A Comprehensive Test of IEEE Document Formatting with Unified Rendering System

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Abstract—This paper presents a comprehensive test of the unified rendering system for IEEE document formatting. The system generates pixel-perfect HTML and PDF output that matches the exact formatting of Word documents created using OpenXML specifications. The approach uses a structured document model with precise formatting metadata to ensure consistent output across all formats. Experimental results demonstrate 100% visual fidelity between Word, HTML, and PDF outputs.

Index Terms—IEEE formatting, document generation, unified rendering, OpenXML, pixel-perfect output, HTML, PDF, Word documents

1. Introduction

2. Methodology

3. Results

REFERENCES

The IEEE document format is widely used in academic and professional publications. Ensuring consistent formatting across different output formats (Word, HTML, PDF) has been a significant challenge. Traditional approaches often result in visual discrepancies between formats due to different rendering engines and layout algorithms.

This paper introduces a unified rendering system that generates pixel-perfect output by using a structured document model with exact OpenXML-level formatting metadata. The system converts precise measurements from twips to CSS units and implements advanced justification algorithms to match Word's native text rendering.

Our approach consists of three main components: (1) a document model builder that extracts formatting metadata from input data, (2) a unified HTML renderer that applies pixel-perfect CSS matching OpenXML specifications, and (3) format-specific generators that use the same underlying model.

The unified rendering system successfully generates output with 100% visual fidelity across all formats. Font sizes, spacing, justification, and layout match exactly between Word documents and their HTML/PDF counterparts.

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