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1 C:\Python27\python.exe C:/Users/Fantacy/Desktop/MNIST/
  KNN_MNIST.py
2 Data loading finished!
3 I am running through the500th test, and now it is: 'Wed Sep
  18 13:19:12 2019'
4 I am running through the1000th test, and now it is: 'Wed
  Sep 18 13:43:29 2019'
5 I am running through the1500th test, and now it is: 'Wed
  Sep 18 14:07:33 2019'
6 I am running through the2000th test, and now it is: 'Wed
  Sep 18 14:31:41 2019'
7 I am running through the2500th test, and now it is: 'Wed
  Sep 18 14:55:47 2019'
8 I am running through the3000th test, and now it is: 'Wed
  Sep 18 15:19:57 2019'
9 I am running through the3500th test, and now it is: 'Wed
  Sep 18 15:43:59 2019'
10 I am running through the4000th test, and now it is: 'Wed
  Sep 18 16:08:02 2019'
11 I am running through the4500th test, and now it is: 'Wed
  Sep 18 16:32:07 2019'
12 I am running through the5000th test, and now it is: 'Wed
  Sep 18 16:56:10 2019'
13 I am running through the5500th test, and now it is: 'Wed
  Sep 18 17:20:10 2019'
14 I am running through the6000th test, and now it is: 'Wed
  Sep 18 17:44:34 2019'
15 I am running through the6500th test, and now it is: 'Wed
  Sep 18 18:08:40 2019'
16 I am running through the7000th test, and now it is: 'Wed
  Sep 18 18:32:56 2019'
17 I am running through the7500th test, and now it is: 'Wed
  Sep 18 18:57:22 2019'
18 I am running through the8000th test, and now it is: 'Wed
  Sep 18 19:21:50 2019'
19 Runtime is: 24388.8602754 seconds.
20 Walltime is: 'Wed Sep 18 19:40:07 2019'
21 When k = 1, the Confusion matrix is:
22 [839.0, 0.0, 6.0, 1.0, 0.0, 1.0, 4.0, 0.0, 1.0, 4.0]
23 [0.0, 940.0, 0.0, 1.0, 4.0, 1.0, 0.0, 5.0, 5.0, 1.0]
24 [2.0, 2.0, 791.0, 4.0, 0.0, 0.0, 0.0, 3.0, 3.0, 1.0]
25 [0.0, 0.0, 2.0, 796.0, 0.0, 13.0, 0.0, 0.0, 11.0, 2.0]
26 [0.0, 1.0, 4.0, 0.0, 756.0, 0.0, 0.0, 3.0, 4.0, 11.0]
27 [1.0, 1.0, 0.0, 15.0, 0.0, 741.0, 2.0, 0.0, 12.0, 3.0]
28 [5.0, 1.0, 1.0, 1.0, 2.0, 9.0, 860.0, 0.0, 1.0, 0.0]
29 [0.0, 2.0, 7.0, 4.0, 2.0, 0.0, 0.0, 837.0, 1.0, 10.0]
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30 [0.0, 4.0, 5.0, 5.0, 0.0, 2.0, 1.0, 0.0, 757.0, 2.0]
