View Review

Paper ID
2611

Paper Title
CauTsFool: Causality-Driven Imperceptible Attacks for Time Series Classification

REVIEW QUESTIONS

1. How confident are you in your evaluation of this paper?
Confident

2. Importance/relevance to ICME
Of limited interest

3. Justification for importance/relevance
Currently, most adversarial attack research focuses on images and feedforward neural networks, while the unique nature of time series data makes these methods difficult to directly apply. CauTsFool fills this research gap and focuses on adversarial attacks on RNN-based time series classification models.

4. Novelty/originality
Minor Originality

5. Justification for novelty/originality
This paper applies causal reasoning to adversarial attacks and demonstrates the potential of causal information in optimizing perturbation targets. This interdisciplinary approach provides new insights into the application of causal reasoning to other machine learning tasks.

6. Technical correctness
Probably Correct

7. Justification for technical correctness
Through causal reasoning, CauTsFool can accurately identify and attack the most influential subsequences, thereby significantly reducing the magnitude of the perturbation while maintaining a high attack success rate. This approach improves the efficiency and concealment of the attack.

8. Experimental validation and reproducibility
Limited but Convincing

9. Justification for experimental validation and reproducibility
The paper details the design and implementation of the CauTsFool framework, including how causal reasoning is integrated, the steps of perturbation generation, and how to optimize using causal strength. This transparency helps other researchers understand and reproduce experiments.

10. Clarity of presentation

Clear Enough

11. Justification for clarity of presentation

Well-Presented

12. Reference to prior work

References Adequate

13. Justification for references

The paper is well-organized, following a logical flow from introduction to methodology, experiments, results, and conclusion. Each section clearly outlines the objectives, methods, and findings, making it easy for readers to follow the argument.

14. Overall evaluation of the paper

Strong Reject

15. Justification for overall evaluation (required)

This seems just combination work.
Although causal inference itself is not a new concept, integrating it into adversarial attacks for time series classification represents a novel application. This integration addresses the unique challenges posed by the temporal dependencies in time series data.

18. Is this an award-quality paper? (Only for Definite Accept papers)

Not a candidate for award