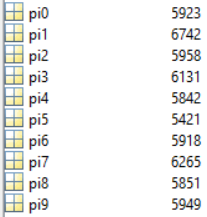
Atanas Delevski  
HW2 Report

b)



9.87%

11.23%

9.93%

‬10.22%

9.73%

9.03%

9.86%

10.44%

9.75%

9.91%

Code:

data\_train = load('mnist\_train.csv');

data\_test = load('mnist\_test.csv');

labels\_train = data\_train(:, 1);

labels\_test = data\_test(:, 1);

images\_train = data\_train(:, 2:785);

images\_test = data\_test(:, 2:785);

images\_trainA = zeros(60000, 784);

images\_testA = zeros(10000, 784);

pi0 = sum(labels\_train(:)==0);

pi1 = sum(labels\_train(:)==1);

pi2 = sum(labels\_train(:)==2);

pi3 = sum(labels\_train(:)==3);

pi4 = sum(labels\_train(:)==4);

pi5 = sum(labels\_train(:)==5);

pi6 = sum(labels\_train(:)==6);

pi7 = sum(labels\_train(:)==7);

pi8 = sum(labels\_train(:)==8);

pi9 = sum(labels\_train(:)==9);

for i=1:60000

for j=1:784

if images\_train(i, j) > 100

images\_trainA(i, j) = 1;

end

end

End

index\_label = 0;

data\_set = zeros(10, 784, 1);

for i=1:60000

index\_label = labels\_train(i);

for j=1:784

if images\_trainA(i, j) == 1

data\_set(index\_label+1, j, 1) = data\_set(index\_label+1, j, 1) + 1;

end

end

end

Pij = zeros(10, 784, 1);

for i=1:10

for j=1:784

if i==1

Pij(i, j, 1) = data\_set(i, j, 1)/pi0;

elseif i==2

Pij(i, j, 1) = data\_set(i, j, 1)/pi1;

elseif i==3

Pij(i, j, 1) = data\_set(i, j, 1)/pi2;

elseif i==4

Pij(i, j, 1) = data\_set(i, j, 1)/pi3;

elseif i==5

Pij(i, j, 1) = data\_set(i, j, 1)/pi4;

elseif i==6

Pij(i, j, 1) = data\_set(i, j, 1)/pi5;

elseif i==7

Pij(i, j, 1) = data\_set(i, j, 1)/pi6;

elseif i==8

Pij(i, j, 1) = data\_set(i, j, 1)/pi7;

elseif i==9

Pij(i, j, 1) = data\_set(i, j, 1)/pi8;

elseif i==10

Pij(i, j, 1) = data\_set(i, j, 1)/pi9;

end

end

end

This is as far as I could get. I couldn’t figure out how to do the testing portion by myself. I had all the Pij’s inside the Pij matrix, but I wasn’t sure how to proceed from there and how to apply them all to observation vectors.