

Mitigating Information Asymmetry in Governmental Policies: An AI-Driven Approach

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Abstract

This study investigates the efficacy of GPT-4, a Large Language Model (LLM), in generating summaries of governmental policies to enhance public comprehension and address information asymmetry. Through a comparative analysis utilizing the Gunning Fog Index (GFI) and Flesch-Kincaid Score (FKS), the research assesses the readability and information retention of Artificial Intelligence (AI)-produced legislative summaries. The results indicate that GPT-4 significantly outperforms provided summaries and original legislative texts in clarity and simplicity. The AI summaries demonstrated a 121.5% increase in FKS compared to the full bills and a 52.3% increase over the provided summaries. In terms of GFI, the AI summaries achieved a decrease of 61.8% from the full bills and 44.5% from the provided summaries, indicating a substantial enhancement in readability. Moreover, the ROUGE-L scores consistently exceed the 0.5 threshold, demonstrating robust information retention across six Congresses. For summaries falling below this benchmark, a feedback loop employing a modified Genetic Algorithm effectively enhances their quality, ensuring high fidelity of information with improved fitness scores. The integration of a novel fitness function that takes FKS and GFI into account, along with the ROUGE-L, within the Genetic Algorithm proved effective in refining summaries where initial attempts did not meet the desired standards, as evidenced by a 29.89% average increase in ROUGE-L scores post-feedback loop application. This approach underscores the potential of AI in democratizing legislative information, suggesting that GPT-4 can bridge the gap between complex legal jargon and the lay public's understanding. This research provides a foundation for leveraging AI to mitigate information asymmetry in public policy by increasing the comprehensibility and specificity of summaries, potentially increasing informed citizen participation in democratic processes.

Keywords: Information Asymmetry; Artificial Intelligence; Policy Comprehension; Text Simplification; Information Retention