

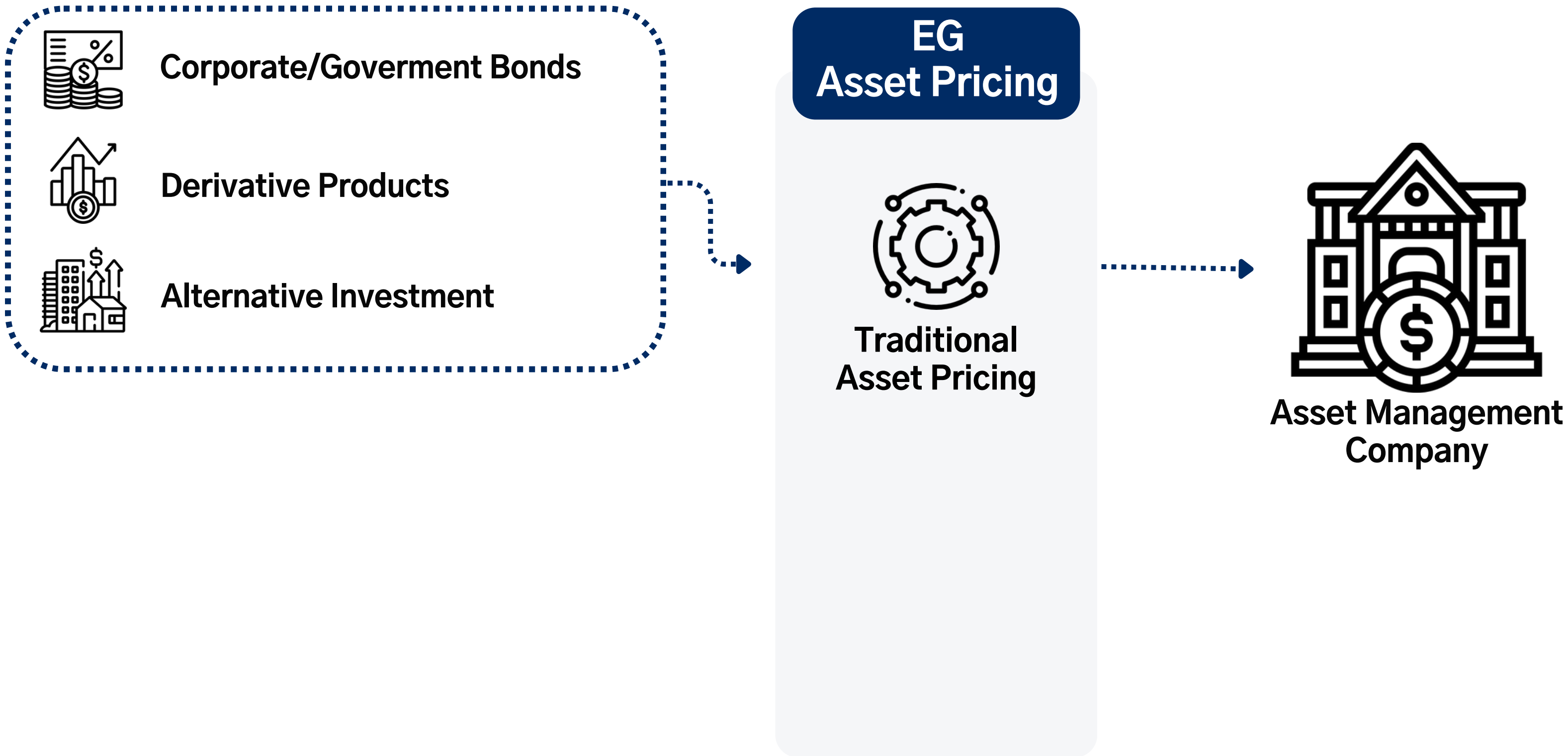
Large Language Models for Semantic Monitoring of Corporate Disclosures

