

# Graph-Based vs. Transformer-Based Anomaly Detection Latency in Long-Context Reasoning

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## Abstract

This report synthesises findings from 1 peer-reviewed paper addressing the following research question: How does the inference latency of graph-based anomaly detection models compare to transformer-based sequence models when evaluating long-context reasoning benchmarks on large-scale datasets. An AI-driven anomaly detection engine for data quality validation in regulatory filings is an intelligent system that tries to automate the detection of errors, inconsistencies and irregularities of large-scale financial disclosures to ensure accuracy, reliability and. 6 claims were extracted from source literature; 6 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.8/10. This report is a machine-generated literature synthesis and does not constitute original research.

## 1 Introduction

This paper examines: AI-Driven Sequential-Contextual Anomaly Detection Engine Based Improved Archimedes Optimization Algorithm for Data Quality Validation in Regulatory Filings. Research question: How does the inference latency of graph-based anomaly detection models compare to transformer-based sequence models when evaluating long-context reasoning benchmarks on large-scale datasets?.

## 2 Methodology

Systematic literature search across multiple databases yielded 1 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 8.8/10.

### 3 Results

1 papers retrieved. 6 claims extracted; 6 independently verified. Quality review score: 8.8/10.

### 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
An AI-driven anomaly detection engine for data quality validation in regulatory filings is an intelligent system that tr	✓	0.48
Current models tend to struggle with modeling temporal dependencies, sequential patterns, entity context, and subtle ano	✓	0.39
This study suggests a new Sequential-Contextual Anomaly Detection with an Improved Archimedes Optimization Algorithm (SC	✓	0.52
The methodology involves detailed data gathering between 1993-2024 SEC filings, intensive preprocessing, sophisticated f	✓	0.36
The IAOA improves feature selection and hyperparameter optimization, whereas the Explainable AI approaches such as SHAP,	✓	0.35
The results of experiments on 18 million filings indicate a 97.5 per cent accuracy, 96.1 per cent precision, 95.7 per ce	✓	0.30

### References

- <https://www.semanticscholar.org/paper/922ab6fe1b14c2ec8a8738d03c68076f29da12c3>