**DeepLearning\_Lesson2: Basics in Keras**

Please don't forget to submit your feedback after the class. This helps a lot in increasing effectiveness of the course. Use the following link to submit your feedback: https://docs.google.com/forms/d/e/1FAIpQLSdTM-YGnO\_nRQWExbADN-BbM410nk6-CpI7yYf0iLTILm3Pvw/viewform

**Lesson Overview:**

In this lesson, we are going to discuss Neural Network, Backpropagation, Activation Function, Linear Regression, Cost/Loss Functions, Gradient Descent (Optimization Algorithm) and Learning Rate.

**Use Case Description:**

Linear Regression with 'predict the price of the houses in Kansas City' dataset

**Source Code:**

https://umkc.box.com/s/rtgk77j8ygv4v25h1o8vp3jw3nccuha5

**In class programming:**

1. Plot the loss of linear Regression for the use case explained in the class (price housing dataset)

\*\*\* for plotting you need to use the history object which your model fitted on that

2. Improvement to the Linear Regression discussed in class by:

a. adding more layers with different **neuron unit**

b. changing the **optimizer**

c. changing the **activation function**

d. changing the number of **epochs** for example first run with 200 then 800

e. changing the **batch size**

f. for each case “a” to “e”, analyze the result how the loss is changing while you change these hyperparameter

**ICP Submission Guidelines (for In Class students):**

1. ICP Submission is in pairs of two students.

2. Once completed, must be presented to TA or Instructor before the completion of the class

3. Submission after class is considered as a late submission. (Check the late submission policy in the syllabus)

4. ICP Code with brief explanation should be pushed to GitHub. Submit GitHub link through the Feedback Form: https://docs.google.com/forms/d/e/1FAIpQLSdTM-YGnO\_nRQWExbADN-BbM410nk6-CpI7yYf0iLTILm3Pvw/viewform

**Online Submission Guidelines (for Online students):**

1. Submit your source code and documentation to GitHub and represent the work through wiki page properly (submit your screenshots as well. The screenshot should have both the code and the output)

2. Comment your code appropriately

3. Video Submission (2 – 3 min video showing the demo of the ICP, with brief voice over on the code explanation)

4. Submission after class is considered as a late submission. (Check the late submission policy in the syllabus)

5. Use the following Google link to submit your ICP # (GitHub wiki page link for ICP #): https://docs.google.com/forms/d/e/1FAIpQLSdTM-YGnO\_nRQWExbADN-BbM410nk6-CpI7yYf0iLTILm3Pvw/viewform

**Evaluation Criteria:**

1. Completeness of Features

2. Code Quality (<https://en.wikipedia.org/wiki/Best_coding_practices>)

3. Time

4. Feedback Submission

**Note:** *Cheating, plagiarism, disruptive behavior and other forms of unacceptable conduct are subject to strong sanctions in accordance with university policy. See detailed description of university policy at the following URL:* [*https://catalog.umkc.edu/special-notices/academic-honesty/*](https://catalog.umkc.edu/special-notices/academic-honesty/)