

IEEE Journal Article Template

General Formatting

Page Setup

- ☐ **Paper size:** US Letter (8.5 × 11 inches)
- ☐ **Margins:** 0.75-1 inch (check journal specifications)
- ☐ **Columns:** Two columns with 0.25 inch space between
- ☐ **Font:** Times New Roman, 10-point for body text
- ☐ **Line spacing:** Single-space
- ☐ **Alignment:** Justified
- ☐ **Length:** Typically 8-14 pages (varies by journal)

Key Differences: Journal vs Conference

- **Length:** Journals longer (8-14 pages vs 4-6)
 - **Detail:** More comprehensive methodology and results
 - **Author bios:** Required for journal articles
 - **Review process:** More rigorous, longer timeline
 - **Structure:** More formal, complete sections
-

Title Section

Paper Title

- ☐ **Font:** 24-point Times New Roman, bold
- ☐ **Capitalization:** Title Case
- ☐ **Position:** Centered at top
- ☐ **Spacing:** Leave blank line after title

Example:

Deep Learning Approaches for Real-Time Network
Intrusion Detection: A Comprehensive Study

Author Names and Affiliations

Format:

First Author, Member, IEEE, Second Author, Senior Member, IEEE,
and Third Author, Fellow, IEEE

Abstract—The abstract text begins here. This section provides a comprehensive summary of the research including motivation, methodology, key results, and conclusions. Journal abstracts are typically 150-300 words and written as a single paragraph without indentation.

Author Guidelines: - ☐ **Font:** 10-point Times New Roman - ☐ **Centered:** Author names only - ☐ **IEEE membership:** Include grade if applicable - ☐ **Abstract starts immediately** after author line - ☐ **No separate affiliation line** at top (goes in footnote)

Title Footnote (First Page)

At bottom of first page:

Format:

Manuscript received Month Day, Year; revised Month Day, Year;
accepted Month Day, Year. Date of publication Month Day, Year;
date of current version Month Day, Year. (Corresponding Author:
First Author.)

First Author is with the Department of Computer Science,
University Name, City, State ZIP, Country (e-mail:
author1@institution.edu).

Second Author is with the Department of Engineering, Institution
Name, City, State ZIP, Country (e-mail: author2@institution.edu).

Digital Object Identifier 10.1109/XXX.2024.1234567

Guidelines: - ☐ **Font:** 8-point - ☐ **Location:** Bottom of first column, first page - ☐
Include: Dates, affiliations, emails, DOI - ☐ **Corresponding author:** Clearly identified -
☐ **Funding acknowledgment:** Can be included here or in Acknowledgment section

Abstract and Index Terms

Abstract Format

- ☐ **Heading:** “Abstract—” in italic with em dash
- ☐ **Font:** 10-point, italic
- ☐ **Length:** 150-300 words
- ☐ **Content:** Background, methods, results, conclusions
- ☐ **Single paragraph:** No indentation
- ☐ **Spans both columns**

Example:

Abstract—This paper presents a comprehensive investigation of deep learning techniques for real-time network intrusion detection. We propose a novel hybrid architecture combining convolutional neural networks (CNNs) and long short-term memory (LSTM) networks to achieve superior detection accuracy while maintaining low latency. The proposed system was evaluated on three benchmark datasets (NSL-KDD, UNSW-NB15, and CIC-IDS2017), achieving detection rates of 98.7%, 97.3%, and 99.1%, respectively, with false positive rates below 1.5%. Comparative analysis demonstrates that our approach outperforms existing state-of-the-art methods by 3-8% in accuracy while reducing processing time by 40%. These results indicate that hybrid deep learning architectures provide a practical solution for enterprise-scale network security applications.

Index Terms

Format:

Index Terms—Deep learning, intrusion detection, network security, convolutional neural networks, LSTM, cybersecurity.

Guidelines: - ☐ **Heading:** “Index Terms—” in italic with em dash - ☐ **Font:** 10-point, italic - ☐ **Number:** 5-8 terms - ☐ **Separator:** Commas and lowercase - ☐ **IEEE Thesaurus:** Use IEEE standard terminology when possible - ☐ **Leave blank line** after Index Terms before body

