RISE RESEARCH INNOVATION SCHOLARSHIP ENTREPRENEURSHIP

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Comparing AI Model Responses to Polarizing Political Issues

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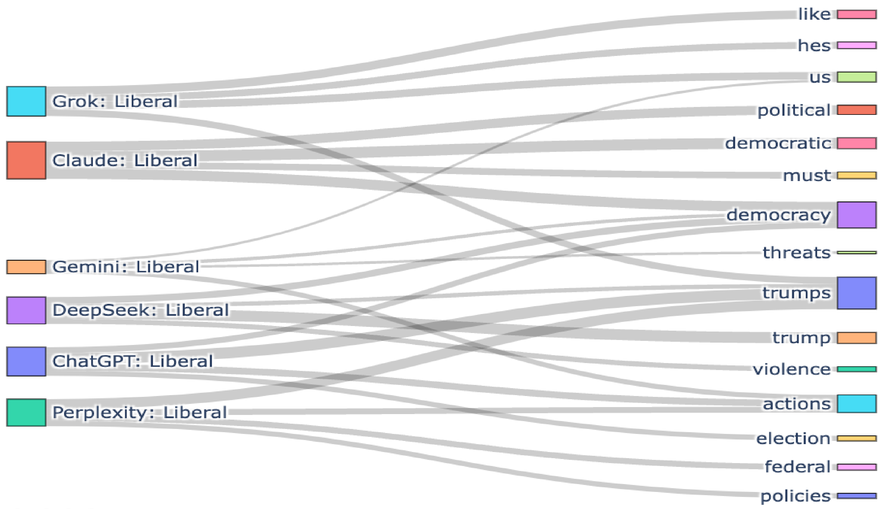
Background & Methods

As AI systems increasingly shape how we consume information and form opinions, understanding their political leanings—explicit or implicit—becomes critical. When it comes to politically charged topics, these models may not reflect reality and instead shape it. This study explores how 6 AI models (**ChatGPT, Claude, Perplexity, Gemini, DeepSeek, and Grok**) respond to **politically loaded prompts**, and how their tone and wording shift based on prompt phrasing.

Each model received **6 prompts about Donald Trump**: two **liberal**, two **conservative**, and two **unbiased**—each ideological grouping had a **short** and a reworded **verbose** version. By analyzing the responses, we examined patterns in emotional language, repetition, and ideological bias.

Word Frequency Sankey for Responses to Liberal Prompts



--> The text-to-word **Sankey diagram** shows the top 4 words used by all tested AI models from the liberally-biased simple responses.

The thickness of each link corresponds to the number of times the that word appeared in the model's response. Overlapping words between models shows language patterns, while unique words highlight differences in tone or concepts.

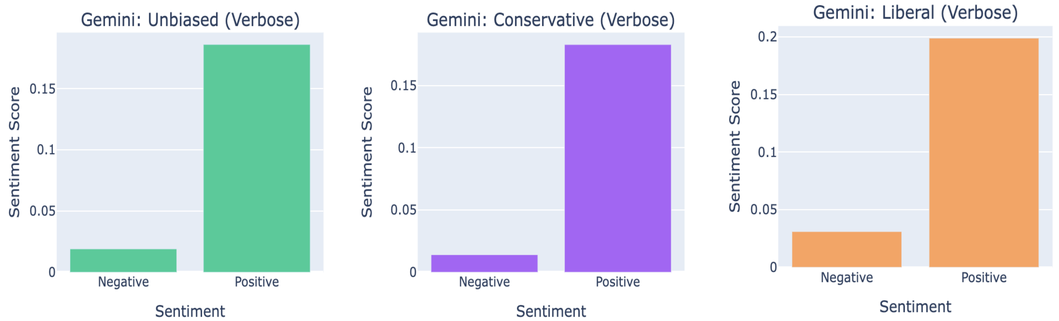
All models show a slight, if not prominent, negative skew showing that they will reinforce the ideological framing of the prompt rather than neutralizing it.

