Peer Review-1

Exercise-1

Reviewer: Rimli Sengupta

Reviewing: Ciara Nugent

1 General Review:

You have a lot of great information and seem to cover all parts of this exercise. Your folder is well organized and I really liked your pdf file. Each figure in the pdf file is named and labeled properly.

2 General Overview of codes:

It was very interesting and helpful to see your different matrix factorizations in R. I think, it would be much more informative if the steps are described in more detail. Also, for this code, I think, after starting a loop, it would be better to maintain the indentation style to convey the program structure.

There is package called 'glmnet' which fits lasso and elastic-net model paths for regression, logistic and multinomial regression using coordinate descent. The algorithm is extremely fast, and exploits sparsity in the input x matrix where it exists. In R, we can also compare the speed of a method by sys.time().

For the next gradient descent and Newton method codes, I have a few suggestions:

While running read.csv(), header=FALSE could be included in the statement.
Also I think, it would be much more informative if a visual delimiter is added in between each function, for easy readability.
To check the convergence, the cost functions could be compared by changing the number of iterations required for convergence. (Such as analyzing the difference between the total cost of Newton method by changing the number of iterations by one unit).

3 General Overview:

I believe, overall, you have done excellent work on this. I have tried to check in detail your code and I learned a lot of things from your code. While checking your MatrixInversion.R code, I felt that I could have followed your method for different matrix factorizations.