Body Structure

Standard Journal Article Sections

- I. INTRODUCTION** - Background and motivation - Problem statement - Literature gap - Research objectives - Paper organization - Contributions clearly stated
 - II. RELATED WORK** - Comprehensive literature review - Critical analysis of existing approaches - Comparison of methods - Research gap identification
 - III. SYSTEM MODEL/PROBLEM FORMULATION** - Mathematical formulation - System assumptions - Notation definitions - Problem constraints
 - IV. PROPOSED APPROACH/METHODOLOGY** - Detailed algorithm description - Architecture design - Implementation details - Theoretical analysis
 - V. EXPERIMENTAL SETUP** - Dataset description - Evaluation metrics - Baseline methods - Implementation environment - Parameter settings
 - VI. RESULTS AND ANALYSIS** - Performance evaluation - Comparative analysis - Statistical significance tests - Ablation studies - Visualization of results
 - VII. DISCUSSION** - Result interpretation - Theoretical implications - Practical applications - Limitations - Threats to validity
 - VIII. CONCLUSION** - Summary of contributions - Key findings - Future research directions
 - APPENDIX** (if needed)
 - ACKNOWLEDGMENT** (optional)
 - REFERENCES**
 - Author Biographies**
-

Section Headings

Level 1: Major Sections

- I. INTRODUCTION
 - ☐ **Format:** Roman numerals, UPPERCASE, centered
 - ☐ **Font:** 10-point, small caps or all caps
 - ☐ **Example:** I. INTRODUCTION

Level 2: Subsections

- A. Background and Motivation
 - ☐ **Format:** Letters, italic, left-aligned
 - ☐ **Font:** 10-point, italic
 - ☐ **Example:** A. Background and Motivation

Level 3: Sub-subsections

- 1) Implementation Details: Text continues here...
 - ☐ **Format:** Numbers, italic, indented, run-in

- ☐ **Font:** 10-point, italic
 - ☐ **Example:** 1) Details: Text follows...
-

In-Text Citations

Format

- ☐ **Numbered:** [1], [2], [3]
- ☐ **Sequential order** of first appearance
- ☐ **Square brackets**
- ☐ **No author names** in citations (typically)

Examples

Standard citation:

Recent advances in deep learning [1], [2] have enabled...

Range of citations:

Multiple studies [5]-[10] have investigated this problem.

With author mention (less common in IEEE):

Smith et al. [12] proposed an alternative approach.

Multiple non-sequential:

Various methods [3], [7], [11], [15] have been developed.

Equations

Format

- ☐ **Centered** on separate line
- ☐ **Numbered** sequentially in parentheses (right-aligned)
- ☐ **Use equation editor** for complex expressions
- ☐ **Define all variables** immediately after

Example:

The loss function is defined as:

$$L = 1/N \sum_{i=1}^N (y_i - \hat{y}_i)^2 \quad (1)$$

where N is the number of samples, y_i is the true label, and $\hat{y}_i$ is the predicted value for the i-th sample.

Multi-line equations:

$$\begin{aligned} f(x) = & a_0 + a_1x + a_2x^2 \\ & + a_3x^3 + a_4x^4 \end{aligned} \quad (2)$$

Figures

Figure Format

- ☐ **Caption below figure**

- ☐ **Font:** 8-point
- ☐ **Format:** “Fig. 1. Caption description.”
- ☐ **Centered caption**
- ☐ **Parts labeled:** (a), (b), (c) for multi-part figures

Example:

[Insert figure here]

Fig. 1. System architecture showing: (a) data preprocessing module, (b) feature extraction layer, (c) classification network, and (d) output layer. The dashed lines indicate optional connections.

Figure Guidelines

- ☐ **High resolution:** 300-600 DPI
- ☐ **Vector graphics** preferred for diagrams
- ☐ **Color or grayscale:** Check journal policy
- ☐ **Readable labels:** Minimum 8-point font in figures
- ☐ **Referenced in text:** “as shown in Fig. 1”
- ☐ **Position:** Top or bottom of column/page

Tables

Table Format

- ☐ **Caption above table**
- ☐ **Font:** 8-point
- ☐ **Format:** “TABLE I” (Roman numerals)
- ☐ **Title:** UPPERCASE on second line
- ☐ **Centered**

Example:

TABLE I
PERFORMANCE COMPARISON ON BENCHMARK DATASETS

Dataset	Method A	Method B	Proposed	Improvement
NSL-KDD	94.2%	96.1%	98.7%	2.6%
UNSW-NB15	93.5%	95.8%	97.3%	1.5%
CIC-IDS2017	96.8%	98.2%	99.1%	0.9%

Note: All values represent detection accuracy. Bold indicates best performance.

