2. Student Handout

Student Handout: Introduction to AI Language Models and Prompt Engineering

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1. Overview of AI Language Models

What is an AI Language Model?

- AI language models are designed to understand and generate human language.
- They are trained on vast amounts of text data to predict what comes next in a sentence, answer questions, translate languages, and more.

Types of AI Language Models

1. **GPT (Generative Pre-trained Transformer)**
   - Focuses on generating text.
   - Applications: Writing essays, generating creative content, answering questions, writing code.
2. **BERT (Bidirectional Encoder Representations from Transformers)**
   - Focuses on understanding the context of a sentence.
   - Applications: Sentiment analysis, question answering, text classification.

Examples

- **GPT Example**: Generating a continuation for the sentence "Once upon a time in a distant land..."
- **BERT Example**: Determining the sentiment of the sentence "I love this product!"
- **GPT Example**: Writing a short story based on the prompt "A day in the life of a superhero."

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2. Introduction to Prompt Engineering

What is Prompt Engineering?

- The process of designing the input (or "prompt") given to an AI language model to get the best possible response.
- Crafting clear and specific prompts is crucial for guiding the AI model effectively.

Basic Prompt Design

1. **Be Specific**: The more specific the prompt, the better the AI's response.
2. **Provide Context**: Include necessary information to guide the AI.
3. **Experiment**: Try different prompts to achieve the desired response.

Examples

- **Specific Prompt Example**: "Explain the cultural diversity of India."
- **Contextual Prompt Example**: "Describe the events of the French Revolution in the 18th century."
- **Experimentation Example**: Trying different phrasings to get a detailed explanation of quantum physics.

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3. Types of AI Language Models: GPT and BERT

GPT (Generative Pre-trained Transformer)

- Excels at generating coherent and contextually relevant text.
- Applications include creative writing, answering questions, and generating code.

BERT (Bidirectional Encoder Representations from Transformers)

- Excels at understanding the context and meaning of text.
- Applications include sentiment analysis, question answering, and text classification.

Examples

- **GPT Application Example**: Generating a poem based on the theme "nature."
- **BERT Application Example**: Classifying emails as spam or not spam.
- **GPT Application Example**: Answering a question about the plot of a novel.

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4. Basic Prompt Design: How Prompts Influence AI Responses

Why Do Prompts Matter?

- The quality of the prompt directly affects the quality of the AI's response.
- Clear and specific prompts lead to more accurate and useful responses.

Examples of Prompt Design

- **Poor Prompt Example**: "Tell me about history."
- **Good Prompt Example**: "Tell me about the history of the Mughal Empire in India."
- **Contextual Prompt Example**: "Write a story set in ancient Egypt with a focus on daily life."

Conclusion

- AI language models like GPT and BERT are powerful tools for understanding and generating human language.
- Prompt engineering is essential for obtaining the best responses from these models.
- The quality of your prompt directly influences the AI's response, so specificity and context are key.

Feel free to experiment with different prompts to see how the AI responds and refine your understanding of prompt engineering!