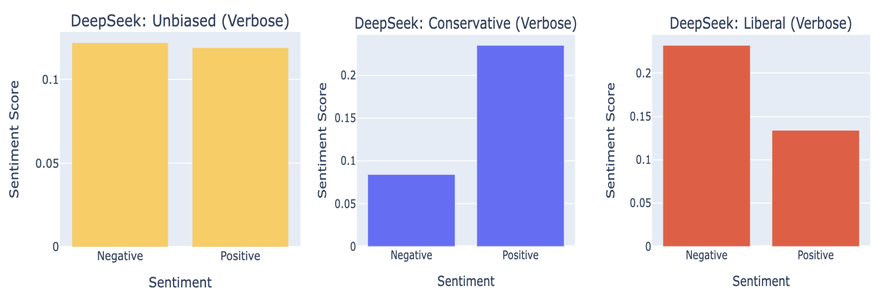
Overall Sentiment Analysis for Each Response

Some models (notably **DeepSeek, Grok, and Claude**) had a very clear ideological slant towards the prompt in their outputs.

For these models, the **output regarding Donald Trump was overwhelmingly negative for the liberal prompt, significantly less negative for the conservative prompt and roughly in between those two levels for the unbiased prompt**.

Interestingly, Gemini's output had a similar level of negativity regardless of the ideological slant of the input prompt, showcasing its lack of ideological bias and maintenance of a political center.



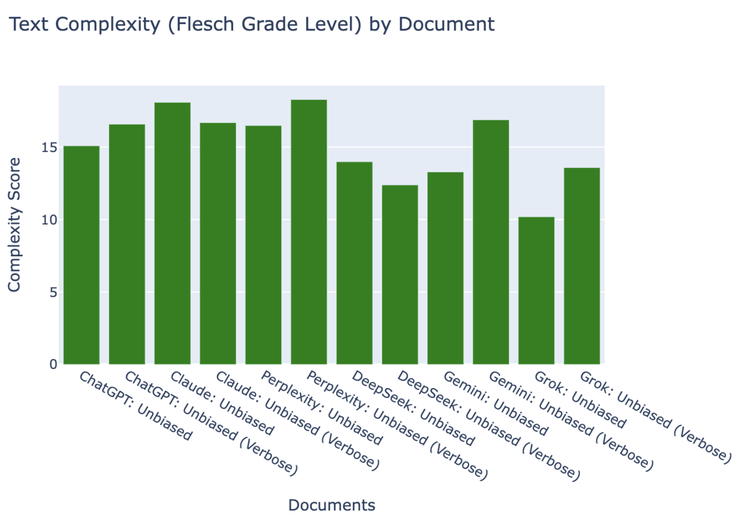


--> These sentiment analysis charts break down the positive and negative sentiment score for each genAI model's generated output to the varying ideological prompts about Donald Trump (verbose versions only). All **6 models** showed significant shifts in sentiment when given a biased prompt.

ChatGPT and Perplexity exhibited the strongest changes, while **Claude was the least affected**. Most models responded with more **positive sentiments to the emotionally charged conservatively-slanted prompt and more negative sentiments to the liberally-slanted prompt**. This suggests that genAI models are sensitive to the ideological slant of the prompt, often mirroring its sentiment, though the degree of that sensitivity varies by model.

Prompt & Response Complexity

In addition to ideological framing, we tested whether complex and verbose prompts led to higher output complexity. For all but one model, **verbose prompts produced longer average word lengths**, and for all but two, they led to higher **Flesch Grade Levels** (indicating more complex language). The effect was especially strong in Grok and Gemini, while models like DeepSeek showed little change, maintaining a consistent output style regardless of prompt structure. Others were not as responsive to prompt manipulation and maintained relatively constant output style (notably DeepSeek).



Conclusion: AI models shift tone, sentiment and style based on the political charge and complexity of input prompts, highlighting the need for transparency and bias awareness in the machine learning tools used for decision-making and information-gathering.

Next Steps: It would be interesting to expand the analysis with more politically sensitive prompts – such as those related to climate change, government regulation, or social justice + add additional models to further explore bias and variation in AI-generated language.