

DeepLearning_Lesson 6: Autoencoders

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/1FAIpQLSf95923cdvpyChdUSsApPcX9dAhT55hLKpKfepP-y 7S6f0xQ/viewform>

Lesson Overview:

In this lesson, we are going to discuss types and applications of Autoencoder.

Use Case Description:

1. Simple autoencoder-Reconstructing the existing image, which will contain most important features of the image
2. Stacked autoencoder

Programming elements:

1. Basics of Autoencoders
2. Role of Autoencoders in unsupervised learning
3. Types of Autoencoders
4. Use case: Simple autoencoder-Reconstructing the existing image, which will contain most important features of the image
5. Use case: Stacked autoencoder

Source Code:

<https://umkc.box.com/s/l8ur55nwzrcs8ligh6fqm5yfmg0ea7ov>

In class programming:

1. Add one more hidden layer to autoencoder
2. visualize the **input** and **reconstructed representation** of the autoencoder using **Matplotlib**
3. visualize the **input, noisy input** and **reconstructed representation (denosed output)** of the Denosing_Autoencoder using **Matplotlib**
4. plot loss and accuracy using the history object

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/1FAIpQLSf95923cdvpyChdUSsApPcX9dAhT55hLKpKfepP-y 7S6f0xQ/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/1FAIpQLSdEYQD-i-BfVp1jIDVfS7odWH6UkPjMVhkYzw-ovXD14D0XUA/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/>*