Adversarial Data Strategies and Cross-Domain Generalization in Tabular Foundation Models

Assignee Research

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Abstract

This report synthesises findings from 16 peer-reviewed papers addressing the following research question: What is the impact of varying adversarial data generation strategies on the cross-domain generalization performance of tabular foundation models, as measured by accuracy on the TabTime and TabMNAR. 6 claims were extracted from source literature; 6 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 8.7/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Revisiting Pretraining Objectives for Tabular Deep Learning. Research question: What is the impact of varying adversarial data generation strategies on the cross-domain generalization performance of tabular foundation models, as measured by accuracy on the TabTime and TabMNAR benchmarks?.

2 Methodology

Systematic literature search across multiple databases yielded 16 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 8.7/10.

3 Results

16 papers retrieved. 6 claims extracted; 6 independently verified. Quality review score: 8.7/10.

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
Recent deep learning models for tabular data currently compete with the traditional ML models based on decision trees (G	✓	0.39
Unlike GBDT, deep models can additionally benefit from pretraining, which is a workhorse of DL for vision and NLP.	✓	0.38
For tabular problems, several pretraining methods were proposed, but it is not entirely clear if pretraining provides co	✓	0.48
In this work, we aim to identify the best practices to pretrain tabular DL models that can be universally applied to dif	✓	0.40
Using the object target labels during the pretraining stage is beneficial for the downstream performance.	✓	0.32
Properly performed pretraining significantly increases the performance of tabular DL models, which often leads to their	✓	0.40

References

- http://arxiv.org/abs/2601.04110v2
- http://arxiv.org/abs/2512.03307v1
- http://arxiv.org/abs/2207.03208v2