Project Summary

Github: https://github.com/richwellp/CS547

Project Overview

Project 22: UIUC GPA

Team Members

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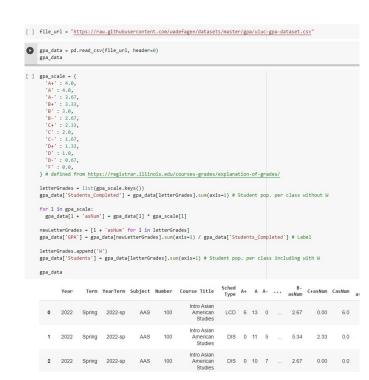
Problem Summary

The purpose of this project is to implement deep learning concepts and techniques on a real dataset: UIUC GPA. The general questions that will require the application of deep learning is predicting the GPA/grade distribution of UIUC courses in the future. The project will provide some visualization of the data and descriptive statistics, implement linear or logistic regression, and recurrent neural networks.

License

Dataset is obtained from Professor Ulmschneider's uiuc-gpa-dataset. Project curated by Jared Canty (Summer 2022 Blackwell Program). All rights are reserved.

Milestone 1



richwell

Different Optimizers

SGD

```
Testing set:
141/141 [============= ] - 1s 5ms/step - loss: 0.1560 - r_square: -1.1253e-04
1/1 [======] - 0s 60ms/step
First five testing data points:
labels: [3.90939394 3.01621359 3.73956522 3.82
                                              2.92307692]
predictions: [[3.3574088]
[3.3574088]
[3.3574088]
 [3.3574088]
 [3.3574088]]
model summary:
Model: "sequential"
                        Output Shape
 Layer (type)
                                               Param #
                        (None, 256)
 dense (Dense)
                                               3026176
 dense 1 (Dense)
                        (None, 256)
                                               65792
 dense 2 (Dense)
                        (None, 2)
                                               514
 dense_3 (Dense)
                        (None, 1)
                                               3
______
Total params: 3,092,485
Trainable params: 3,092,485
Non-trainable params: 0
```

Adagrad

```
Testing set:
141/141 [========== ] - 1s 5ms/step - loss: 0.0953 - r square: 0.3877
1/1 [======] - 0s 91ms/step
First five testing data points:
labels: [2.89134146 3.4725
                                3.7608
                                         3.42282051]
predictions: [[3.0486987]
[3.5815594]
[3.3927758]
 [3.57574 ]
 [3.3431113]]
model summary:
Model: "sequential_1"
                      Output Shape
Layer (type)
                                          Param #
______
dense 4 (Dense)
                      (None, 256)
                                          3005440
 dense 5 (Dense)
                      (None, 256)
                                          65792
 dense 6 (Dense)
                      (None, 1)
                                          257
______
Total params: 3,071,489
Trainable params: 3,071,489
Non-trainable params: 0
```

Nadam

```
Testing set:
First five testing data points:
labels: [2.89134146 3.4725
                     3.6
                            3.7608
                                    3.42282051]
predictions: [[2.9482253]
[3.620613
[3.507869]
[3.6148648]
[3.5587149]]
model summary:
Model: "sequential 2"
Layer (type)
                   Output Shape
                                     Param #
dense 7 (Dense)
                   (None, 256)
                                     3005440
dense 8 (Dense)
                   (None, 256)
                                     65792
dense_9 (Dense)
                   (None, 1)
                                     257
______
Total params: 3,071,489
Trainable params: 3,071,489
Non-trainable params: 0
```

RMSProp

```
Testing set:
141/141 [============ ] - 1s 4ms/step - loss: 0.0790 - r_square: 0.4926
First five testing data points:
labels: [2.89134146 3.4725
                            3.6
                                     3.7608
                                               3.42282051]
predictions: [[3.0347123]
 [3.6743803]
 [3.4486861]
 [3.66894
 [3.3406034]]
model summary:
Model: "sequential 3"
 Layer (type)
                         Output Shape
                                                Param #
 dense 10 (Dense)
                         (None, 256)
                                                3005440
 dense_11 (Dense)
                         (None, 256)
                                                65792
 dense 12 (Dense)
                         (None, 1)
                                                257
Total params: 3,071,489
Trainable params: 3,071,489
Non-trainable params: 0
```