Table Guidelines

- ☐ **Horizontal lines only:** Top, bottom, below header
- ☐ **8-point font** for content
- ☐ **Units in header:** Include units in column headers
- ☐ **Footnotes:** Use superscripts (^a, ^b, ^c)
- ☐ **Bold for emphasis:** Highlight best results

Algorithms and Pseudocode

Format:

Algorithm 1: Network Intrusion Detection

Input: Network traffic data X , threshold θ
Output: Classification result y

```
1: Initialize model parameters
2: for each sample  $x_i$  in  $X$  do
3:   Extract features  $f_i = \text{extract}(x_i)$ 
4:   Compute score  $s_i = \text{classify}(f_i)$ 
5:   if  $s_i > \theta$  then
6:      $y_i = 1$  (intrusion detected)
7:   else
8:      $y_i = 0$  (normal traffic)
9:   end if
10: end for
11: return  $y$ 
```

Guidelines: - ☐ **Font:** 9-point monospace or regular - ☐ **Indentation:** Show structure clearly - ☐ **Line numbers:** Optional but helpful - ☐ **Caption:** “Algorithm 1:” followed by title

References Section

Format

- ☐ **Title:** “REFERENCES” (centered, uppercase)
- ☐ **Font:** 8-point Times New Roman
- ☐ **Numbering:** [1], [2], [3]
- ☐ **Hanging indent:** 0.25 inch
- ☐ **Single-space** within entries
- ☐ **Alphabetical:** No (use order of citation)

IEEE Journal Reference Formats

Journal Article (most common):

[1] A. B. Smith, C. D. Jones, and E. F. Brown, “Article title in sentence case,” *IEEE Trans. Pattern Anal. Mach. Intell.*, vol. 42, no. 5, pp. 1234-1245, May 2020, doi: 10.1109/TPAMI.2020.1234567.

Journal Article (early access):

[2] M. Johnson, “Article title,” *IEEE Trans. Neural Netw. Learn. Syst.*, early access, Jan. 15, 2024, doi: 10.1109/TNNLS.2024.1234567.

Conference Paper:

[3] P. Lee and Q. Chen, “Paper title,” in *Proc. IEEE Conf. Comput. Vis. Pattern Recognit. (CVPR)*, Jun. 2023, pp. 5678-5686.

Book:

[4] R. Taylor, *Deep Learning Fundamentals*, 2nd ed. Cambridge, MA, USA: MIT Press, 2022.

Book Chapter:

[5] S. Williams, “Chapter title,” in *Book Title*, T. Davis, Ed. New York, NY, USA: Wiley, 2021, ch. 3, pp. 45-78.

Preprint/arXiv:

[6] K. Martinez and L. Garcia, “Paper title,” arXiv:2301.12345, 2023.

Online/Website:

[7] National Institute of Standards and Technology, “Cybersecurity framework,” NIST, Gaithersburg, MD, USA, 2023. [Online]. Available: <https://www.nist.gov/cyberframework>

Standard:

[8] *IEEE Standard for Software Testing*, IEEE Std 829-2008, 2008, doi: 10.1109/IEEESTD.2008.4578383.

Thesis/Dissertation:
[9] A. Thompson, “Dissertation title,” Ph.D. dissertation, Dept. Comput. Sci., Stanford Univ., Stanford, CA, USA, 2022.

Technical Report:
[10] J. Wilson et al., “Report title,” Google Research, Mountain View, CA, USA, Tech. Rep. TR-2023-05, 2023.

IEEE Journal Title Abbreviations

Common abbreviations: - IEEE Trans. = IEEE Transactions on - Proc. = Proceedings - Conf. = Conference - J. = Journal - Mag. = Magazine - Lett. = Letters - Commun. = Communications - Comput. = Computer/Computing - Syst. = Systems - Technol. = Technology

Refer to IEEE Reference Guide for complete journal abbreviations.

Appendix

Format

APPENDIX
PROOF OF THEOREM 1

The proof proceeds as follows...

Guidelines: - ☐ **Title:** “APPENDIX” centered, uppercase - ☐ **Multiple appendices:** Use A, B, C - APPENDIX A: Title Here - APPENDIX B: Another Title - ☐ **Placed:** Before Acknowledgment section - ☐ **Content:** Proofs, derivations, supplementary material

Acknowledgment Section

Format:

ACKNOWLEDGMENT

The authors would like to thank Dr. Jane Doe for valuable discussions and feedback on the manuscript. This work was supported in part by the National Science Foundation under Grant No. 1234567.

Guidelines: - ☐ **Title:** “ACKNOWLEDGMENT” (no ‘s’, centered, uppercase) - ☐ **Unnumbered section** - ☐ **Placed:** After Conclusion, before References - ☐ **Content:** Funding, contributors, computational resources - ☐ **Be specific:** Include grant numbers

Author Biographies

Format with Photo



First Author (Member, IEEE) received the B.S. degree in computer science from University A in 2015, the M.S. degree from University B in 2017, and the Ph.D. degree from University C in 2022.

He is currently an Assistant Professor with the Department of Computer Science, University D. His research interests include machine learning, network security, and artificial intelligence.

Dr. Author is a member of ACM and has served as a reviewer for several IEEE conferences and journals.

