Visualizing Conformance Checking Results

1 Introduction

Conformance checking, a type of process mining, has shown to be a useful tool that compares modeled behavior (**“to-be”**) with actual behavior (**“as-is”**) to ensure that processes are followed correctly, improve efficiency, and ensure compliance with standards and regulations.

2 Objectives

To find out-

- Causes of deviations
- Existing conformance checking techniques
- Disadvantages these techniques have
- Novel visualisation technique development

3 Methodology

Literature review of conformance checking

Analysis of 45 publications on Google Scholar ranging from 2011 to 2024

4 Findings

Reasons for deviations

- Data dependency abstraction
- Inaccurate event timestamps
- Scalability
- Offline nature

Conformance checking techniques

- Rule Checking
- Token-based replay
- Trace alignment
- Stochastic-Aware conformance checking

Shortcomings of these techniques

- Limited adaptability and complexity
- Scalability
- Computational complexity and labor-intensive
- High-complexity loops support

Novel visualisation techniques

- Improved interpretability- graphical representation
- Effective presentation- Lexis diagrams and flowcharts
- Better decision-making by visual analytics
- Timely deviation detection through real-time monitoring and visualisation

5 Conclusion

This study finds gaps in conformance-checking techniques and proposes novel methods. Future research should focus on **interactive multi-perspective** conformance checking, integrating **AI and ML**, **plotted graph views**, and **real-time monitoring systems**.

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