Junwon Sung, Yunkyung Byun, Youngsam Kim

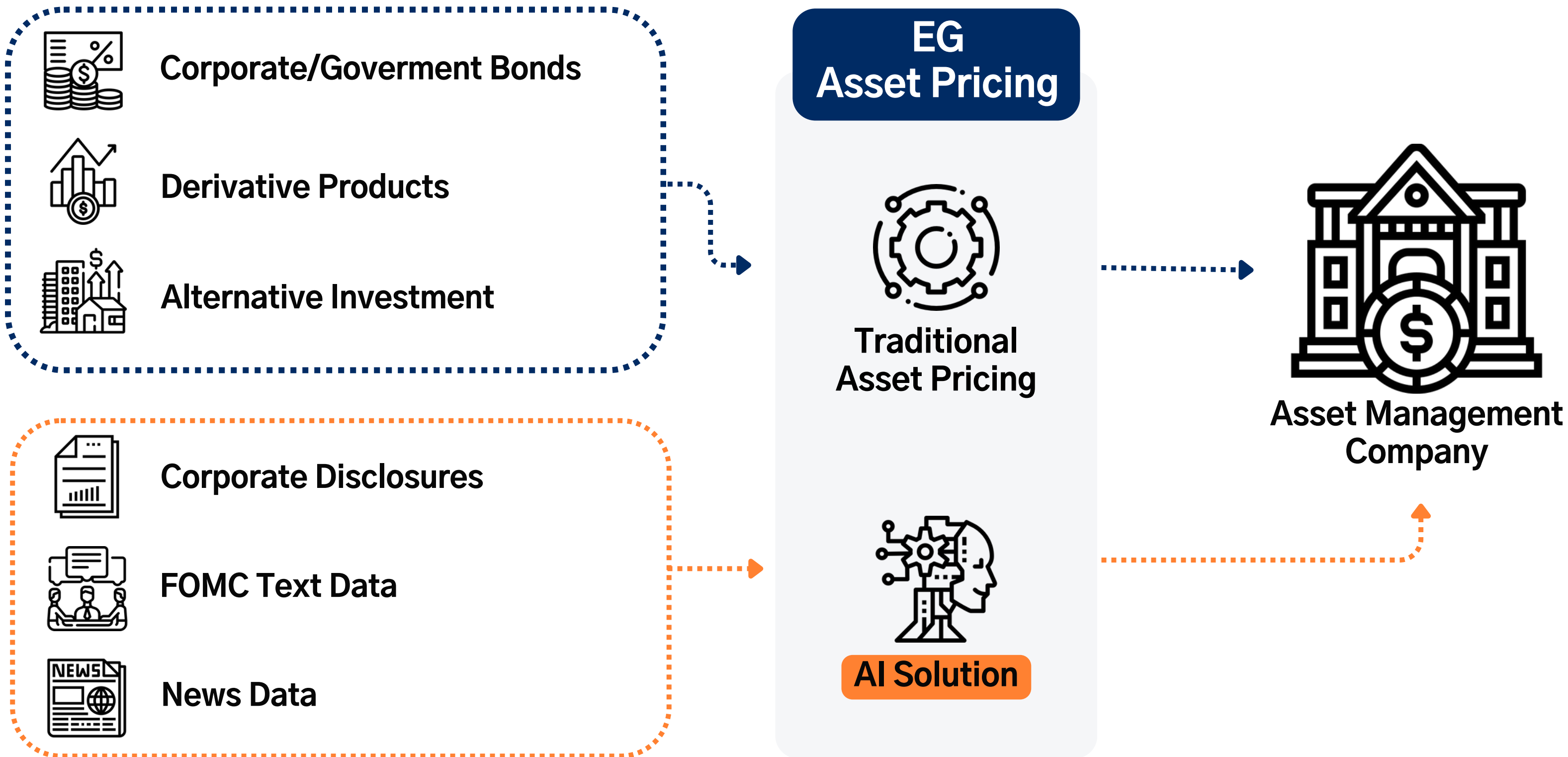


ASSET PRICING & DATA PLATFORM

What We Do:



What We Do:



