Objective and OKRs for Group 16 - Deep Learning

Primary Objective

In the next 2-3 months, our main objective is to develop a custom BART (Denoising Sequence-to-Sequence Pre-training for Natural Language Generation, Translation, and Comprehension) model from scratch utilizing the PyTorch framework. This model will be specially designed for denoising Natural Language Processing (NLP) tasks, with a particular focus on machine translation between English and Hindi.

Given the variance in skill and experience among our team, we've decided to incorporate pair programming sessions. These sessions aim to create a unified learning environment, ensuring that each team member gains a similar level of understanding and expertise.

The project will proceed through several stages, which include a detailed understanding and practical application of the BART model, training and evaluation of the model, and subsequent adjustments for optimal translation accuracy.

Outcome and OKRs (Objectives and Key Results)

Objective 1: Ensure all team members have a thorough understanding of the "Attention is All You Need" paper by Vaswani et al., the foundation for the BART model.

- Key Result 1: By the end of the second week, all team members can accurately summarize and discuss the content and implications of Vaswani's paper.

Objective 2: Develop a custom BART model from scratch using PyTorch.

- Key Result 1: By the end of the eighth week, we should have a coded version of the BART architecture.
- Key Result 2: By the end of the ninth week, our model should be capable of training on the provided datasets.

Objective 3: Achieve effective machine translation between English and Hindi with our BART model

- Key Result 1: By the end of the eighth week, the model should be able to translate simple sentences with minimal errors.
- Key Result 2: By the end of the twelfth week, our model should demonstrate significant improvement in translation accuracy and denoising capabilities, as determined by various datasets' tests.

Milestones and Deadlines

- Milestone 1: Thorough Understanding of "Attention is All You Need" Paper - End of Week 2
- Milestone 2: Successful Implementation of BART Architecture - End of Week 8
- Milestone 3: Functional Training of Model on Datasets - End of Week 9
- Milestone 4: Initial Testing and Evaluation - End of Week 10
- Milestone 5: Fine-tuning and Optimization of Model - End of Week 12
- Milestone 6: Final Evaluation of Model Performance on chosen Dataset - End of Week 13
- Milestone 7: (tentative): Deploy model using simple API such as Flask for demonstration - End of Week 13

Throughout this process, pair programming sessions will take place to ensure balanced growth and learning for all team members. Let's take this project as an opportunity to learn, collaborate, and innovate.