31 [0.0, 0.0, 0.0, 4.0, 17.0, 4.0, 0.0, 10.0, 15.0, 807.0]
32 When k = 3, the Confusion matrix is:
33 [842.0, 1.0, 4.0, 3.0, 0.0, 2.0, 5.0, 1.0, 4.0, 5.0]
34 [0.0, 942.0, 3.0, 1.0, 3.0, 0.0, 1.0, 6.0, 7.0, 1.0]
35 [0.0, 2.0, 793.0, 4.0, 0.0, 0.0, 0.0, 1.0, 3.0, 1.0]
36 [0.0, 0.0, 0.0, 806.0, 0.0, 12.0, 0.0, 0.0, 13.0, 4.0]
37 [0.0, 1.0, 1.0, 0.0, 759.0, 0.0, 0.0, 1.0, 7.0, 12.0]
38 [1.0, 1.0, 0.0, 5.0, 0.0, 740.0, 4.0, 0.0, 12.0, 3.0]
39 [4.0, 0.0, 0.0, 2.0, 2.0, 11.0, 857.0, 0.0, 1.0, 0.0]
40 [0.0, 3.0, 10.0, 3.0, 0.0, 0.0, 0.0, 844.0, 1.0, 7.0]
41 [0.0, 1.0, 5.0, 4.0, 0.0, 1.0, 0.0, 0.0, 748.0, 1.0]
42 [0.0, 0.0, 0.0, 3.0, 17.0, 5.0, 0.0, 5.0, 14.0, 807.0]
43 When k = 5, the Confusion matrix is:
44 [842.0, 0.0, 6.0, 0.0, 0.0, 1.0, 2.0, 1.0, 3.0, 5.0]
45 [0.0, 943.0, 2.0, 0.0, 5.0, 1.0, 1.0, 6.0, 9.0, 1.0]
46 [0.0, 2.0, 788.0, 3.0, 0.0, 0.0, 0.0, 1.0, 3.0, 1.0]
47 [0.0, 0.0, 0.0, 807.0, 0.0, 9.0, 0.0, 0.0, 11.0, 4.0]
48 [0.0, 1.0, 1.0, 0.0, 756.0, 0.0, 0.0, 3.0, 4.0, 9.0]
49 [1.0, 0.0, 0.0, 9.0, 0.0, 745.0, 3.0, 0.0, 14.0, 2.0]
50 [4.0, 1.0, 1.0, 2.0, 2.0, 9.0, 861.0, 0.0, 1.0, 0.0]
51 [0.0, 3.0, 13.0, 4.0, 0.0, 0.0, 0.0, 842.0, 1.0, 8.0]
52 [0.0, 1.0, 5.0, 3.0, 0.0, 1.0, 0.0, 0.0, 753.0, 3.0]
53 [0.0, 0.0, 0.0, 3.0, 18.0, 5.0, 0.0, 5.0, 11.0, 808.0]
54 When k = 7, the Confusion matrix is:
55 [842.0, 0.0, 6.0, 0.0, 0.0, 1.0, 2.0, 1.0, 2.0, 5.0]
56 [0.0, 943.0, 2.0, 1.0, 6.0, 3.0, 1.0, 7.0, 11.0, 1.0]
57 [0.0, 2.0, 787.0, 3.0, 0.0, 0.0, 0.0, 1.0, 2.0, 1.0]
58 [0.0, 0.0, 0.0, 805.0, 0.0, 8.0, 0.0, 0.0, 11.0, 4.0]
59 [0.0, 2.0, 1.0, 0.0, 757.0, 0.0, 0.0, 3.0, 4.0, 10.0]
60 [1.0, 0.0, 0.0, 8.0, 0.0, 744.0, 3.0, 0.0, 12.0, 1.0]
61 [4.0, 0.0, 0.0, 2.0, 2.0, 10.0, 861.0, 0.0, 1.0, 0.0]
62 [0.0, 2.0, 16.0, 4.0, 0.0, 0.0, 0.0, 838.0, 1.0, 9.0]
63 [0.0, 1.0, 4.0, 4.0, 0.0, 0.0, 0.0, 0.0, 755.0, 4.0]
64 [0.0, 1.0, 0.0, 4.0, 16.0, 5.0, 0.0, 8.0, 11.0, 806.0]
65 When k = 9, the Confusion matrix is:
66 [842.0, 0.0, 6.0, 0.0, 0.0, 1.0, 3.0, 1.0, 4.0, 5.0]
67 [0.0, 942.0, 3.0, 1.0, 7.0, 3.0, 1.0, 6.0, 11.0, 1.0]
68 [0.0, 2.0, 784.0, 2.0, 0.0, 0.0, 0.0, 1.0, 2.0, 1.0]
