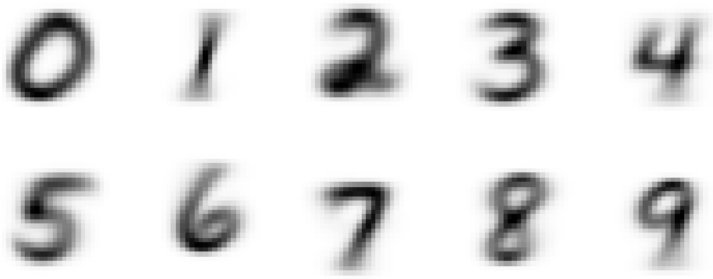
MNIST 手寫數字資料



各數字墨水用量的平均、標準差

```
digit: ink_mean, ink_std
0: 44.216828, 10.736191
1: 19.379654, 5.607750
2: 37.988658, 9.703046
3: 36.090187, 9.635850
4: 30.948226, 8.130984
5: 32.831095, 9.502106
6: 35.011953, 9.544340
7: 29.204563, 7.811263
8: 38.289775, 9.851285
9: 31.260435, 8.273293
```

Q1(a). 用墨水量猜猜看以下分別是哪一個數字？

```
index: ink
59677: 34.308673
35981: 25.968112
6865: 56.959184
26064: 22.743622
18741: 16.200255
22600: 37.936224
27950: 24.501276
16411: 36.030612
5475: 69.881378
32134: 28.904337
```

Q1(b). 用每個數字附近的數字，來猜猜看它是哪個數字？

```
ind: neighboring digits
28370: [2 1 1 2 6 1]
34420: [9 0 9 4 7 7]
11959: [6 1 1 1 1 1]
55532: [4 4 6 4 5 4]
54421: [0 5 7 4 7 4]
43773: [3 3 3 2 3 0]
25899: [1 1 1 1 1 1]
24254: [7 7 7 4 0 7]
2927: [8 0 8 5 3 6]
39562: [5 9 3 6 4 6]
```

NSYSU-digits 手寫資料

各數字墨水用量的平均、標準差

```
digit: ink_mean, ink_std
0: 8.794989, 2.483019
1: 6.589010, 1.590713
2: 8.955215, 2.848100
3: 8.041135, 2.143122
4: 10.732587, 2.402498
5: 8.376941, 2.135341
6: 9.320737, 2.628407
7: 9.650199, 2.013895
8: 12.371447, 3.414354
9: 9.639391, 2.456494
```

Q1(a). 用墨水量猜猜看以下分別是哪一個數字？

```
index: ink
273: 12.673469
87: 14.271684
490: 13.397959
14: 13.533163
367: 4.100765
390: 8.561224
311: 5.316327
211: 9.485969
299: 8.251276
229: 10.153061
```

Q1(b). 用每個數字附近的數字，來猜猜看它是哪個數字？

```
ind: neighboring digits
53: [2 3 0 6 2]
483: [1 7 1 3 1]
60: [1 6 6 1 1]
257: [0 4 4 0 6]
358: [0 1 5 4 9]
230: [3 3 6 3 9]
287: [1 1 1 9 4]
280: [7 7 1 0 6]
84: [8 0 8 2 5]
264: [9 1 1 7 0]
```

Answers

A1(a). 有猜對嗎？

```
index: ink <-- answer
59677: 34.308673 <-- 2: 37.988658, 9.703046
35981: 25.968112 <-- 8: 38.289775, 9.851285
6865: 56.959184 <-- 4: 30.948226, 8.130984
26064: 22.743622 <-- 9: 31.260435, 8.273293
18741: 16.200255 <-- 1: 19.379654, 5.607750
22600: 37.936224 <-- 6: 35.011953, 9.544340
27950: 24.501276 <-- 7: 29.204563, 7.811263
16411: 36.030612 <-- 3: 36.090187, 9.635850
5475: 69.881378 <-- 0: 44.216828, 10.736191
32134: 28.904337 <-- 5: 32.831095, 9.502106
```

A1(b). 有猜對嗎？

```
ind: neighboring digits <-- answer
28370: [2 1 1 2 6 1] <-- 2
34420: [9 0 9 4 7 7] <-- 9
11959: [6 1 1 1 1 1] <-- 6
55532: [4 4 6 4 5 4] <-- 4
54421: [0 5 7 4 7 4] <-- 0
43773: [3 3 3 2 3 0] <-- 3
25899: [1 1 1 1 1 1] <-- 1
24254: [7 7 7 4 0 7] <-- 7
2927: [8 0 8 5 3 6] <-- 8
39562: [5 9 3 6 4 6] <-- 5
```

A2(a). 有猜對嗎？

```
index: ink <-- answer
273: 12.673469 <-- 2: 8.955215, 2.848100
87: 14.271684 <-- 8: 12.371447, 3.414354
490: 13.397959 <-- 4: 10.732587, 2.402498
14: 13.533163 <-- 9: 9.639391, 2.456494
367: 4.100765 <-- 1: 6.589010, 1.590713
390: 8.561224 <-- 6: 9.320737, 2.628407
311: 5.316327 <-- 7: 9.650199, 2.013895
211: 9.485969 <-- 3: 8.041135, 2.143122
299: 8.251276 <-- 0: 8.794989, 2.483019
229: 10.153061 <-- 5: 8.376941, 2.135341
```

A2(b). 有猜對嗎？

```
ind: neighboring digits <-- answer
53: [2 3 0 6 2] <-- 2
483: [1 7 1 3 1] <-- 9
60: [1 6 6 1 1] <-- 6
257: [0 4 4 0 6] <-- 4
358: [0 1 5 4 9] <-- 0
230: [3 3 6 3 9] <-- 3
287: [1 1 1 9 4] <-- 1
280: [7 7 1 0 6] <-- 7
84: [8 0 8 2 5] <-- 8
264: [9 1 1 7 0] <-- 5
```