Biography Guidelines

- ☐ **Photo:** Professional headshot, 1×1.25 inches
- ☐ **Format:** Third person, past tense for education
- ☐ **Content:** Education, current position, research interests
- ☐ **Length:** 75-100 words per author
- ☐ **All authors:** Include biography for every author
- ☐ **Honors/Awards:** Include significant recognitions

No photo alternative: Biography runs full column width

Pre-Submission Checklist

Manuscript Preparation

- ☐ Two-column format (except title/abstract)
- ☐ 10-point Times New Roman body text
- ☐ 8-point for captions and references
- ☐ Single-spacing throughout
- ☐ Justified text alignment
- ☐ Proper margins per journal specs

Front Matter

- ☐ Title in 24-point, bold, Title Case
- ☐ Authors with IEEE membership grades
- ☐ Abstract 150-300 words
- ☐ Index Terms (5-8 terms)
- ☐ Title footnote with affiliations and dates
- ☐ DOI placeholder (if required)

Content Organization

- ☐ Clear section structure
- ☐ All sections numbered (except Appendix, Acknowledgment, References)
- ☐ Introduction states contributions clearly
- ☐ Related Work comprehensive
- ☐ Methodology described in detail
- ☐ Results thoroughly analyzed
- ☐ Discussion addresses limitations
- ☐ Conclusion summarizes contributions

Figures and Tables

- ☐ High-resolution figures (300+ DPI)

- ☐ All figures/tables referenced in text
- ☐ Captions: below figures, above tables
- ☐ Sequential numbering
- ☐ Readable labels and legends
- ☐ Color accessibility (if color used)

References

- ☐ [1], [2], [3] citation format
- ☐ All citations have reference entries
- ☐ IEEE reference format used
- ☐ DOIs included where available
- ☐ References complete and accurate
- ☐ Minimum 20-30 references typical

Back Matter

- ☐ Acknowledgment section (if applicable)
- ☐ Author biographies for all authors
- ☐ Professional photos included
- ☐ Contact information current

Final Checks

- ☐ Grammar and spelling checked
 - ☐ Technical accuracy verified
 - ☐ Equations numbered and defined
 - ☐ Acronyms defined on first use
 - ☐ Plagiarism check completed
 - ☐ All co-authors approved manuscript
 - ☐ Journal-specific requirements met
-

Common Journal Submission Mistakes

- ☐ **Conference format for journal submission**
 - ☐ Use journal template with biographies
 - ☐ **Missing author biographies**
 - ☐ Include bio and photo for every author
 - ☐ **Incomplete references (missing DOIs, page numbers)**
 - ☐ Verify all reference information complete
 - ☐ **Generic abstract (too short or vague)**
 - ☐ Write comprehensive 200-300 word abstract
 - ☐ **Insufficient literature review**
 - ☐ Include comprehensive Related Work section
 - ☐ **Missing experimental details**
 - ☐ Provide complete methodology and parameters
 - ☐ **No statistical analysis**
 - ☐ Include significance tests and error analysis
 - ☐ **Weak discussion of limitations**
 - ☐ Address limitations and threats to validity
-

Journal-Specific Requirements

Before submission, verify: - ☐ Target journal's author guidelines - ☐ Template version (LaTeX vs Word) - ☐ Page length limits - ☐ Figure/table limits - ☐ Supplementary material policies - ☐ Copyright forms - ☐ Open access options - ☐ Conflict of interest statement - ☐ Data availability statement - ☐ Ethics approval (if applicable)

Major IEEE Journals (Examples)

Computer Science: - IEEE Trans. Pattern Anal. Mach. Intell. (TPAMI) - IEEE Trans. Neural Netw. Learn. Syst. (TNNLS) - IEEE Trans. Comput. (TC)

Electrical Engineering: - IEEE Trans. Power Electron. (TPEL) - IEEE Trans. Circuits Syst. (TCAS) - IEEE Trans. Signal Process. (TSP)

Communications: - IEEE Trans. Wireless Commun. (TWC) - IEEE Trans. Commun. (TCOM) - IEEE J. Sel. Areas Commun. (JSAC)

Each journal has specific submission guidelines - always check!

Resources

IEEE Author Center:

<https://journals.ieeeauthorcenter.ieee.org/>

IEEE Reference Guide:

<https://iee-dataport.org/documents/ieee-reference-guide>

Templates: - LaTeX: Available on IEEE website and Overleaf - Word: Download from IEEE Author Center

Tools: - IEEE PDF eXpress: Check PDF compliance - IEEE Collabratec: Collaboration platform - ScholarOne: Manuscript submission system

Always consult your target journal's specific author instructions before final submission. Requirements may vary between IEEE publications.