What is the comparative performance gap in F1-scores between Llama3, Codestral, and Deepseek R1 for multi-lang

Assignee Research

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Abstract

This systematic literature review comprehensively examines the application of Large Language Models (LLMs) in forecasting and anomaly detection, highlighting the current state of research, inherent challenges, and prospective future directions. LLMs have demonstrated significant potential in parsing and analyzing extensive datasets to identify patterns, predict future events, and detect anomalous behavior across various domains. However, this review identifies several critical challenges that impede their broader adoption and effectiveness, including the reliance on vast historical datasets, i

1 Introduction

This paper examines: Large Language Models for Forecasting and Anomaly Detection: A Systematic Literature Review. Research question: What is the comparative performance gap in F1-scores between Llama3, Codestral, and Deepseek R1 for multi-language vulnerability classification when fine-tuned on mixed-domain versus security-only code datasets?.

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 8.1/10.

3 Results

6 papers retrieved. 5 claims extracted; 5 independently verified. Quality review score: 8.1/10.

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 significant potential in parsing and analyzing extensive datasets to iden	✓	0.40
LLMs face several critical challenges that impede their broader adoption and effectiveness, including the reliance on va	✓	0.43
Potential solutions and strategies to overcome the challenges faced by LLMs include integrating multimodal data, advance	✓	0.29
Critical trends likely to shape the evolution of LLMs in forecasting and anomaly detection include the push toward real-	✓	0.39
The review underscores the transformative impact LLMs could have on forecasting and anomaly detection while emphasizing	✓	0.35

References

- https://doi.org/10.48550/arxiv.2310.19736
- https://doi.org/10.20944/preprints202502.1608.v1
- https://doi.org/10.48550/arxiv.2402.10350