Assignment 1, Implementation of MLP

Requirements

Please provide a implementation of api for MLP model training and inference. Implementation needs to consider the following requirements:

1, Don't use ai programming frameworks such as PyTorch, Tensorflow and etc.

2, Flexible definition of MLP structure.

3, Multiple activation options

4, Classification and regression

5, Weight initialization options

6, SGD optimizers: Momentum, RmsProp, Adam

7,SGD stop criteira

8,Regularization l1, l2, elastic

9,Confusion matrix

10, Optional parallel SGD

11, API design/specification

12, Optional Web api.

13, Loss tracking

14, Other helper classes

It is highly recommended using different programming languages other than python, and design your own api specification that will satisfy complete deep-learning programming, and also try parallel of training using multi-threads or gpus if available.

Notice

1, Gen code is acceptable but requires to satisfy above.

2, You need to demonstrate you understand and capable of this implementation.

3, Therefore, must run and provide detailed results, such as the model (save in file), confusion matrix and other evaluations.

4, Reports on key points of your design and implementation.

5, Recommended datasets include:

- Mnist dataset for classification: https://www.kaggle.com/datasets/oddrationale/mnist-in-csv
- Boston house dataset for regression.