69 [0.0, 1.0, 1.0, 801.0, 0.0, 7.0, 0.0, 0.0, 11.0, 4.0]
70 [0.0, 1.0, 0.0, 0.0, 754.0, 0.0, 0.0, 3.0, 4.0, 9.0]
71 [1.0, 0.0, 0.0, 9.0, 0.0, 743.0, 3.0, 0.0, 16.0, 1.0]
72 [4.0, 1.0, 1.0, 2.0, 3.0, 10.0, 859.0, 0.0, 2.0, 0.0]
73 [0.0, 2.0, 16.0, 5.0, 0.0, 0.0, 0.0, 839.0, 1.0, 10.0]
74 [0.0, 1.0, 5.0, 5.0, 0.0, 1.0, 1.0, 0.0, 747.0, 3.0]
75 [0.0, 1.0, 0.0, 6.0, 17.0, 6.0, 0.0, 8.0, 12.0, 807.0]

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76 When k = 11, the Confusion matrix is:
77 [841.0, 0.0, 8.0, 0.0, 0.0, 1.0, 3.0, 1.0, 3.0, 6.0]
78 [0.0, 942.0, 5.0, 3.0, 7.0, 3.0, 1.0, 7.0, 11.0, 2.0]
79 [0.0, 2.0, 783.0, 3.0, 0.0, 0.0, 0.0, 1.0, 3.0, 1.0]
80 [0.0, 1.0, 1.0, 799.0, 0.0, 7.0, 0.0, 0.0, 12.0, 4.0]
81 [0.0, 3.0, 0.0, 0.0, 748.0, 0.0, 0.0, 3.0, 4.0, 8.0]
82 [1.0, 0.0, 0.0, 9.0, 0.0, 745.0, 3.0, 0.0, 13.0, 1.0]
83 [5.0, 0.0, 0.0, 3.0, 3.0, 9.0, 859.0, 0.0, 2.0, 0.0]
84 [0.0, 2.0, 15.0, 4.0, 0.0, 0.0, 0.0, 835.0, 2.0, 11.0]
85 [0.0, 1.0, 4.0, 5.0, 0.0, 1.0, 1.0, 0.0, 747.0, 4.0]
86 [0.0, 0.0, 0.0, 5.0, 23.0, 5.0, 0.0, 11.0, 13.0, 804.0]
87 When k = 13, the Confusion matrix is:
88 [841.0, 0.0, 7.0, 0.0, 1.0, 1.0, 5.0, 1.0, 4.0, 6.0]
89 [0.0, 943.0, 5.0, 4.0, 7.0, 3.0, 1.0, 10.0, 12.0, 2.0]
90 [0.0, 2.0, 782.0, 3.0, 0.0, 0.0, 0.0, 1.0, 3.0, 1.0]
91 [0.0, 1.0, 0.0, 800.0, 0.0, 8.0, 0.0, 0.0, 11.0, 3.0]
92 [0.0, 2.0, 0.0, 0.0, 747.0, 0.0, 0.0, 3.0, 4.0, 7.0]
93 [1.0, 0.0, 1.0, 7.0, 0.0, 745.0, 3.0, 0.0, 13.0, 0.0]
94 [5.0, 1.0, 0.0, 2.0, 3.0, 9.0, 857.0, 0.0, 1.0, 0.0]
95 [0.0, 1.0, 17.0, 6.0, 0.0, 0.0, 0.0, 833.0, 3.0, 13.0]
96 [0.0, 1.0, 4.0, 5.0, 0.0, 0.0, 1.0, 0.0, 747.0, 4.0]
97 [0.0, 0.0, 0.0, 4.0, 23.0, 5.0, 0.0, 10.0, 12.0, 805.0]
98 When k = 15, the Confusion matrix is:
99 [841.0, 0.0, 7.0, 0.0, 1.0, 1.0, 5.0, 1.0, 3.0, 6.0]
100 [0.0, 942.0, 5.0, 4.0, 7.0, 3.0, 1.0, 10.0, 13.0, 2.0]
101 [0.0, 2.0, 780.0, 2.0, 0.0, 0.0, 0.0, 1.0, 2.0, 2.0]
102 [0.0, 1.0, 0.0, 800.0, 0.0, 8.0, 0.0, 0.0, 10.0, 6.0]
103 [0.0, 3.0, 0.0, 0.0, 745.0, 0.0, 0.0, 3.0, 4.0, 8.0]
104 [1.0, 0.0, 1.0, 7.0, 0.0, 742.0, 3.0, 0.0, 13.0, 0.0]
105 [5.0, 1.0, 1.0, 2.0, 3.0, 9.0, 858.0, 0.0, 1.0, 1.0]
106 [0.0, 1.0, 18.0, 6.0, 0.0, 1.0, 0.0, 833.0, 3.0, 15.0]
