

# Introduction to Machine Learning HW1 report

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Describe what problems you encountered and how did you solve them when implementing the basic and advanced functions. (2%)

實作的時候其實概念上都沒有太大的問題，因為 `template` 都寫得蠻詳細的，有遇到的困難大概是一開始打的時候 `trace code` 要花比較久時間，後面慢慢懂了之後，就比較輕鬆了。然後最大的困難是我一開始 `sigmoid backward < 0` 的公式有一個地方打錯了，但前面跑都沒問題，到快寫完的時候才有 `output` 跟答案不一樣的狀況出現，就花很多時間才找到問題出在哪.....。

Briefly describe the structure of your binary and multi-class classifiers. (2%)

Binary classifiers:

```
layers_dims = [30, 64, 64, 1]
activation_fn = ["relu", "relu", "sigmoid"]
learning_rate = 0.1
num_iterations = 400
```

Multi-class classifiers:

```
layers_dims = [784, 128, 64, 10]
activation_fn = ["relu", "relu", "softmax"]
learning_rate = 0.1
num_iterations = 51
batch_size = 128
```

Describe effort you put to improve your model (e.g., hyperparameter finetuning). (1%)

上網去查要怎麼給 `batch_size` 會比較好(但好像還是要根據 `model` 跟資料多寡來決定)，還有 `Multi-class classifiers` 在做 `handwritten digit classification problem` 時，中間 `layer` 要怎麼設置會比較好。之後就是一直慢慢去調整 `learning rate`。