DA312 Advanced Machine Learning Lab
Assignment 4

11 March, 2024

- You can write the code in Google Colab platform.
- Submit .ipynb or .py file to the Teams assignment. The code should be well commented.

Task

Develop a Recurrent Neural Network to predict the future values of a sinc function given a sequence of its past data points. Implement the RNN model from scratch (you are expected to manually code the RNN cell and the forward pass of the network, without using pre-built RNN layers from libraries like PyTorch or TensorFlow).

- Generate a sinc function of 1000 data points over a suitable range.
- Create sequential datasets for training the RNN. Each input sequence should consist of 50 consecutive data points from the sinc function, and the target should be the next point following the sequence.
- Split the data into 80% training and 20% testing sets.
- Train the model on the training set using Mean Squared Error (MSE) as the loss function.
- Implement a training loop and train your model for at least 100 epochs.
- Predict the sinc function values on the test set.
- Plot the original and predicted sinc function values on the test set to visually compare their similarity.