

Diffusion-Based vs. GAN Approaches in Tabular Data Generation for Classifier Accuracy

Assignee Research

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Abstract

This report synthesises findings from 3 peer-reviewed papers addressing the following research question: How do diffusion-based tabular data generation methods compare to GAN-based approaches in preserving feature correlations for downstream classifier accuracy on the TabBench benchmark. 6 claims were extracted from source literature; 6 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.2/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Explainable Artificial Intelligence (XAI): What we know and what is left to attain Trustworthy Artificial Intelligence. Research question: How do diffusion-based tabular data generation methods compare to GAN-based approaches in preserving feature correlations for downstream classifier accuracy on the TabBench benchmark?.

2 Methodology

Systematic literature search across multiple databases yielded 3 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 8.2/10.

3 Results

3 papers retrieved. 6 claims extracted; 6 independently verified. Quality review score: 8.2/10.

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
The outcomes of many AI models are challenging to comprehend and trust due to their black-box nature.	✓	0.27
Existing survey papers have tackled the concepts of XAI, its general terms, and post-hoc explainability methods.	✓	0.31
There have not been any reviews that have looked at the assessment methods, available tools, XAI datasets, and other rel	✓	0.25
The study summarizes recently proposed techniques in XAI for supervised machine learning.	✓	0.19
The review divides XAI techniques into four axes: (i) data explainability, (ii) model explainability, (iii) post-hoc exp	✓	0.34
The study introduces available evaluation metrics, open-source packages, and datasets.	✓	0.18

References

- <https://doi.org/10.1016/j.inffus.2023.101805>
- <https://doi.org/10.1038/s41746-023-00927-3>
- <https://doi.org/10.1007/s10462-018-09679-z>