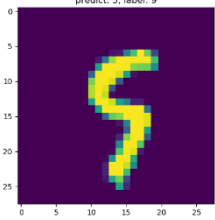
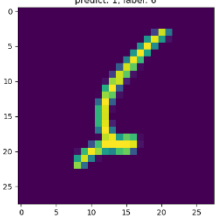
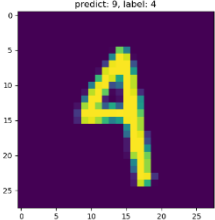
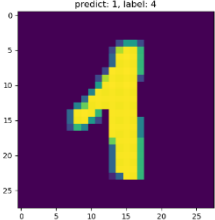
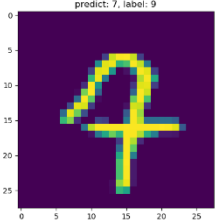
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model.add(Conv2D(32, (5,5), activation='relu', input_shape = (28,28,1)))
model.add(MaxPool2D(pool_size=2))
model.add(BatchNormalization())
model.add(Dropout(0.25))

model.add(Conv2D(64, (3,3), activation='relu'))
model.add(BatchNormalization())
model.add(Dropout(0.25))
model.add(Conv2D(64, (3,3), activation='relu'))
model.add(BatchNormalization())
model.add(Dropout(0.25))

model.add(Flatten())
model.add(Dense(64, activation="relu"))
model.add(BatchNormalization())
model.add(Dropout(0.25))
model.add(Dense(32, activation="relu"))
model.add(BatchNormalization())
model.add(Dropout(0.25))
model.add(Dense(10, activation="softmax"))
```

以下為此模型在 training data 中一些預測錯誤的例子：

		
Fig 1: predict 7, label 1	Fig 2: predict 8, label 5	Fig 3: predict 9, label 4
		
Fig 4: predict 7, label 1	Fig 5: predict 4, label 9	Fig 6: predict 6, label 1

		
<p>Fig 7: predict 9, label 8</p>	<p>Fig 8: predict 5, label 9</p>	<p>Fig 9: predict 1, label 6</p>
		
<p>Fig 10: predict 9, label 4</p>	<p>Fig 11: predict 1, label 4</p>	<p>Fig 12: predict 7, label 9</p>