MDM Deep Learning Project

Group 5

Group Members Name

1) Vivek Borade Prn - 202201040216

2) Nirmal Chaturvedi Prn- 202201040210

3) Abhijeet Jadhav Prn- 202201040122

Topic-

News Headline Generation using Encoder-Decoder Models

Project Objective:

The aim of this project is to develop a deep learning model capable of generating concise and meaningful headlines for news articles. We implemented and compared:

- A basic **Encoder-Decoder model without attention**
- An **Encoder-Decoder model with Bahdanau attention**
- A **Self-Attention (Transformer-based)** model

This project explores how attention mechanisms improve the relevance and accuracy of generated headlines, especially for long and complex articles.

Models Implemented:

1. **Encoder-Decoder without Attention**
    - Learns to map input sequences (articles) to output sequences (headlines) using LSTM.
    - Suffers from performance drop with long sequences due to fixed context vector.
2. **Encoder-Decoder with Attention**
    - Introduces dynamic focus on input tokens at each decoding step.
    - Improves alignment between article content and generated headline.
3. **Self-Attention (Transformer)**
    - Applies attention to all input tokens in parallel.
    - Captures complex dependencies with higher speed and accuracy.

Colab Link-

1) Without Attention
   Colab Link-
   https://colab.research.google.com/drive/1_WBLdpa46BNLK4EOevQ6VVmAe5-XIm5x?usp=sharing

2) With Attention
   Colab Link-
   https://colab.research.google.com/drive/11bK8fuxbNS9zvyojzqOPCrifKQivgIFL

3) Self attention

   Colab Link-
   https://colab.research.google.com/drive/1u3XIlftjixQuYblAe0ep22aEag_1rFHQ?usp=sharing

   Github Link-
   https://github.com/nirmalchaturvedi/DL_Project

I, Vivek Borade, confirm that the work submitted in this assignment is my own and has been completed following academic integrity guidelines. The code is uploaded on my GitHub repository account, and the repository link is provided below:

GitHub Repository Link: https://github.com/nirmalchaturvedi/DL_Project

Signature:

Vivek Borade

Prn - 202201040216

Nirmal Chaturvedi

Prn- 202201040210

Abhijeet Jadhav

Prn- 202201040122