

AI PolicyChat Final Presentation

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Introduction

Motivation:

Develop a fine-tuned Large Language Model that is capable of understanding and answering questions related to AI policy.

Challenges:

- Provide insightful, contextually relevant responses
- Outperform the base Llama-2-7B model
- Effective Prompt Engineering
- Effective Fine-Tuning

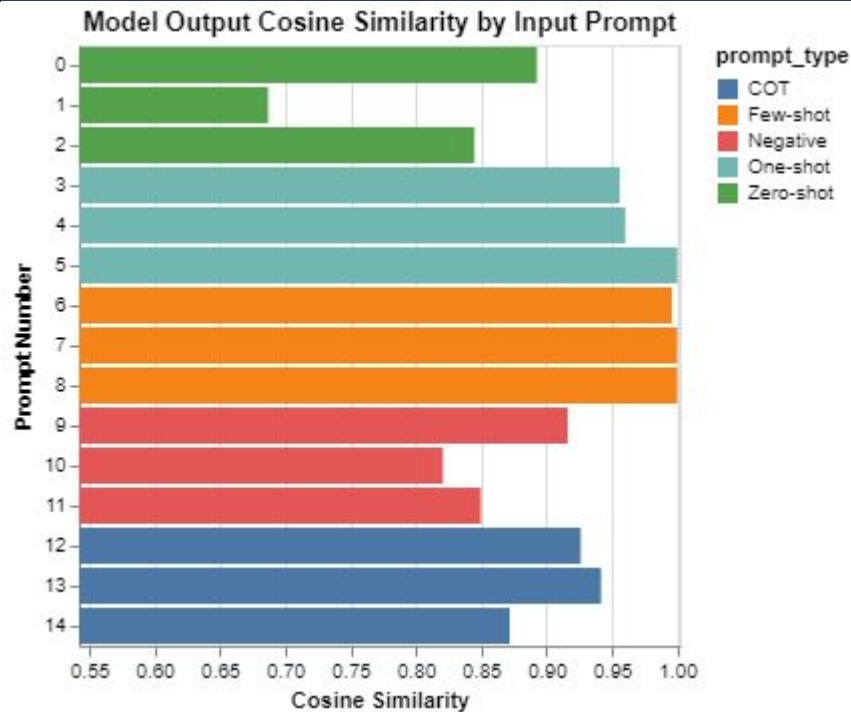
Methodology

- **Data Collection and Preparation**
 - Policy Document subsets: International, US Government, Think-Tanks, Organizations, Forums
- **Prompting Techniques**
 - Application to base and fine-tuned models
- **Fine-Tuning and Model Development**
 - PEFT, Hyperparameter selection
- **Model Evaluation**
 - Automatic and Human Evaluation

Prompt Engineering

Methods:

- Zero-Shot
- One-Shot
- Few-Shot
- Negative Prompting
- Chain-of-Thought Prompting



Example Zero-Shot Prompting

Input:

List the most pressing topics regarding regulation of AI.

Base Output:

The most pressing topics regarding regulation of AI are:

1. Privacy and data protection: AI systems can collect and process vast amounts of personal data, which raises concerns about privacy and data protection.
2. Bias and discrimination: AI systems can perpetuate existing biases and discrimination, which can have a disproportionate impact on certain groups of people.
3. Accountability and transparency: AI systems can

Fine-Tuned Output:

- Defining AI accurately
- The role of AI in the future of work
- AI's impact on competition and pricing
- The role of AI in the next generation of digital platforms
- AI and the future of automation

Example COT Prompt Input:

Input:

Question: Why should international discourse take China's AI regulations seriously?

Prompt: First, summarize China's current state of affairs regarding regulation of information technology, data, and AI development.

Second, discuss China's most recent legislative changes regarding AI.

Then, state why other nations should pay close attention to China's new AI regulations.

