SwiftLaTeX- Exploring Web-based True WYSIWYG Editing for Digital Publishing

Abstract—The text processing tool LaTeX has prevailed as a standard in many fields of exact sciences; it is evident that LaTeX is likely here to stay. From that perspective, it is important to explore what are the best possible ways to support the author in efficiently editing documents. There have been several approaches that provide graphical editing support for LaTeX. We argue that a true WYSIWYG (What You See Is What You Get) approach is a justified requirement for future systems and we present here the first cloud-based true WYSIWYG editor, which allows the author to edit the document in its print form directly in the Web-based PDF viewer. Building such a system creates unique challenges compared to existing approaches. We identify these challenges and name workable solutions. We also provide a principled usability discussion of the new system. In short our finding is: Editing LaTeX directly in the PDF view is possible for a wide range of edits and useful for many major user groups; hence it is a fair requirement towards future top-of-the-line LaTeX editors. It is getting wonderful |

I. Introduction

The TeX typesetting system by Donald Knuth ushered in an era of high-quality open-source electronic document publishing. Knuth embedded into TeX deep knowledge of the traditional art and craft of typesetting. Over the past decade, various TeX derivatives have been successfully strong dichotomy between the source code and compiled document and the user has to alternate and switch focus between them in many work cycles.

A systematic analysis of these existing solutions leads us to the research hypothesis that enabling direct editing in the print output will bring about a significant improvement of usability for various user groups due to the removal of the notorious edit-compile-review cycle. To match this aspiration, we introduce SwiftLatex, the first cloud-based system that provides LaTeX users with a print-quality WYSIWYG editing experience. Specifically, the WYSIWYG editor is designed to meet a crucial criterion, notably the replacement capability: all text that is visible in the resulting PDF document (including the basic text in formulae) is editable. For instance, a formula $\frac{4}{cx}$ in the PDF document can be modified to $\frac{4}{ct}$ instantaneously and in place in the PDF.

However, implementing the system entails three essential challenges. First, allowing direct editing of the PDF document requires that the product of the LaTeX compilation must be combined with the current user edit. However, the combination is considered to be challenging

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