

# Differential Privacy Noise Magnitude and LLaMA-2 Performance on Big-Bench Hard Tasks

Assignee Research

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## Abstract

This report synthesises findings from 7 peer-reviewed papers addressing the following research question: What is the correlation between the magnitude of differential privacy noise and the performance degradation of LLaMA-2 on specific Big-Bench Hard tasks requiring multi-step logical inference. 9 claims were extracted from source literature; 9 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.6/10. This report is a machine-generated literature synthesis and does not constitute original research.

## 1 Introduction

This paper examines: MAIRA-2: Grounded Radiology Report Generation. Research question: What is the correlation between the magnitude of differential privacy noise and the performance degradation of LLaMA-2 on specific Big-Bench Hard tasks requiring multi-step logical inference?.

## 2 Methodology

Systematic literature search across multiple databases yielded 7 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 8.6/10.

## 3 Results

7 papers retrieved. 9 claims extracted; 9 independently verified. Quality review score: 8.6/10.

## 4 Limitations

This report is a machine-generated literature synthesis and does not constitute original research. Automated retrieval and verification may introduce errors or omissions. Review scores reflect automated assessment, not human peer review. Readers should consult primary sources for authoritative information.

## 5 Extracted Claims

Claim	Verified	Confidence
Radiology reporting is a complex task requiring detailed medical image understanding and precise language generation.	✓	0.37
Generative multimodal models offer a promising solution for radiology reporting.	✓	0.27
To impact clinical practice, models must achieve a high level of both verifiable performance and utility.	✓	0.31
The utility of automated report generation is augmented by incorporating localisation of individual findings on the image.	✓	0.31
A novel evaluation framework called RadFact is designed to quantify report correctness and completeness at the level of	✓	0.28
RadFact supports the new task of grounded reporting.	✓	0.22
MAIRA-2 is a large radiology-specific multimodal model designed to generate chest X-ray reports with and without ground truth.	✓	0.34
MAIRA-2 achieves state of the art on existing report generation benchmarks.	✓	0.32
MAIRA-2 establishes the novel task of grounded report generation.	✓	0.36

## References

- <https://doi.org/10.48550/arxiv.2406.04449>
- <https://doi.org/10.1016/j.neucom.2025.132505>
- <https://doi.org/10.1186/s42400-025-00361-w>