Background of Research Based on LLMs

Traditional Approach to Financial Analysis



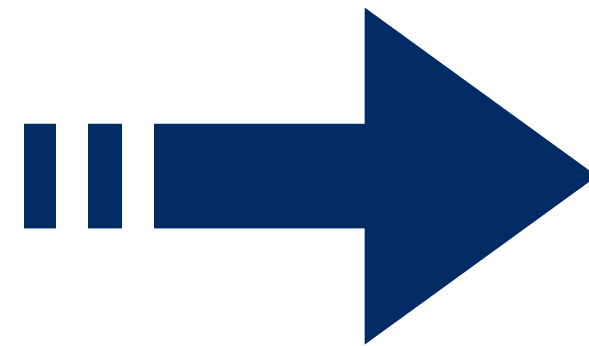
Background of Research Based on LLMs

Traditional Approach to Financial Analysis

✗ 
Labor-Intensive

✗ 
Time-Consuming

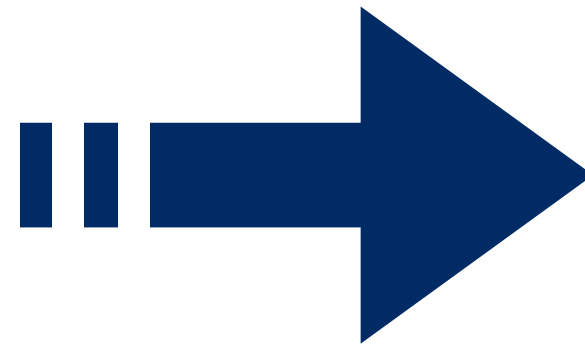
✗ 
Limited Scale



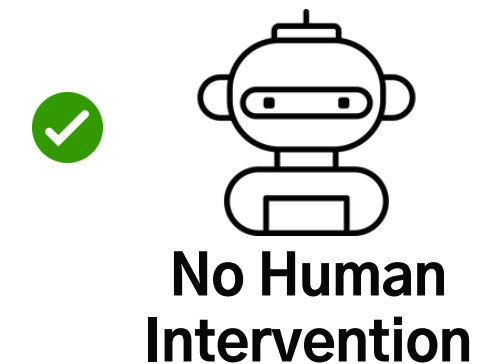
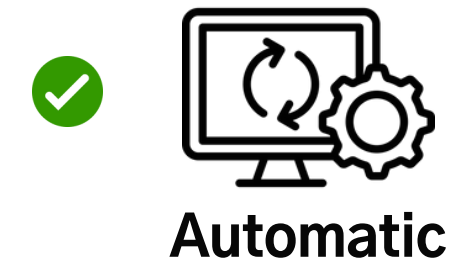
**Large
Language
Models**

