

Peer Review

Review of: "Evaluating the Application of SOLID Principles in Modern AI Framework Architectures"

Abdul Qayum¹

1. Computer Science and Information Systems, University of Limerick, Ireland

Strengths:

1. The research effectively highlights potential SOLID principle violations in both TensorFlow and Scikit-Learn, providing valuable insights into their architectural design choices.
2. The discussion on trade-offs concerning non-functional requirements (NFRs) is a useful contribution, helping readers understand the practical constraints of these frameworks.

Suggested areas for Improvement:

Root Cause Analysis of SOLID Violations:

- While the paper identifies SOLID violations, it does not sufficiently explain why these violations occur (e.g., performance optimizations, backward compatibility, or API design decisions).
- A deeper analysis of the underlying reasons would strengthen the findings.

Standardized Quality Assessment (ISO/IEC 25010):

- Currently, the trade-offs are discussed qualitatively. Using a standardized model like ISO/IEC 25010 (System and Software Quality Model) would provide a more structured and measurable evaluation.
- This model covers key attributes such as maintainability, performance efficiency, security, and usability, making the comparison more comprehensive.

Expanded Discussion on Security & Usability Trade-offs:

- The paper focuses on performance and maintainability but overlooks security and usability, which are critical in ML framework adoption.

- For example, does TensorFlow's flexibility introduce security risks (e.g., custom ops leading to vulnerabilities)? Does Scikit-Learn's simplicity improve usability at the cost of scalability?
- Addressing these aspects would provide a more balanced assessment.

Overall, the research is a meaningful contribution but would benefit from the above enhancements, which would make the findings more robust and actionable for practitioners.

Declarations

Potential competing interests: No potential competing interests to declare.