



Advanced computer science with artificial intelligence

# Adapting Language models to new topics

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# Introduction

- Language models are critical for NLP but struggle with new topics
- Evaluated adaptation of GPT-3.5 and PaLM-2 via sentiment classification
- Used financial news and poetry as seen and unseen domains

# Problem Statement

While language models are trained on massive datasets, they struggle when applied to niche topics outside their domain. My project investigates this limitation in depth by asking - how do state-of-the-art models like GPT-3.5 and PaLM-2 perform on seen versus unseen data?

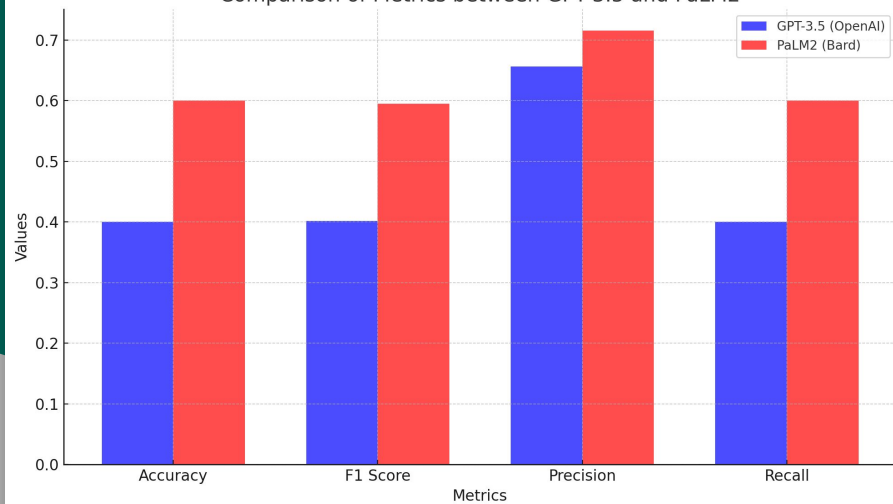
# Methodology

- Sentiment analysis on financial news and poetry
- GPT-3.5 and PaLM-2 tested via few-shot learning
- Models primed with financial news, tested on poetry
- No domain information provided during adaptation
- 50 test cases conducted per experiment

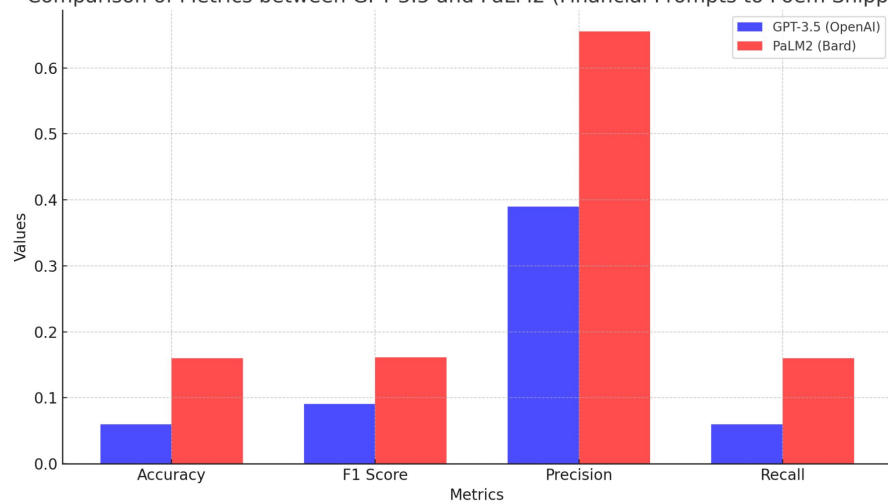
# Results

- Accuracy 40-60% on seen domain, drops to 6-16% on unseen
- PaLM-2 outperforms GPT-3.5 on both datasets
- Models predict "no result" frequently on unfamiliar poetry data
- PaLM-2 leverages context learning more effectively

Comparison of Metrics between GPT-3.5 and PaLM2



Comparison of Metrics between GPT-3.5 and PaLM2 (Financial Prompts to Poem Snippets)



# Analysis

- Few-shot learning insufficient for radically different domains
- Advanced adaptation techniques may be necessary
- Architectural improvements enable better generalization
- More evaluation needed on complex real-world tasks



# Conclusion

- Study provides comparative analysis of model adaptation skills
- Limitations in generalizing to new topics with minimal examples
- Significant scope to enhance model versatility through advanced techniques
- Important implications for real-world LLM deployment



Thank You