Background of Research Based on LLMs

Traditional Approach to Financial Analysis

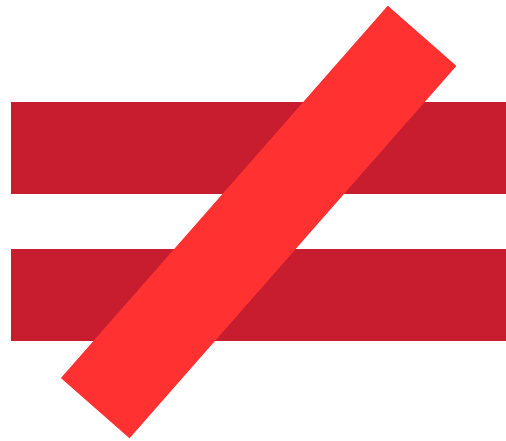


Large Language Models



Issues for LLMs

Discrepancy

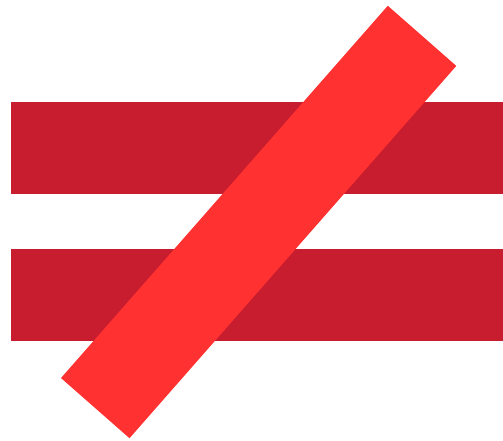


Human vs GPT

Cultural Context
Emotional Intelligence

Issues for LLMs

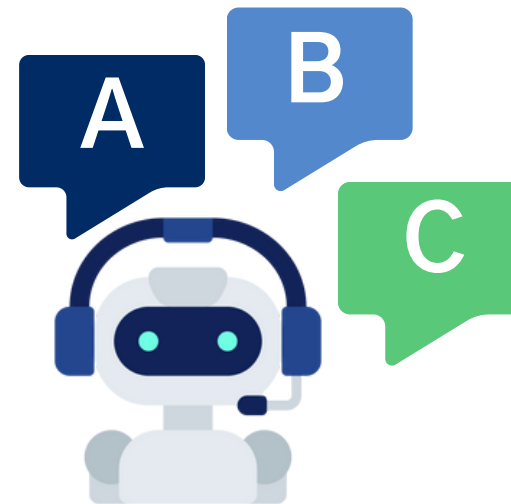
Discrepancy



Human vs GPT

Cultural Context
Emotional Intelligence

Inconsistency

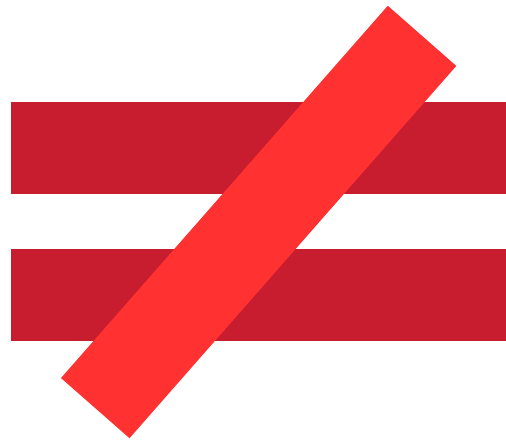


Variability Across Texts

Language Complexity
Domain-specific Terms

Issues for LLMs

Discrepancy



Human vs GPT

Cultural Context
Emotional Intelligence

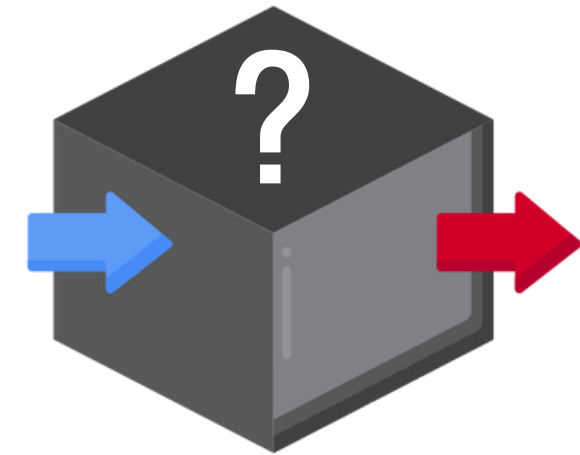
Inconsistency



Variability Across Texts

Language Complexity
Domain-specific Terms

Black Boxes



Non-interpretability

Challenges in
Transparency and Trust

Research Paper

Corporate Disclosures



Periodic Disclosure

Financial Statements
Quarterly Updates



Current Disclosure

Merger Announcements
Changes in Executive Leadership
Rights Offerings

Research Paper

Main Questions

1. How effective are large language models, specifically GPT-3.5-turbo and GPT-4, in analyzing sentiment in corporate announcements?
2. What challenges or limitations are associated with using large language models like GPT-3.5-turbo and GPT-4 for sentiment analysis in the context of corporate announcements?

Research Paper

Data

- Collection Target : Disclosures of the top 50 companies listed on KOSPI
- Collection Period : January 2022 to May 2023
- Data Processing : Data consists of disclosures summarized with GPT-3.5
- Example :

CJ CGV

Period : 2023-06

Time-series Data

Additional Listing (Domestic CB Conversion)

2023-06-13 10:30

CJ CGV Co., Ltd. has additionally listed 383 registered common shares. The issue price for the 6th issue is 26,600 won and for the 9th issue is 22,000 won. The issuance dates range from May 16, 2023, to May 31, 2023. The dividend base date is January 1, 2023. The method of capital increase is through a domestic convertible bond (CB) conversion, and the listing date is June 16, 2023. (Summarized Disclosure)

Capital Increase Decision

2023-06-20 12:04

CJ CGV Co., Ltd. decided to increase the capital by issuing 74,700,000 common shares through a board meeting on June 20, 2023. Through this, they plan to raise 100 billion won for facility funds, 90 billion won for operational funds, and 380 billion won for debt repayment. The issuance price of the new shares is 7,630 won per share. The allocation base date for the new shares is July 31, 2023, and the expected listing date of the new shares is September 27, 2023.

Loan Decision

2023-06-22 18:49

A decision has been made to loan funds to CGI HOLDINGS LIMITED, the Hong Kong subsidiary of CJ CGV. The loan amount is 102,456,000,000 won with an interest rate of 7.37%. The loan period is from June 20, 2023, to December 20, 2023. This loan is an extension of an existing loan for the improvement of the subsidiary's financial structure, and the board decision date was June 20, 2023.

...

(11 Disclosures Omitted)

Research Paper

Rating Score	Reasons for the score
2 (Negative)	CJ CGV is making efforts to secure funds through additional listing and paid-in capital increases. However, given the extension of loans to affiliates, the use of capital increase funds for debt repayment, and the forecast for designation as an investment cautionary stock, the company's financial status is perceived as unstable. Such circumstances could increase uncertainty about the company's future growth and potentially weaken its competitiveness.

