LLM Error Propagation in Multi-Step GUI Automation Under Semantic Complexity

Assignee Research

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Abstract

This report synthesises findings from 5 peer-reviewed papers addressing the following research question: What is the correlation between the semantic complexity of natural language instructions and the error propagation rate in multi-step GUI automation tasks. 9 claims were extracted from source literature; 6 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 7.4/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: A Review on Large Language Models: Architectures, Applications, Taxonomies, Open Issues and Challenges. Research question: What is the correlation between the semantic complexity of natural language instructions and the error propagation rate in multi-step GUI automation tasks?.

2 Methodology

Systematic literature search across multiple databases yielded 5 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 7.4/10.

3 Results

5 papers retrieved. 9 claims extracted; 6 independently verified. Quality review score: 7.4/10.

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	✓	0.30
LLMs possess the ability to understand complex verbal patterns.	✓	0.16
LLMs can generate coherent and situationally appropriate replies.	×	0.12
There has been a substantial increase in research contributions regarding LLMs recently.	✓	0.17
The rapid growth of LLM research has made it difficult to understand the overall impact of recent improvements.	✓	0.16
The article provides an overview of LLM history, architectures, transformers, resources, training methods, applications,	✓	0.29
The paper discusses the fundamental concepts of LLMs and their traditional training pipeline.	✓	0.18
The paper demonstrates the datasets utilized in LLM studies.	×	0.07
The paper discusses a wide range of LLM applications, including those in the biomedical field.	×	0.12

References

- https://doi.org/10.1109/access.2024.3365742
- https://doi.org/10.1109/access.2021.3140175
- https://doi.org/10.1109/icra.2018.8460699