

1. Open Methodology & Documentation

Clear Research Protocol:

Are the research questions, hypotheses, and methodology explicitly stated?

Is there a step-by-step description of the experimental design?

Detailed README File:

Does the paper or supplementary materials include a README explaining how to reproduce the study?

2. Data Accessibility & Transparency

Open Data:

Are the raw or processed datasets publicly available?

If data cannot be shared, is there a clear justification (e.g., privacy concerns)?

Data Documentation:

Is there a data dictionary or codebook explaining variables, formats, and preprocessing steps?

Are data collection methods (e.g., surveys, sensors, LMS logs) fully described?

FAIR Compliance:

Is the data Findable (DOI or persistent identifier)?

Is it Accessible (open license, no paywalls)?

Is it Interoperable (standardized formats like CSV, JSON)?

Is it Reusable (clear licensing, metadata)?

3. Code & Software Availability

Open Source Code:

Is the analysis code (Python, R, etc.) shared in a repository (GitHub, GitLab)?

Are scripts for data cleaning, analysis, and visualization included?

Version Control & Dependencies:

Are software versions (e.g., Python 3.10, TensorFlow 2.12) documented?

Is there a requirements.txt, environment.yml, or Dockerfile for reproducibility?

Deterministic Execution:

If randomness is involved (e.g., ML training), are random seeds fixed and reported?

4. Replicability of Analysis

Reproducible Workflow:

Can the analysis be rerun with the provided code and data?

Transparent Statistical Methods:

Are statistical tests, models, and assumptions clearly described?

Are effect sizes, confidence intervals, and p-values reported (not just significance)?

Alternative Implementations Tested:

If applicable, does the study test robustness by varying methods (e.g., different ML models)?

5. Results & Interpretation

Same Conclusions Possible:

Can an independent researcher reach similar conclusions using the same data and methods?

Are limitations and potential biases discussed?

Negative Results Reported:

Are non-significant or contradictory findings included (avoiding publication bias)?