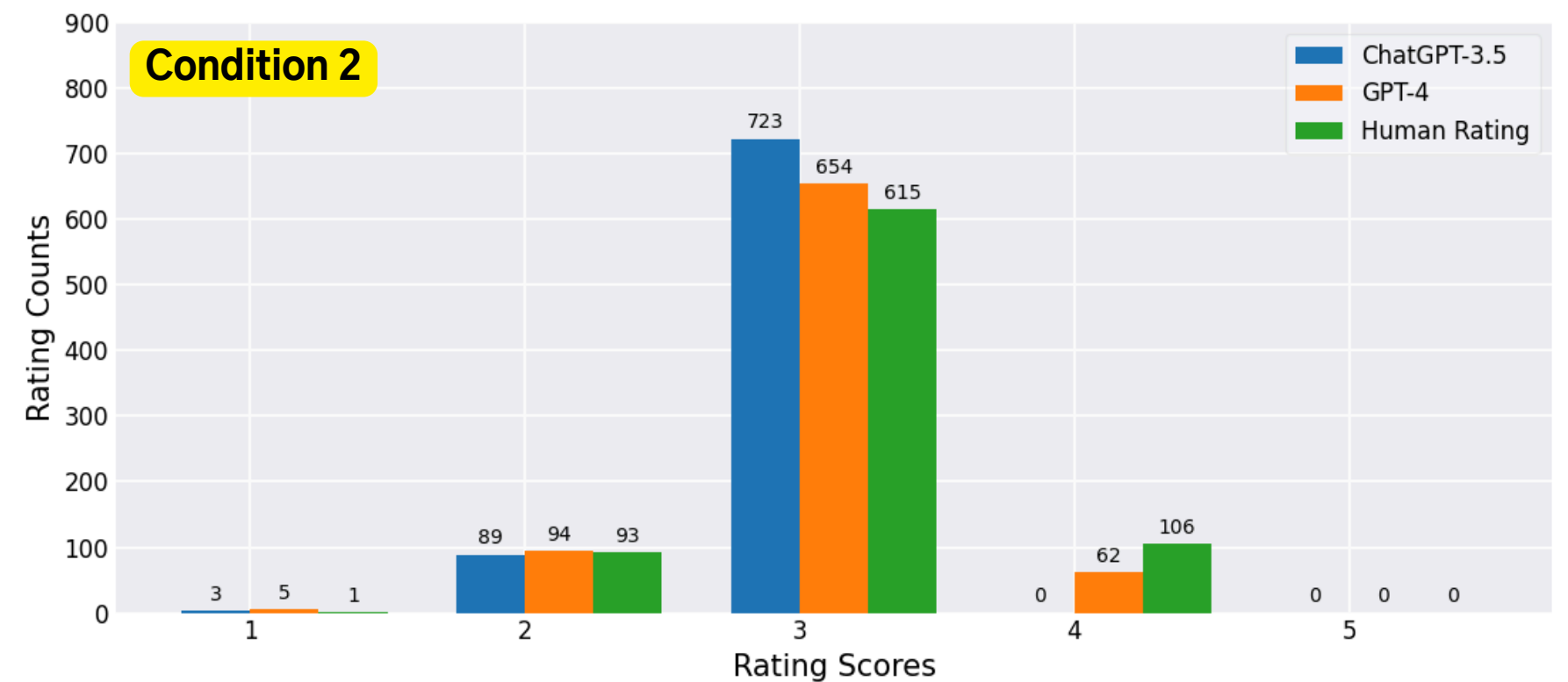
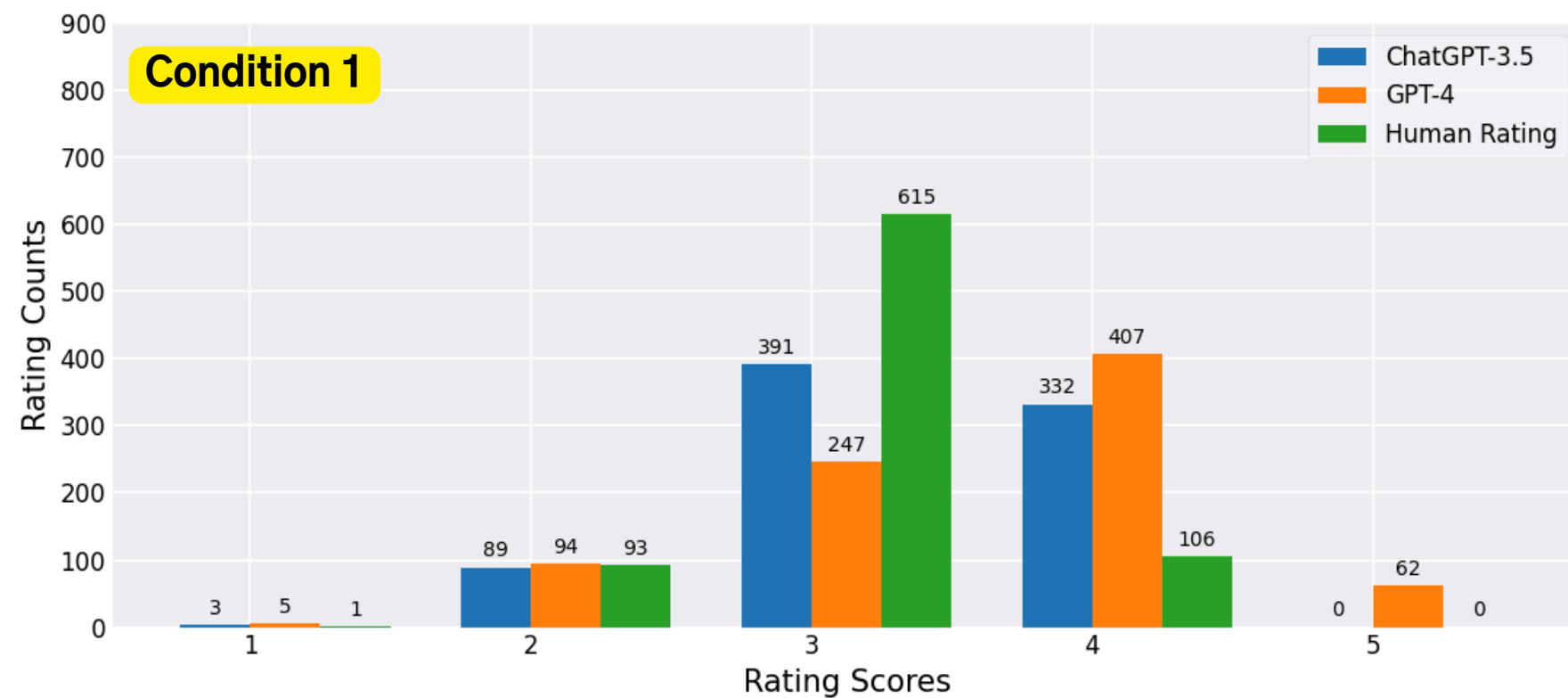
Research Paper

