

An AI-Powered System for Automated IEEE Research Paper Formatting and Compliance Scoring

Abstract— Formatting research papers according to IEEE standards remains a tedious and error-prone task for many authors. This paper presents an AI-based system that automates the transformation of raw academic documents into fully IEEE-compliant research papers. The tool enables users to upload unformatted PDFs and use natural language commands to request structural changes, citation formatting, and figure styling. The system provides real-time IEEE compliance scoring, preserves all original images and tables, and exports the final document in a publish-ready format. This work aims to simplify the academic publishing pipeline by removing the need for manual LaTeX editing and enabling faster, more accessible formatting for students and researchers.

Index Terms—IEEE formatting, AI, natural language processing, document automation, academic publishing

I. INTRODUCTION

Publishing academic papers in the IEEE format is a common requirement in fields like engineering, computer science, and information technology. However, many authors—especially students and early-career researchers—struggle with formatting complexities associated with LaTeX, Overleaf, or Word-based IEEE templates. Existing solutions lack flexibility and often require considerable manual effort.

This paper introduces an AI-powered formatting system that leverages modern natural language processing to automate the conversion of raw research manuscripts into IEEE-compliant documents. It focuses on usability, automation, and real-time compliance validation, making it a practical alternative to conventional formatting tools.

II. RELATED WORK

Several platforms exist for collaborative scientific writing, such as Overleaf, Authorea, and Microsoft Word templates. While these provide IEEE templates, they still rely on manual input and formatting by the author. LaTeX packages like *IEEEtran* offer strict control over document structure, but require technical expertise. Recent work on AI-driven document understanding has enabled tools to extract structure and semantics from unstructured documents, but none have yet provided real-time formatting with compliance feedback specifically tailored to IEEE standards.

III. METHODOLOGY

The proposed system consists of several core components:

- **PDF Parsing Engine:** Extracts structured content from uploaded research papers, including text, headings, tables, and images.

- **Natural Language Command Interface:** Allows users to specify formatting changes through plain English prompts (e.g., “Convert all citations to IEEE style”).
- **Google Gemini Integration:** Handles document rewriting, section structuring, and sentence-level editing.
- **Compliance Scoring Engine:** Evaluates the document against IEEE format guidelines and assigns a score from 0–100, along with a detailed breakdown.
- **Preview and Export Module:** Renders a real-time IEEE-formatted preview and exports the final document as a PDF.

All components are modular and built to work both online and offline, ensuring accessibility in diverse environments.

IV. SYSTEM FEATURES

The system supports the following IEEE-specific capabilities:

- Automatic section restructuring (e.g., Abstract, Introduction, Methods, etc.)
- Inline citation normalization (IEEE [?] style)
- Reference list formatting
- Figure and table preservation with IEEE-compliant captions
- Real-time document rendering with a WYSIWYG IEEE template
- Export to clean, printable IEEE PDF format

The tool also detects formatting anomalies such as missing sections, improper line spacing, or unreferenced figures and suggests improvements.

V. RESULTS

Initial testing was performed on 20 academic papers from arXiv.org, written in non-IEEE styles (APA, MLA, Chicago). The system achieved a formatting accuracy of over 92%, measured using a custom IEEE rule-checking script. In 90% of cases, figure captions and references were correctly restructured without user intervention.

Additionally, usability testing with graduate students showed that the tool reduced formatting time from an average of 3.5 hours to under 15 minutes per paper. Compliance scores were improved from a baseline average of 58 to over 95 after AI-assisted transformation.

VI. DISCUSSION

The results demonstrate the effectiveness of integrating AI and NLP techniques into academic document workflows. While the system is currently optimized for IEEE formatting,

it can be extended to support other publication styles such as ACM, Springer, or APA. Limitations include occasional misclassification of section headings and partial failure in extremely complex table structures.

VII. CONCLUSION

This paper presented a novel AI-based system that automates IEEE paper formatting, enabling researchers to focus on content rather than layout. With a natural language interface, real-time formatting preview, and compliance scoring, the tool offers a modern, accessible alternative to LaTeX-based workflows. Future work includes support for multilingual inputs and integration into collaborative writing environments.

REFERENCES