SoS '24

Large Language Models

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Plan of Action

- **Week 1 :** Go through ML basics and Deep learning required for NLPs
- **Week 2 :** Review key NLP concepts: tokenization, stemming, lemmatization, POS tagging, NER, parsing
- **Week 3 :** Sequence Models - Study RNNs, LSTMs, and GRUs
- **Week 4 :** Study the attention mechanism and Transformer architecture.

Mid-Term Report

- **Week 5 :** Study some pre-trained language models like BERT, GPT, and their variants.
- **Week 6 :** Advanced LLM Techniques : Explore techniques for model optimization and efficient training (e.g., pruning, quantization).
- **Week 7 :** Applications : Study various applications of NLP such as machine translation, summarization, Q&A systems, chatbots. Choose a capstone project integrating multiple aspects of NLP and LLMs (e.g., end-to-end application involving preprocessing, model training, and deployment)
- **Week 8 :** Buffer and documentation

End-Term Report

References

1. IIT Bombay CS725: Foundation of Machine Learning
2. Stanford CS224N: Natural Language Processing with Deep Learning
3. Transforms blogs and Attention Is All You Need Research Paper
4. Coursera - Generative AI with Large Language Models Course
5. Overview of lectures on LLMs by Princeton University (COS 597G)
6. Multimodal Machine Learning playlist available on YouTube
7. Paper on Multimodal Few-Shot Learning with Frozen Language Models
8. RAG – LLMs from this playlist