Condition 1: No Adjustments

- Acts as a control group with no modifications to the GPT score.
- Establishes a baseline for performance metrics.

Condition 2: Adjusting for Over-Positivity

- Subtract 1 point if the GPT score is 4 or above.
- Balances the model's tendency to be overly positive, aligning evaluations more closely with human judgment.



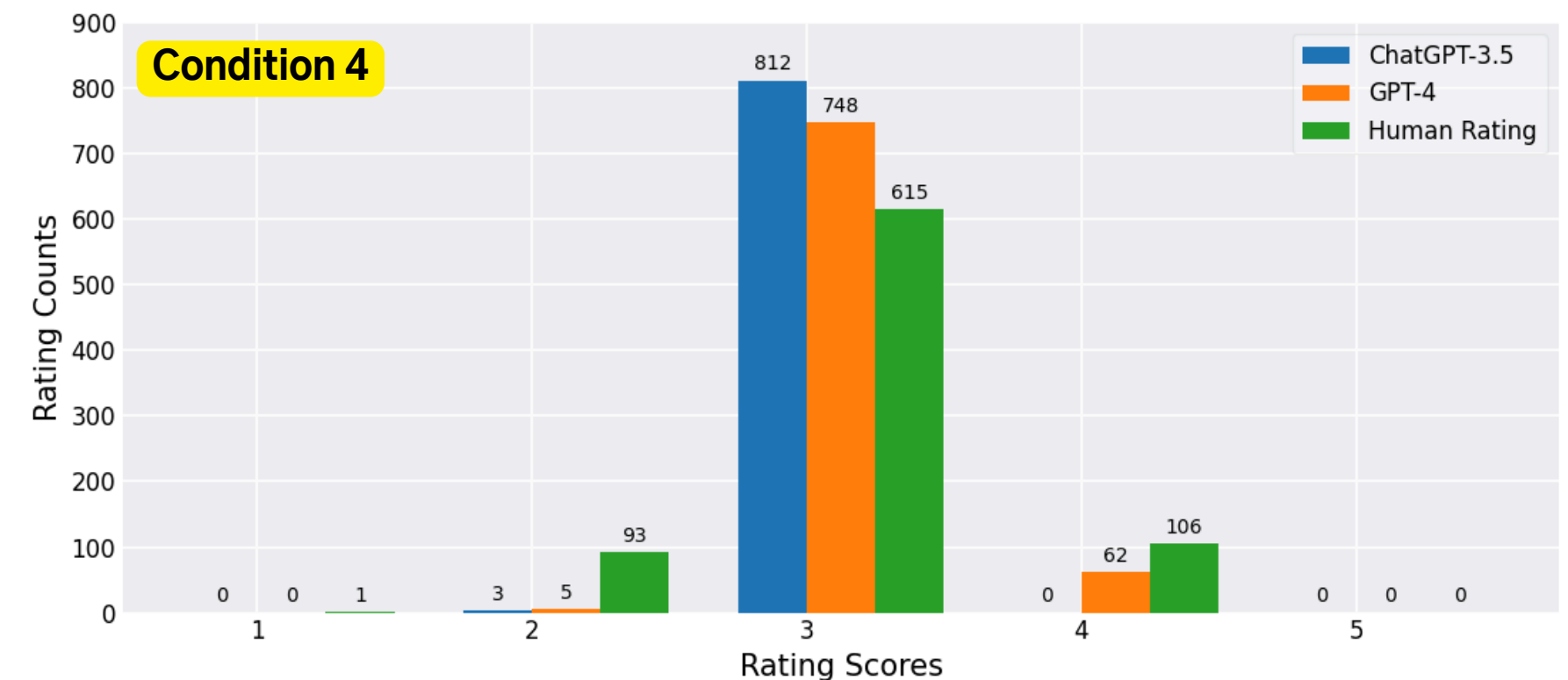
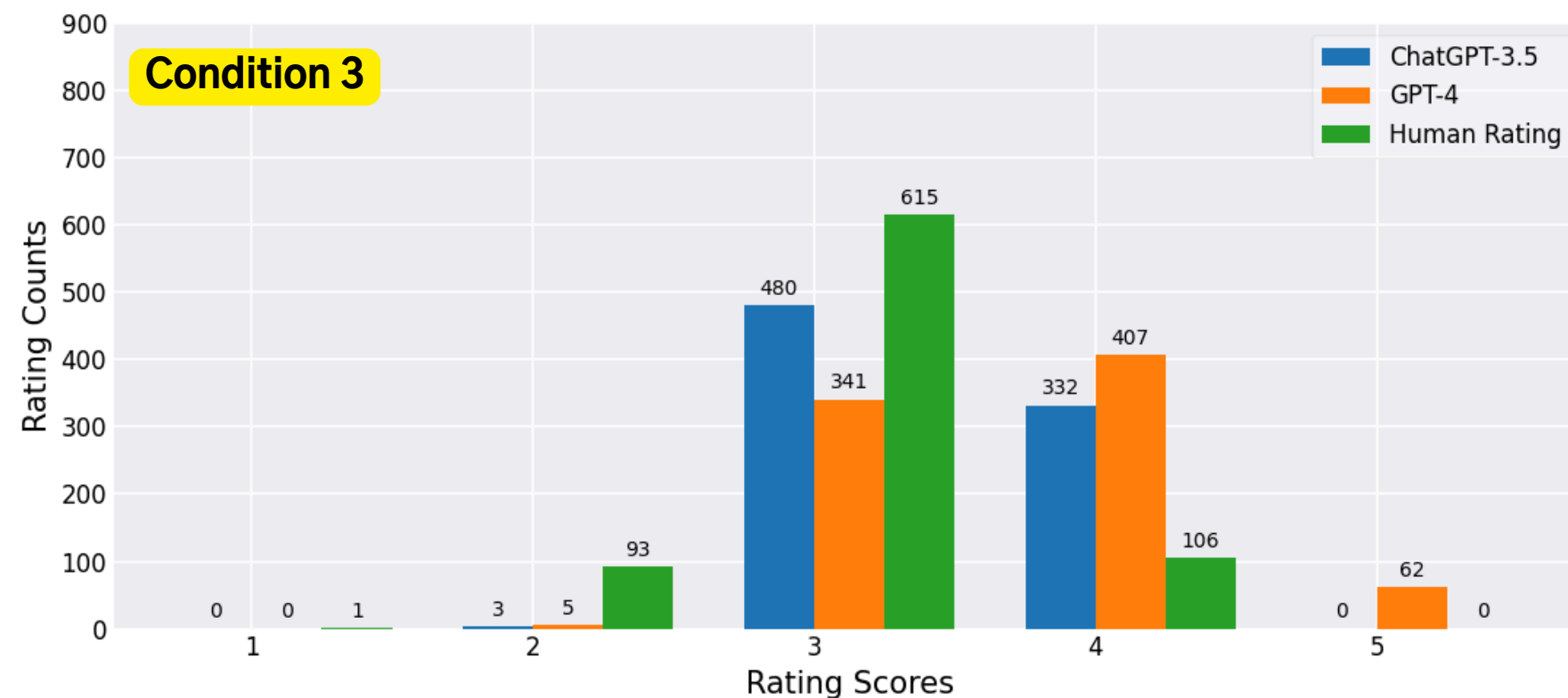
Research Paper

Condition 3: Adjusting for Under-Negativity

- Add 1 point if the GPT score is 2 or lower.
- Addresses potential underestimation of negative tones by compensating for unduly negative scores.

Condition 4: Combined Adjustment Strategy

- Add 1 point if the GPT score is 2 or below, and subtract 1 point if the score is 4 or above.
- Tests for both overestimation and underestimation biases simultaneously by applying the adjustments from Conditions 2 and 3.



