

CS6847: Cloud Computing

Assignment III

(Submission via Google Classroom)

Deadline: April 10, 2019 (11:30 PM)

Tensorflow is open source library created by Google for building artificial intelligence models using data flow graphs. It can be used to create varieties of Deep Learning Models. The objective of the assignment is to understand Tensorflow and use it to create a model for New York Taxi dataset cab price prediction.

Instructions

- In this assignment you will train and test the neural network for cab fare prediction using the (**New York City Taxi Fare Prediction dataset**).
- Use the `train.csv` and `test.csv` for training and testing the model.
- The first layer contains six neurons(pickup_datetime, pickup_longitude, pickup_latitude, dropoff_longitude, dropoff_latitude ,passenger_count) as the features of the dataset.
- The output layer would have one neuron predicting the fare.
- You can vary the number of hidden layers and the number of neurons in the hidden layers accordingly.
- Train the neural network using any optimization algorithm (Example **gradient descent, momentum based gradient descent**, etc). You are free to choose **learning rate, early stopping, batch size** and any other parameters accordingly.
- You can use **Colaboratory** a free Jupyter notebook environment for writing and executing your code.

Evaluation

- The primary evaluation metric for the assignment is your understanding of tensorflow as a graph processing engine. (**TensorBoard** can be used as as visualization tool to visualize tensorflow graphs, plot quantitative metrics, etc)
- Plot the graphs and compare the execution time of your program using CPU, GPU and TPU.
- Specify the dimensions of input and output at each layer. For example, the input to first layer is 6×1 .
- Explain the effect of increasing the number of hidden layers and neurons on the epoch time and accuracy with relevant plots.
- **Note:** Please refrain from using high level libraries such as Keras and PyTorch for this assignment.

Submission guidelines

- Submit the source code for the assignment. All other supporting files used for generating plots, logs, etc. should also be placed in the zip file (`Roll_number.zip`).
- Submit a `README` file containing the necessary details for running your program.
- Create a report explaining the plots and results in detail.

Academic Honesty

WARNING ABOUT ACADEMIC DISHONESTY: Do not share your work with anyone else. The work YOU submit SHOULD be the result of YOUR efforts.