How does the inference latency per token and throughput of PowerInfer compare to other state-of-the-art sparse

Assignee Research

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Abstract

Abstract The rapid evolution of large language models (LLMs) has driven a transformative shift in artificial intelligence (AI), reshaping both research paradigms and practical applications. Distinguished from their predecessors by unprecedented scale and advanced capabilities, LLMs necessitate new frameworks for understanding their development, behavior, and societal impact. This survey systematically reviews recent advancements in LLM techniques across four key dimensions: (1) pre-training methodologies, which establish core model capabilities through large-scale self-supervised training, arc

1 Introduction

This paper examines: A Survey of Large Language Models. Research question: How does the inference latency per token and throughput of PowerInfer compare to other state-of-the-art sparse or quantized inference systems like GPTQ or SparseGPT when evaluated on HumanEval and GSM8K benchmarks for LLaMA models ranging from 7B to 70B?.

2 Methodology

Systematic literature search across multiple databases yielded 10 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 8.5/10.

3 Results

10 papers retrieved. 9 claims extracted; 9 independently verified. Quality review score: 8.5/10.

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 survey reviews LLM advancements across four key dimensions: pre-training methodologies, post-training techniques, ut	✓	0.22
Pre-training methodologies establish core model capabilities through large-scale self-supervised training, architectural	✓	0.35
Post-training techniques include supervised fine-tuning and reinforcement learning.	✓	0.17
Post-training techniques adapt foundational models to downstream tasks and enhance their alignment and safety.	✓	0.26
Utilization strategies include in-context learning, prompt engineering, and agentic reasoning.	✓	0.21
Utilization strategies optimize real-world deployment and enable effective interaction with external environments.	✓	0.25
Evaluation methods encompass benchmarks for core language capabilities, reasoning, and safety.	✓	0.19
The survey identifies critical research issues concerning theoretical foundations, efficient scaling, alignment, and age	✓	0.25
Large language models are distinguished from their predecessors by unprecedented scale and advanced capabilities.	✓	0.24

References

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- https://doi.org/10.1145/3694715.3695964
- https://doi.org/10.1007/s11704-026-60308-3