View Review

Paper ID

2630

Paper Title

DeepEntropy: Inducing Ambiguity of Deep Classifiers via Entropy-based Test Selection

REVIEW QUESTIONS

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

Confident

2. Importance/relevance to ICME

Of sufficient interest

3. Justification for importance/relevance

The background of this article is that deep learning testing plays a vital role in revealing errors and vulnerabilities before model deployment. However, traditional security assessment testing methods require annotating a large number of test cases, which is time-consuming and laborious. Therefore, automatically selecting a more representative subset (i.e., inducing erroneous behaviors) from a large number of unlabeled tests can significantly improve testing efficiency and error detection capabilities.

4. Novelty/originality

Moderate Original

5. Justification for novelty/originality

The research content of this problem includes proposing a new test selection method DeepEntropy, which optimizes the selection of test cases by combining weighted entropy and output difference to improve the ability of model error exposure.

6. Technical correctness

Probably Correct

7. Justification for technical correctness

Method is detailed and includes clear definitions of entropy measures and the proposed DeepEntropy metric. The integration of weighted entropy and output differences is well-explained, providing a solid foundation for the approach.

8. Experimental validation and reproducibility

Limited but Convincing

9. Justification for experimental validation and reproducibility

DeepEntropy outperforms DeepGini, ATS, RS, and MaxP in test selection performance. Experimental results show that DeepEntropy performs well in detecting the total number of errors and types of errors, which is 12% and 9% higher than the state-of-the-art methods.

10. Clarity of presentation
Clear Enough

11. Justification for clarity of presentation
The presentation of the "DeepEntropy" paper is generally clear and structured

12. Reference to prior work
References Adequate

13. Justification for references
Enough to learn about the area

14. Overall evaluation of the paper
Weak Reject

15. Justification for overall evaluation (required)
The paper clearly outlines its objectives, focusing on improving the efficiency and effectiveness of deep learning testing through entropy-based test selection. The goals are well-defined and aligned with the research problem.

However, I dont't think this is a novelty method. Authors doesn't explain clearly why introduce this DeepEntropy and inner reason for that.

18. Is this an award-quality paper? (Only for Definite Accept papers)
Not a candidate for award