

A Multi-Model Approach to Mitigate Hallucinations in Large Language Models

Publisher: IEEE

Cite This

PDF

Praneet Singh ; Aditya Ghosh ; Debdutta Ghosh ; Satadru Pramanik ; Awantika Kumari ; Sayantani Das

All Authors

24

Full

Text Views



Abstract

Document Sections

I. Introduction

II. Literature Survey

III. Proposed Methodology

IV. Architecture and Design

V. Experimental Setup

Show Full Outline

Authors

Figures

References

Keywords

Metrics

More Like This

Abstract:

Large Language Models (LLMs) frequently generate realistic output that is factually incorrect or illogical, a phenomenon also referred to as hallucinations. In this study, a layered verification architecture based on an ensemble of heterogeneous models is evaluated for its ability to enhance the factual accuracy of output. The architecture comprises the Qwen3-30B-A3B, DeepSeek-Prover-V2, and Generative Pre-trained Transformer (GPT) -4.1 models, using Google Gemini 2.5 Pro as the secondary verification mechanism and judge model. The benchmark set of fact-based multiple-choice questions is used to evaluate the accuracy of individual models and a hybrid majority-voting model with judge-overwrite functionality. The accuracy of individual models peaked at 86.67%, while the proposed hybrid model architecture achieved a higher accuracy of 91.11%. The findings demonstrate that an adaptive ensemble architecture can effectively mitigate generative errors in real-world applications, enabling safer deployment of Artificial Intelligence (AI) when factual accuracy is paramount.

Published in: 2026 13th International Conference on Computing for Sustainable Global Development (INDIACom)

Date of Conference: 08-10 April 2026

DOI: 10.23919/INDIACom70271.2026.11526014

Date Added to IEEE Xplore: 26 May 2026

Publisher: IEEE

ISBN Information:

Conference Location: New Delhi, India

Recommended for You (Beta)

- Deep Learning in Autonomous Vehicles: A Comprehensive Review of Object Detection, Lane Detection and Scene...
- Comprehensive Performance Analysis of Object Detection Algorithms Across Diverse...
- Deep Learning with Image Processing for Object Detection in...

Learn More

Sign in to Continue Reading

Authors

Figures

References

Keywords

Metrics

