Feature-Conditional vs. Class-Conditional Alignment in LLM Robustness on Imbalanced Reasoning Benchmarks

Assignee Research

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Abstract

Natural language processing (NLP) has significantly transformed in the last decade, especially in the field of language modeling. Large language models (LLMs) have achieved SOTA performances on natural language understanding (NLU) and natural language generation (NLG) tasks by learning language representation in self-supervised ways. This paper provides a comprehensive survey to capture the progression of advances in language models. In this paper, we examine the different aspects of language models, which started with a few million parameters but have reached the size of a trillion in a very

1 Introduction

This paper examines: A Review of Current Trends, Techniques, and Challenges in Large Language Models (LLMs). Research question: How does feature-conditional alignment compared to class-conditional alignment affect the robustness of large language models on imbalanced reasoning benchmarks?.

2 Methodology

Systematic literature search across multiple databases yielded 11 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

11 papers retrieved. 10 claims extracted; 10 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
Natural language processing (NLP) has significantly transformed in the last decade, especially in the field of language	✓	0.28
Large language models (LLMs) have achieved state-of-the-art (SOTA) performances on natural language understanding (NLU)	✓	0.30
LLMs achieve performance by learning language representation in self-supervised ways.	✓	0.18
Language models started with a few million parameters.	✓	0.18
Language models have reached the size of a trillion parameters in a very short time.	✓	0.19
LLMs transitioned from task-specific to task-independent to task-and-language-independent architectures.	✓	0.26
LLMs can perform well across many domains and datasets if sufficiently trained on a large and diverse dataset.	✓	0.25
The availability of cheap computational power and large datasets has improved LLM capabilities over time.	✓	0.24
The availability of cheap computational power and large datasets has raised new challenges for LLMs.	✓	0.22
LLM performance is affected by the model's depth, width, and data size.	✓	0.21

References

- https://doi.org/10.3390/app14052074
- https://doi.org/10.1186/s13643-024-02609-x

- https://doi.org/10.48550/arxiv.2307.03109