Research Paper

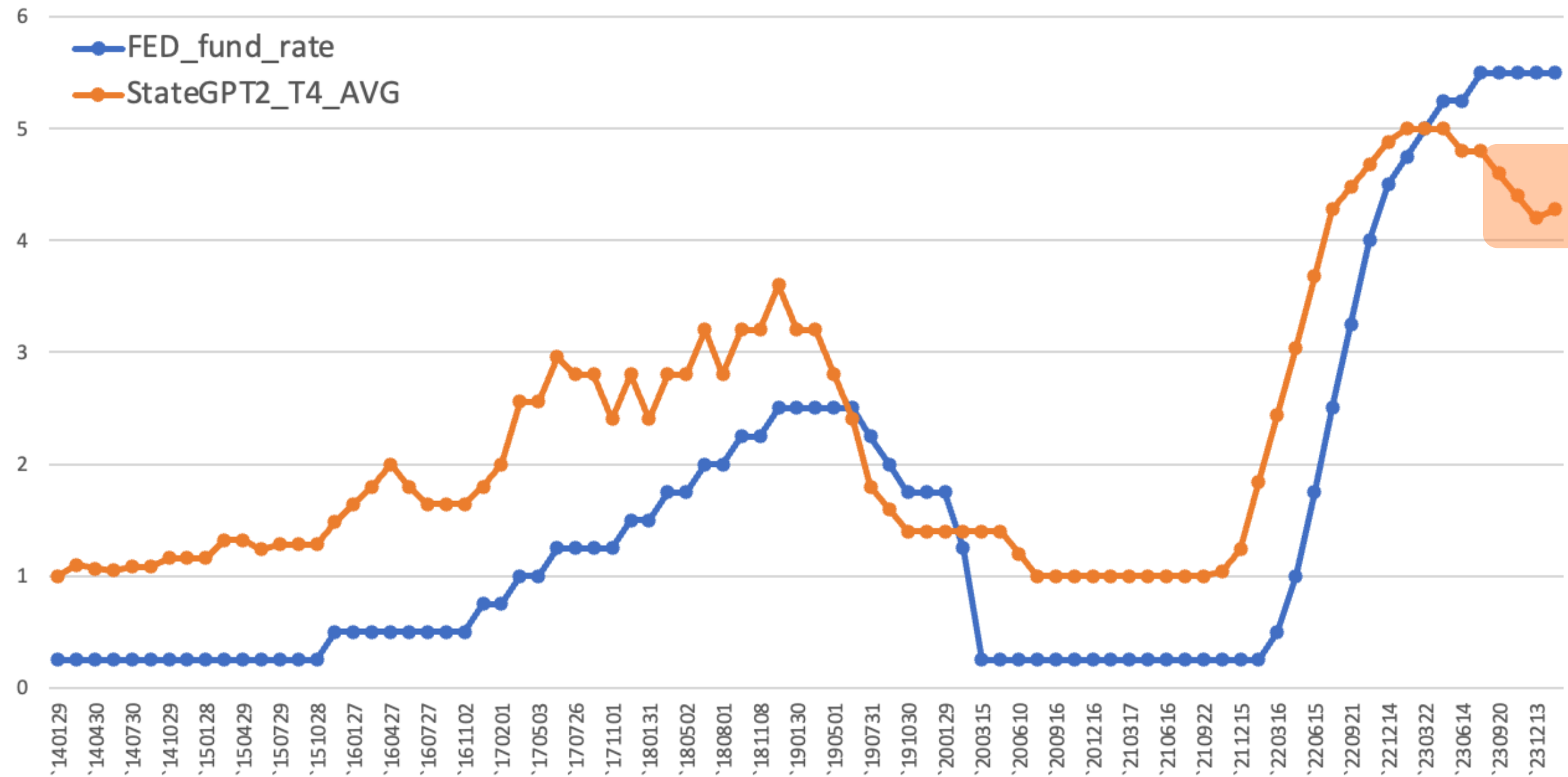
Performance of GPT Models

Condition	GPT Model	Concordance Rate	Spearman	Kendall
Condition 1	ChatGPT-3.5	0.60	0.48	0.46
	GPT-4	0.43	0.57	0.54
Condition 2	ChatGPT-3.5	0.77	0.42	0.41
	GPT-4	0.82	0.61	0.59
Condition 3	ChatGPT-3.5	0.59	0.40	0.39
	GPT-4	0.39	0.51	0.48
Condition 4	ChatGPT-3.5	0.76	0.13	0.13
	GPT-4	0.79	0.42	0.40

Future Research

GPT4 Dove/Hawk rating on FOMC statements

(2014.01 - 2024.01)



Conclusion

01

Unlocking Potential

- Proven impact of GPT-3.5 and GPT-4 on revolutionizing sentiment analysis in corporate disclosures.

02

Navigating Challenges

- Highlighted the need for precise model tuning to tackle sentiment discrepancies and interpretability for accurate results.

03

Future Direction

- Committed to enhancing AI tools, combining innovation with expertise for superior financial decision-making.

Thank You

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EG

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