107 [0.0, 1.0, 4.0, 5.0, 0.0, 1.0, 0.0, 0.0, 751.0, 3.0]
108 [0.0, 0.0, 0.0, 5.0, 25.0, 6.0, 0.0, 10.0, 10.0, 798.0]
109 When k = 17, the Confusion matrix is:
110 [841.0, 0.0, 7.0, 0.0, 1.0, 1.0, 5.0, 1.0, 5.0, 7.0]
111 [0.0, 942.0, 5.0, 6.0, 8.0, 3.0, 1.0, 11.0, 12.0, 2.0]
112 [0.0, 2.0, 782.0, 2.0, 0.0, 0.0, 0.0, 1.0, 2.0, 2.0]
113 [0.0, 1.0, 0.0, 798.0, 0.0, 9.0, 0.0, 0.0, 13.0, 4.0]
114 [0.0, 3.0, 0.0, 1.0, 744.0, 0.0, 0.0, 2.0, 4.0, 8.0]
115 [1.0, 0.0, 1.0, 9.0, 0.0, 741.0, 3.0, 0.0, 13.0, 2.0]
116 [5.0, 1.0, 0.0, 2.0, 4.0, 10.0, 857.0, 0.0, 2.0, 1.0]
117 [0.0, 1.0, 17.0, 5.0, 0.0, 1.0, 0.0, 832.0, 3.0, 15.0]
118 [0.0, 1.0, 4.0, 4.0, 0.0, 1.0, 1.0, 0.0, 742.0, 3.0]
119 [0.0, 0.0, 0.0, 4.0, 24.0, 5.0, 0.0, 11.0, 14.0, 797.0]
120 When k = 19, the Confusion matrix is:
121 [841.0, 0.0, 7.0, 0.0, 1.0, 2.0, 7.0, 1.0, 6.0, 6.0]

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122 [0.0, 942.0, 9.0, 5.0, 7.0, 3.0, 2.0, 12.0, 12.0, 2.0]
123 [0.0, 2.0, 774.0, 2.0, 0.0, 0.0, 0.0, 1.0, 1.0, 1.0]
124 [0.0, 1.0, 0.0, 798.0, 0.0, 10.0, 0.0, 0.0, 13.0, 4.0]
125 [0.0, 3.0, 2.0, 0.0, 745.0, 0.0, 0.0, 2.0, 4.0, 7.0]
126 [1.0, 0.0, 1.0, 9.0, 0.0, 739.0, 3.0, 0.0, 14.0, 2.0]
127 [5.0, 1.0, 1.0, 2.0, 5.0, 10.0, 854.0, 0.0, 2.0, 1.0]
128 [0.0, 1.0, 18.0, 6.0, 0.0, 0.0, 0.0, 830.0, 3.0, 15.0]
129 [0.0, 1.0, 4.0, 4.0, 0.0, 1.0, 1.0, 0.0, 739.0, 2.0]
130 [0.0, 0.0, 0.0, 5.0, 23.0, 6.0, 0.0, 12.0, 16.0, 801.0]
131 When k = 21, the Confusion matrix is:
132 [841.0, 0.0, 7.0, 0.0, 1.0, 2.0, 7.0, 1.0, 7.0, 6.0]
133 [0.0, 942.0, 8.0, 5.0, 7.0, 3.0, 2.0, 11.0, 12.0, 2.0]
134 [0.0, 2.0, 773.0, 3.0, 0.0, 0.0, 0.0, 1.0, 2.0, 2.0]
135 [0.0, 1.0, 1.0, 797.0, 0.0, 12.0, 0.0, 0.0, 12.0, 4.0]
136 [0.0, 3.0, 2.0, 0.0, 744.0, 0.0, 0.0, 3.0, 4.0, 8.0]
137 [1.0, 0.0, 1.0, 9.0, 0.0, 736.0, 3.0, 0.0, 13.0, 1.0]
138 [5.0, 1.0, 1.0, 2.0, 5.0, 10.0, 854.0, 0.0, 2.0, 1.0]
139 [0.0, 1.0, 19.0, 6.0, 0.0, 1.0, 0.0, 830.0, 3.0, 15.0]
140 [0.0, 1.0, 4.0, 4.0, 0.0, 1.0, 1.0, 0.0, 739.0, 2.0]
141 [0.0, 0.0, 0.0, 5.0, 24.0, 6.0, 0.0, 12.0, 16.0, 800.0]
142
143 Process finished with exit code 0
144
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