IISER Bhopal

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH BHOPAL

Course instructor: **Dr. Jasabanta Patro**
Course: **DSE 418/618: Advance-NLP**
Marks: **10**

Assignment number: 1
Date: **September 4, 2025**
Date of submission: **September 15, 2025**

Regulations:

- Each student is required to submit solutions based on the specified task.
- Multiple submissions are not allowed.
- Plagiarism: Strictly prohibited. All work should be original. The code will be checked for plague (as well as AI detector) and appropriate action will taken if found guilty of copying.

Submission Guidelines:

- **Deliverables:** public URL of **(i) code** (Text Classification with RNN, LSTM, and Transformer) and **(iii) report** (Submit the classification reports for all the architectures mentioned).
  - The Colab notebook should only contain the inference part of the model and load the pre-trained weights. The training part should be commented out.
  - The model should be able to load weights from your public GitHub repository (create a repo with the trained model and download weights from it).
- File naming convention:

  rollno_name_Advance_nlpassignment1.ipynb
- Students need to submit only the URL of the Colab notebook (with public access) with clear instructions for running the code. The runtime of the code should not be more than 10 minutes.
- Deadline: All assignments must be submitted by the deadline. Late submissions will be penalized.

Marking:

- Marking will be done based on two criterias, (i) **code**, and (ii) **model performance** (more focus will be given to performance).
- The performance of each submission will be evaluated using average macro F1-score based on the predicted labels and the gold ones.

- All submitted code should be reproducible with public access. If the results cannot be reproduced, the submission will be considered incomplete and the submission will not be marked.

Task overview:

1. **Architecture building:** Create custom models of the above-mentioned architectures from scratch. You are restricted to using only the NumPy Library to develop these models. Other Libraries, like transformer and all, are strictly prohibited. Train it on your dataset with an embedding size of 100 dimensions, and save the trained embeddings in your GitHub repository.

2. Use these custom-built architectures for a classification task, using your own custom pre-processing techniques.

3. **Training setup:**

   - Use Adam, AdamW or SGD optimizer.

4. **Note:** Comment out the training part (both embedding creation and model training) of the code (we can undo comments to check the training part also). The model should already be trained, and the deliverable will be focused on inference only.

Files Provided

1. **Dataset:** https://github.com/islnlp/Advance-NLP-assingment-

Deliverables

1. Python notebook implementing the classification task.