Base Model Output

Output:

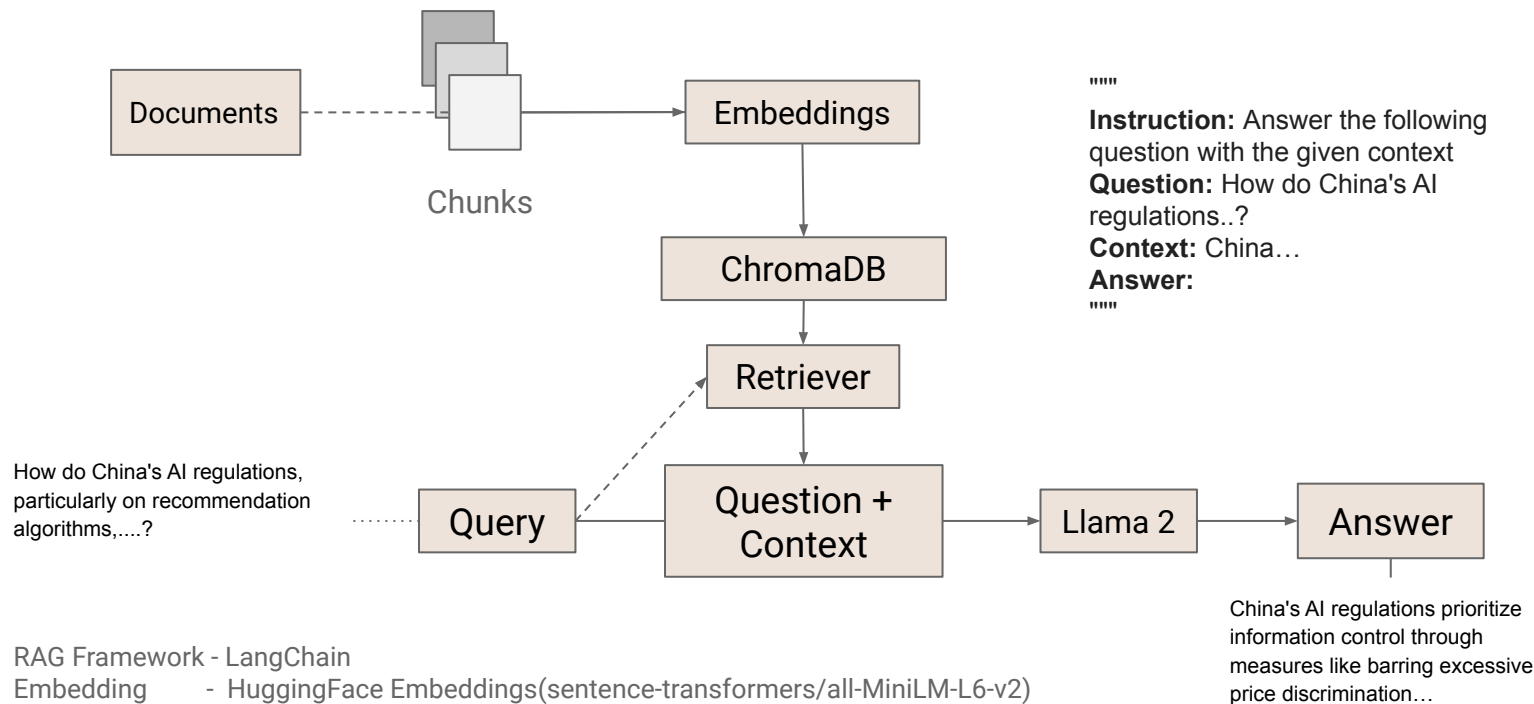
- China's AI regulations are a good example of how to balance the need for innovation with the need for regulation.
- China's AI regulations are a good example of how to balance the need for innovation with the need for regulation.
- China's AI

Fine-Tuned Output

Output:

China is a leading player in AI development and innovation, and its government is aware of this and wants to control this to benefit itself more efficiently. Other nations should pay close attention to China's new AI regulations because they may serve as a template for how a government can control information and data more efficiently.

RAG & Fine-Tuning



RAG Framework - LangChain

Embedding - HuggingFace Embeddings(sentence-transformers/all-MiniLM-L6-v2)

Context Size - 4 Chunks

Vector Store - In-memory ChromaDB

PEFT - QLoRA (r=8)

Quantization - 4 bit

Epochs - 10

Evaluation

- **Automatic Metrics**
 - BLEU
 - ROUGE
 - BERT Score
- **Human Evaluation Criteria**
 - Relevance - Does the response address the prompt?
 - Informativeness - Does the response provide accurate and relevant information?

Questions?

