

Homework 5

1. Problem 1: simple fit neural network

- a. Run the script in the function SimpleFitNN_
- b. Set the number of hidden units to 3.
 - i. Plot the training, validation and testing errors
 - ii. What is the resulting performance
- c. Set the number of hidden units to 5.
 - i. Plot the training, validation and testing errors
 - ii. What is the resulting performance
- d. Set the number of hidden units to 10
 - i. Plot the training, validation and testing errors
 - ii. What is the resulting performance
- e. What percentage of examples are used in
 - i. Training set?
 - ii. Validation set?
 - iii. Testing set?

2. Run CNN:

- a. Plot all the first layer features using image function
 - i. Do the features look different?
- b. Try 3x3 first layer whatever kernels
 - i. How many of the eigenvalues are non-zero?
 - ii. Why are that many zero?
- c. Change learning rate to 0.01 and print out what happens to mini batch accuracy
- d. change learning rate to 0.001 and print out what happens to mini batch accuracy