

PRINTOUTS

Question 1(b).

accuracy: 0.7818

precision: 0.761270801815

recall: 0.5032

Question 1(c).

accuracy: 0.8178

precision: 0.77241047825

recall: 0.6428

Question 1(d).

accuracy: 0.822

precision: 0.755819060167

recall: 0.6884

Question 1(e).

accuracy: 0.821666666667

precision: 0.759312960071

recall: 0.6808

Question 3(a).

validation accuracy of trained net 1: 0.927

validation accuracy of trained net 2: 0.9279

validation accuracy of trained net 3: 0.9274

validation accuracy of trained net 4: 0.934
validation accuracy of trained net 5: 0.9293
validation accuracy of trained net 6: 0.9306
validation accuracy of trained net 7: 0.9274
validation accuracy of trained net 8: 0.9324
validation accuracy of trained net 9: 0.9328
validation accuracy of trained net 10: 0.9296

maximum validation accuracy: 0.934
test accuracy: 0.9384
cross entropy: 329.627352895
learning rate used: 1.0

Question 3(b).

validation accuracy of trained net 1: 0.7972
validation accuracy of trained net 2: 0.7992
validation accuracy of trained net 3: 0.8012
validation accuracy of trained net 4: 0.797
validation accuracy of trained net 5: 0.7894
validation accuracy of trained net 6: 0.7995
validation accuracy of trained net 7: 0.8001
validation accuracy of trained net 8: 0.8009
validation accuracy of trained net 9: 0.795
validation accuracy of trained net 10: 0.7955

maximum validation accuracy: 0.8012
test accuracy: 0.8108
cross entropy: 8104.27189644
learning rate used: 1.0

Question 3(c).

training accuracy (after 50 iterations): 0.9347

test accuracy (after 50 iterations): 0.9195

cross entropy (after 50 iterations): 2283.80850024

training accuracy (after 200 iterations): 0.9836

test accuracy (after 200 iterations): 0.942

cross entropy (after 200 iterations): 780.096560917

Question 3(d).

validation accuracy of trained net 1: 0.8445

validation accuracy of trained net 2: 0.8443

validation accuracy of trained net 3: 0.8421

validation accuracy of trained net 4: 0.8466

validation accuracy of trained net 5: 0.857

validation accuracy of trained net 6: 0.8474

validation accuracy of trained net 7: 0.8559

validation accuracy of trained net 8: 0.8136

validation accuracy of trained net 9: 0.851

validation accuracy of trained net 10: 0.8591

maximum validation accuracy: 0.8591

test accuracy: 0.8678

cross entropy: 3594.67434691

learning rate used: 10.0

Question 3(e).

validation accuracy of trained net 1: 0.8937
validation accuracy of trained net 2: 0.8951
validation accuracy of trained net 3: 0.8943
validation accuracy of trained net 4: 0.9016
validation accuracy of trained net 5: 0.8915
validation accuracy of trained net 6: 0.8976
validation accuracy of trained net 7: 0.8984
validation accuracy of trained net 8: 0.8967
validation accuracy of trained net 9: 0.8946
validation accuracy of trained net 10: 0.8986

maximum validation accuracy: 0.9016
test accuracy: 0.9117
cross entropy: 442.608501639
learning rate used: 1.0

Question 3(f).

test accuracy after epoch #1 is : 0.8915
test accuracy after epoch #10 is : 0.944
test accuracy after epoch #20 is : 0.954
test accuracy after epoch #30 is : 0.9586
test accuracy after epoch #40 is : 0.958
test accuracy after epoch #50 is : 0.9601
test accuracy after epoch #60 is : 0.9591
test accuracy after epoch #70 is : 0.9606
test accuracy after epoch #80 is : 0.96
test accuracy after epoch #90 is : 0.9598
test accuracy after epoch #100 is : 0.9606

final train accuracy: 0.9998

final test accuracy: 0.9606

final cross entropy: 42.8269897395

Question 3(g).

test accuracy after epoch #1 is : 0.1867

test accuracy after epoch #10 is : 0.4271

test accuracy after epoch #20 is : 0.5909

test accuracy after epoch #30 is : 0.7218

test accuracy after epoch #40 is : 0.7098

test accuracy after epoch #50 is : 0.753

test accuracy after epoch #60 is : 0.7729

test accuracy after epoch #70 is : 0.7869

test accuracy after epoch #80 is : 0.8009

test accuracy after epoch #90 is : 0.8171

test accuracy after epoch #100 is : 0.8348

final train accuracy: 0.830766666667

final test accuracy: 0.8348

final cross entropy: 5809.24916712