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Bil 570 Homework 1 Report

Development of a logistic regression model was assigned in this assignment. Mini batch gradient descent algorithm was implemented with python. Only numpy and matplotlib libraries were used. This report will be about model details, parameters and results.

Firstly, data was read and shuffled. Data sets were divided into 20% testing and the remaining as training. Batch size was not chosen too large as there were few columns in both data sets. The algorithm was run for the values 8, 16 and 32. The best result was 16. Therefore, batch size was chosen as 16.

Various attempts have been made to stop the iteration. For example, stopping when the function gets close enough to zero, predetermining maximum number of iterations, and stopping when the improvement drops below a threshold. In the last case, it was stopped when the iteration count reached 100 or the threshold was below 0.001.

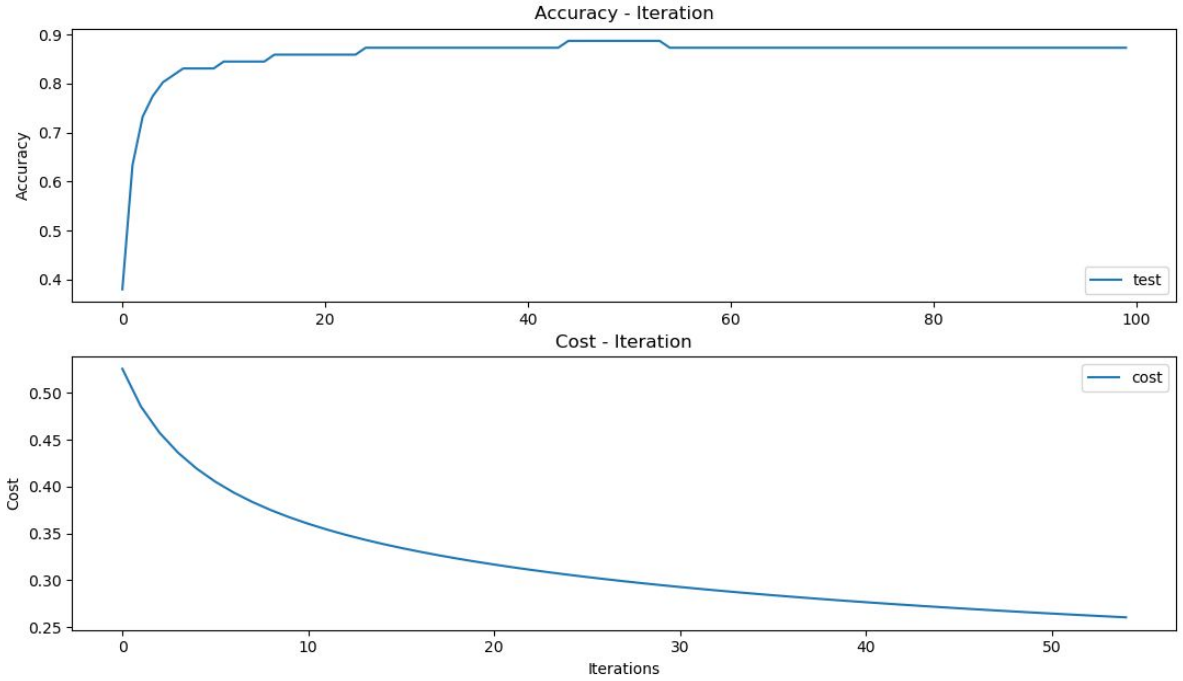
Selected parameters:

Iteration number = 500
Batch size = 16
Threshold = 0.001
Learning rate = 0.1

References:

https://stats.stackexchange.com/questions/164876/what-is-the-trade-off-between-batch-size-and-number-of-iterations-to-train-a-neu
https://machinelearningmastery.com/gentle-introduction-mini-batch-gradient-descent-configure-batch-size/
https://towardsdatascience.com/algorithms-from-scratch-logistic-regression-7bacdfd9738e
https://www.geeksforgeeks.org/ml-mini-batch-gradient-descent-with-python/

dataset/ionosphere/ionosphere.data



dataset/connectionistBench/sonar.all-data