

REVIEWER'S REPORT

Manuscript No.: **IJAR-57821**

Title: **Machine Learning Algorithms in Network Traffic Classification A Survey**

Recommendation:

Accept as it is

Accept after minor revision.....

Accept after major revision✓.....

Do not accept (*Reasons below*)

Rating	Excel.	Good	Fair	Poor
Originality			✓	
Techn. Quality			✓	
Clarity			✓	
Significance			✓	

Reviewer's ID: JPR- **098**

Detailed Reviewer's Report

Decision: Accept after Major Revision

Summary:

The manuscript presents a survey on **Machine Learning algorithms for Network Traffic Classification (NTC)**, reviewing application identification, traffic behavior analysis, and protocol detection techniques, with discussion of encrypted traffic classification and future research challenges.

Strengths:

- Addresses a highly relevant topic in **network security and traffic analysis**.
- Covers a broad range of machine learning techniques including Random Forest, SVM, CNN, DFE, and attention-based models.
- Includes discussion on encrypted traffic classification, which is an important contemporary challenge.
- Provides comparative tables summarizing recent studies and datasets.
- Identifies future research directions such as online learning, semi-supervised learning, explainability, and robustness.

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Major Issues:

- The paper is presented as a survey but lacks a **systematic review methodology**, including search strategy, inclusion/exclusion criteria, and study selection process.
- The abstract claims a **comparative evaluation of AdaBoost, KNN, Logistic Regression, SVM, C4.5, and Random Forest using the KDD dataset**, but no experimental methodology, results tables, or statistical comparisons are actually provided in the manuscript.
- Significant inconsistency exists between the stated experimental contribution and the content, which is primarily a literature review.
- Critical analysis is limited; most sections summarize prior work rather than comparing strengths, weaknesses, and research trends.
- No quantitative comparison of reviewed studies is presented.
- Research gaps and proposed solutions remain generic and are not supported by empirical evidence.
- The conclusion claims a “detailed preprocessing pipeline” and “statistical validation,” but these elements are not described in sufficient detail within the manuscript.

Minor Issues:

- Numerous grammatical, punctuation, and language-quality issues throughout the manuscript.
- Several sentences are repetitive and poorly structured.
- Formatting inconsistencies appear in tables, citations, and section organization.
- Some references are very recent (2025) and should be verified for publication status and accessibility.
- Figure-based taxonomy or conceptual framework diagrams would improve readability and presentation quality.

Final Comment:

The manuscript addresses an important area of machine learning-based network traffic classification and provides a useful overview of recent developments. However, substantial revisions are required to resolve inconsistencies between the claimed experimental contribution and the actual

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survey content, strengthen methodological rigor, improve critical analysis, and enhance overall presentation quality.