The Story of GPT and Building LLMs

Assignment 1: Basic - GPT Evolution Timeline

Objective: Create a visual timeline showing the evolution of GPT models and their key features.

Instructions:

1. Research the release dates, parameter counts, and notable capabilities of different GPT models (GPT-1, GPT-2, GPT-3, GPT-4) using the self-reading material.
2. Create a visual timeline (using any tool you prefer - PowerPoint, Google Slides, Canva, etc.) that shows:
    - When each model was released
    - How many parameters each model contained
    - 2-3 key capabilities or improvements each new version introduced
    - Any major milestones in the development process

Requirements:

- Include at least 4 GPT models on your timeline
- Add visual elements (icons, images, or color coding) to make the timeline engaging
- Add a brief (2-3 sentence) explanation for why parameter count matters in LLM development
- Include a title and your name on the timeline

Assignment 2: Intermediate - LLM Training Process Explanation

Objective: Create an educational blog post explaining how large language models are trained, aimed at a high school student audience.

Instructions:

1. Write a 750-1000 word blog post that explains the complete training process of large language models like GPT.
2. Your post should cover:
    - Data collection and preprocessing
    - Pre-training phase
    - Supervised fine-tuning
    - Reinforcement learning from human feedback (RLHF)
    - At least one challenge in the training process (like bias or hallucinations)

Requirements:

- Use simple language appropriate for high school students
- Include at least one analogy to help explain a complex concept
- Create or include a simple diagram that visualizes the training process
- Include a "Why This Matters" section explaining the significance of understanding how these models are built
- Cite at least 3 concepts from the self-reading material
- Add a glossary of 5 key terms at the end

Assignment 3: Advanced - LLM Alignment Case Study Analysis

Objective: Analyze the different approaches to aligning large language models with human values and preferences, then propose a hypothetical improvement.

Instructions:

1. Based on the self-reading material and additional research, write a 1000-1250 word case study analysis that:
    - Compares and contrasts the three main alignment techniques discussed in the module: Supervised Fine-Tuning (SFT), Reinforcement Learning from Human Feedback (RLHF), and Constitutional AI approaches
    - Analyzes the strengths and limitations of each approach
    - Examines one real-world example where alignment was challenging or failed
2. Then, propose a hypothetical improvement to one of these alignment techniques:
    - Describe your proposed enhancement in detail
    - Explain how it addresses a specific limitation of current methods
    - Discuss potential challenges in implementing your solution
    - Create a simple flowchart or diagram showing how your improvement would fit into the existing process

Requirements:

- Format your analysis as a formal case study with clear sections and headings
- Include a table comparing at least 3 aspects of each alignment technique
- Support your analysis with references to specific concepts from the self-reading material
- Your proposed improvement must be grounded in the scientific concepts covered in class (not pure speculation)
- Include a brief discussion of ethical considerations related to your proposed improvement