 **FACULTY OF COMPUTER SCIENCE AND ENGINEERING**

**Homework: 01 CS-416 Introduction to Deep Learning Marks: 20**

**Instructor: Dr. Khurram Khan Submission Dated: 12/10/2023**

* This is an individual Assignment.
* Students must not share the actual program code with other students.
* Students must be able to explain program code.
* All submissions are subject to Plagiarism detection.

**Q. No 01:** (CLO 1, PLO 1)

1. For following house prediction, the dataset

<https://raw.githubusercontent.com/Tan-Moy/medium_articles/master/art2_multivariate_linear_regression/home.txt>

1. Split the dataset into training/ testing. **Estimate** the parameters for Linear regression on the training set using the batch gradient method (discussed in class).
2. **Predict** the new values of Y using Ŷ = Xŵ (X being the test part and W are the optimized weights on the training part).

Share your code Google Colab file.

1. Download dataset from following link.

<https://www.kaggle.com/c/neolen-house-price-prediction/data>.

It Contains Train.CSV and Test. CSV file.

1. Modify the algorithm (discussed in class) accordingly and train and estimate linear Regression parameters for Batch Gradient Descent, Stochastic Gradient Descent, and Mini-Batch Gradient Descent.
2. **Predict** the results on the test set for optimized weights calculated using Batch Gradient Descent, Stochastic Gradient Descent, and Mini-Batch Gradient Descent.
3. Play with the learning rate and iterations to improve the results.

Share your code Google Colab file.