What is the impact of dimensionality reduction techniques (PCA, SVD) on the semantic coherence and classification performance of

Assignee Research

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Abstract

Large Language Models (LLMs) recently demonstrated extraordinary capability, including natural language processing (NLP), language translation, text generation, question answering, etc. Moreover, LLMs are a new and essential part of computerized language processing, having the ability to understand complex verbal patterns and generate coherent and appropriate replies for the situation. Though this success of LLMs has prompted a substantial increase in research contributions, rapid growth has made it difficult to understand the overall impact of these improvements. Since a lot of new research o

1 Introduction

This paper examines: A Review on Large Language Models: Architectures, Applications, Taxonomies, Open Issues and Challenges. Research question: What is the impact of dimensionality reduction techniques (PCA, SVD) on the semantic coherence and classification performance of word-class embeddings across different languages in the XNLI and MLQA 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 7.3/10.

3 Results

11 papers retrieved. 9 claims extracted; 6 independently verified. Quality review score: 7.3/10.

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
Large Language Models (LLMs) have demonstrated capabilities in natural language processing, language translation, text g	✓	0.25
LLMs possess the ability to understand complex verbal patterns.	✓	0.17
LLMs can generate coherent and appropriate replies for specific situations.	×	0.13
There has been a substantial increase in research contributions regarding LLMs recently.	✓	0.16
The rapid growth of LLM research has made it difficult to understand the overall impact of recent improvements.	✓	0.17
The article provides an overview of LLM history, architectures, transformers, resources, training methods, applications,	✓	0.31
The paper discusses the fundamental concepts of LLMs and their traditional training pipeline.	✓	0.18
The paper demonstrates the datasets utilized in LLM studies.	×	0.08
The paper discusses a wide range of LLM applications, including those in the biomedical field.	×	0.13

References

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