

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:

Image Classification on hand written digits

Source Code:

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

In class programming:

1. using the history object in the source code, plot the loss and accuracy for both training data and validation data. (try to analyze if the model had the overfitting or not?)
2. plot one of the images in the test data, and then do inferencing to check what is the prediction of the fitted model on that single image in the test data
3. We had used 2 hidden layers and relu activation. Try to change the number of hidden layer and the activation to tanh or sigmoid and see what happens

** Bonus point

Run the same code without scaling the images, how the accuracy changes?

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-notice/academic-honesty/>