Part1 result

Perceptron:
perceptron with n = 500
0.9931
perceptron with n = 1000
0.9664
bestresult: correct_500 = 0.9931 correct_1000 = 0.9664

Perceptron with margin:
perceptron(margin) with n = 500, r = 1.5
0.9931
perceptron(margin) with n = 1000, r = 1.5
0.9664
perceptron(margin) with n = 500, r = 0.25
0.9953
perceptron(margin) with n = 1000, r = 0.25
0.9822
perceptron(margin) with n = 500, r = 0.03
0.9975
perceptron(margin) with n = 1000, r = 0.03
0.9839
perceptron(margin) with n = 500, r = 0.005
0.9994
perceptron(margin) with n = 1000, r = 0.005
0.9844
perceptron(margin) with n = 500, r = 0.001
0.9958
perceptron(margin) with n = 1000, r = 0.001
0.9953
bestresult: correct_500 = 0.9958 correct_1000 = 0.9953 learning rate = 0.001

Winnow:
winnow with n = 500, alpha = 1.1
0.9998
winnow with n = 1000, alpha = 1.1
0.9994
winnow with n = 500, alpha = 1.01
0.9799
winnow with n = 1000, alpha = 1.01
0.967
winnow with n = 500, alpha = 1.005
0.9602

winnow with n = 1000, alpha = 1.005
0.8998
winnow with n = 500, alpha = 1.0005
0.5376
winnow with n = 1000, alpha = 1.0005
0.5255
winnow with n = 500, alpha = 1.0001
0.525
winnow with n = 1000, alpha = 1.0001
0.5197
bestresult: correct_500 = 0.9998 correct_1000 = 0.9994 alpha = 1.1

Winnow with margin:
winnow(margin) with n = 500, alpha = 1.1 gamma = 2.0
1.0
winnow(margin) with n = 1000, alpha = 1.1 gamma = 2.0
0.9992
winnow(margin) with n = 500, alpha = 1.1 gamma = 0.3
0.9981
winnow(margin) with n = 1000, alpha = 1.1 gamma = 0.3
0.9992
winnow(margin) with n = 500, alpha = 1.1 gamma = 0.04
0.9992
winnow(margin) with n = 1000, alpha = 1.1 gamma = 0.04
0.9996
winnow(margin) with n = 500, alpha = 1.1 gamma = 0.006
0.9998
winnow(margin) with n = 1000, alpha = 1.1 gamma = 0.006
0.9994
winnow(margin) with n = 500, alpha = 1.1 gamma = 0.001
0.9998
winnow(margin) with n = 1000, alpha = 1.1 gamma = 0.001
0.9994
winnow(margin) with n = 500, alpha = 1.01 gamma = 2.0
0.9866
winnow(margin) with n = 1000, alpha = 1.01 gamma = 2.0
0.9721
winnow(margin) with n = 500, alpha = 1.01 gamma = 0.3
0.9797
winnow(margin) with n = 1000, alpha = 1.01 gamma = 0.3
0.9688
winnow(margin) with n = 500, alpha = 1.01 gamma = 0.04
0.9804

winnow(margin) with n = 1000, alpha = 1.01 gamma = 0.04
0.9664
winnow(margin) with n = 500, alpha = 1.01 gamma = 0.006
0.9789
winnow(margin) with n = 1000, alpha = 1.01 gamma = 0.006
0.9673
winnow(margin) with n = 500, alpha = 1.01 gamma = 0.001
0.9796
winnow(margin) with n = 1000, alpha = 1.01 gamma = 0.001
0.9668
winnow(margin) with n = 500, alpha = 1.005 gamma = 2.0
0.9717
winnow(margin) with n = 1000, alpha = 1.005 gamma = 2.0
0.9144
winnow(margin) with n = 500, alpha = 1.005 gamma = 0.3
0.9618
winnow(margin) with n = 1000, alpha = 1.005 gamma = 0.3
0.8933
winnow(margin) with n = 500, alpha = 1.005 gamma = 0.04
0.9617
winnow(margin) with n = 1000, alpha = 1.005 gamma = 0.04
0.8913
winnow(margin) with n = 500, alpha = 1.005 gamma = 0.006
0.9606
winnow(margin) with n = 1000, alpha = 1.005 gamma = 0.006
0.8929
winnow(margin) with n = 500, alpha = 1.005 gamma = 0.001
0.9595
winnow(margin) with n = 1000, alpha = 1.005 gamma = 0.001
0.8932
winnow(margin) with n = 500, alpha = 1.0005 gamma = 2.0
0.5387
winnow(margin) with n = 1000, alpha = 1.0005 gamma = 2.0
0.525
winnow(margin) with n = 500, alpha = 1.0005 gamma = 0.3
0.5373
winnow(margin) with n = 1000, alpha = 1.0005 gamma = 0.3
0.5256
winnow(margin) with n = 500, alpha = 1.0005 gamma = 0.04
0.5376
winnow(margin) with n = 1000, alpha = 1.0005 gamma = 0.04
0.5244
winnow(margin) with n = 500, alpha = 1.0005 gamma = 0.006
0.5374

winnow(margin) with n = 1000, alpha = 1.0005 gamma = 0.006
0.5252
winnow(margin) with n = 500, alpha = 1.0005 gamma = 0.001
0.5377
winnow(margin) with n = 1000, alpha = 1.0005 gamma = 0.001
0.5252
winnow(margin) with n = 500, alpha = 1.0001 gamma = 2.0
0.5257
winnow(margin) with n = 1000, alpha = 1.0001 gamma = 2.0
0.5204
winnow(margin) with n = 500, alpha = 1.0001 gamma = 0.3
0.5254
winnow(margin) with n = 1000, alpha = 1.0001 gamma = 0.3
0.5195
winnow(margin) with n = 500, alpha = 1.0001 gamma = 0.04
0.5253
winnow(margin) with n = 1000, alpha = 1.0001 gamma = 0.04
0.5197
winnow(margin) with n = 500, alpha = 1.0001 gamma = 0.006
0.5253
winnow(margin) with n = 1000, alpha = 1.0001 gamma = 0.006
0.5197
winnow(margin) with n = 500, alpha = 1.0001 gamma = 0.001
0.525
winnow(margin) with n = 1000, alpha = 1.0001 gamma = 0.001
0.5198
bestresult: correct_500 = 1.0 correct_1000 = 0.9992 alpha = 1.1 gamma = 2.0

Adagrad:
adagrad with n = 500, alpha = 1.5
0.9827
adagrad with n = 1000, alpha = 1.5
0.9946
adagrad with n = 500, alpha = 0.25
0.9906
adagrad with n = 1000, alpha = 0.25
0.9947
adagrad with n = 500, alpha = 0.03
0.9581
adagrad with n = 1000, alpha = 0.03
0.9428
adagrad with n = 500, alpha = 0.005
0.6657
adagrad with n = 1000, alpha = 0.005

0.6202
adagrad with n = 500, alpha = 0.001
0.4977
adagrad with n = 1000, alpha = 0.001
0.5
bestresult: correct_500 = 0.9906 correct_1000 = 0.9947 learning rate = 0.25