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STAT 380

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Part One Report of Single Layer Network on Hitters Data

**Introduction**

The Single-layer neural network is a type of network that consists of one single hidden layer between the input and the output layer. I picked this example because I believe single-layer networks served as a foundation for exploring much more complex neural networks in deep learning. On the other hand, according to Kaggle.com, the hitter’s data set is a major league baseball player data set that contains a variety of information about each player regarding their baseball careers, and their performance in 1986. The data set included 322 observations with 20 attributes, some of which are:

1. AtBat - Number of times at bat in 1986.
2. Hits - Number of hits in 1986.
3. HmRun - Number of home runs in 1986.
4. Run - Number of runs in 1986.
5. RBI - Number of runs batted in 1986.
6. Walks - Number of Walks in 1986
7. Anything that starts with a "C" represents career statistics.
8. Etc.

**Methodology**

After installing the Keras scheme into R studio, follow the handout steps. I decided to run the code found in the HTML document linked below the Part One description. The description for the single-layer network on hitters’ data indicates that the author had built a multiple linear regression, a LASSO regression, and a single-layer network to predict the salary using all the other variables.

Here are the general steps that the author takes in the Lab: Deep Learning under Single Layer Network on Hitters Data:

1. First, load the libraries (ISLR2, glmnet, and keras) into the R environment.
2. Create and name a new data frame “Gitters” to store data points from the “Hitters” data set with no null values.
3. Randomly selected 66.92% of the “Gitters” data as the training set and 33.08% of the data as the testing set using the seed “13”.
4. Create a multiple linear regression to predict salary using all the other variables by using the lm() function. And calculated the mean absolute error of the multiple linear regression.

Reference

* <https://www.kaggle.com/datasets/floser/hitters>
* <https://hastie.su.domains/ISLR2/Labs/Rmarkdown_Notebooks/Ch10-deeplearning-lab-keras.html>