Yeshiva University

AIM 5007 Neural Networks and Deep Learning
Problem Set 5

Introduction

In this problem set, we will complete a short lab activity that builds a neural network model using Python and Keras. The activities from chapter 3 of *The Deep Learning with Keras Workshop* should prepare you adequately for this exercise.

Exercise 1

The dataset we will be using for this exercise contains data for Major League Baseball players and was originally used in the 1988 American Statistical Association Graphics Section Poster Session. You can find a full description of the data here:

https://rdrr.io/cran/ISLR/man/Hitters.html

For this exercise, however, we have a cleaned version of the data (Hitters Dataset Clean.csv). (Only complete rows are used. Rows with missing data have been removed for you.)

Following on the examples from chapter 3 of the book, implement a neural network to predict the salary of a player based on the feature. (Hint: What kind of loss function makes sense for this problem?)

Your deliverable for this exercise includes the following items:

1. The Python code used to implement the model
2. A description of the process you used and the choices you made (e.g., which loss function, how many layers, how many epochs, etc.), and why you did what you did
3. How effective your final model is (and how you know)

Note: You may either provide your description within your Python notebook or you may provide a separate summary report (no more than a page) that details everything you did and how it turned out.

Exercise 2

Fit a model for our favorite seeds data set from previous exercises. Your deliverable here should include the following items (note that there is one additional item compared to above):

1. The Python code used to implement the model
2. A description of the process you used and the choices you made (e.g., which loss function, how many layers, how many epochs, etc.), and why you did what you did
3. How effective your final model is (and how you know)
4. How your final model here compares to your handmade model from previous work

Grading Rubric

0-4	Clarity and correctness of explanations and conclusions drawn
0-2	Organization (easy to follow, well structured, good, concise comments in the code, etc.)
0-4	Correct code that runs for me when I verify it

Note that you have two exercises. The evaluation here will take both into account when grades are assigned to your work.