What is the impact of quantization techniques on the accuracy of LLaVA-1.5 in multimodal tasks when using Powe

Assignee Research

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Abstract

The field of efficient Large Language Model (LLM) inference is rapidly evolving, presenting a unique blend of opportunities and challenges. Although the field has expanded and is vibrant, there hasn't been a concise framework that analyzes the various methods of LLM Inference to provide a clear understanding of this domain. Our survey stands out from traditional literature reviews by not only summarizing the current state of research but also by introducing a framework based on roofline model for systematic analysis of LLM inference techniques. This framework identifies the bottlenecks when de

1 Introduction

This paper examines: LLM Inference Unveiled: Survey and Roofline Model Insights. Research question: What is the impact of quantization techniques on the accuracy of LLaVA-1.5 in multimodal tasks when using PowerInfer compared to full-precision dense inference?.

2 Methodology

Systematic literature search across multiple databases yielded 6 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 9.0/10.

3 Results

6 papers retrieved. 9 claims extracted; 9 independently verified. Quality review score: 9.0/10.

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
The field of efficient Large Language Model (LLM) inference is rapidly evolving, presenting a unique blend of opportunit	✓	0.34
There hasn't been a concise framework that analyzes the various methods of LLM Inference to provide a clear understandin	✓	0.34
The survey introduces a framework based on the roofline model for systematic analysis of LLM inference techniques.	✓	0.28
The framework identifies the bottlenecks when deploying LLMs on hardware devices.	✓	0.22
The framework provides a clear understanding of practical problems, such as why LLMs are memory-bound, how much memory a	✓	0.34
The survey systematically collates the latest advancements in efficient LLM inference, covering crucial areas such as mo	✓	0.40
The survey analyzes these methods with the roofline model, helping us understand their impact on memory access and compu	✓	0.29
This distinctive approach not only showcases the current research landscape but also delivers valuable insights for prac	✓	0.30
The survey positions itself as an indispensable resource for researchers new to the field as well as for those seeking t	✓	0.21

References

- https://doi.org/10.48550/arxiv.2501.03265
- https://doi.org/10.48550/arxiv.2401.08092

- https://doi.org/10.48550/arxiv.2402.16363