

Scholaread: Read Me

Scholaread Team
support@scholaread.com

Abstract—Academic research papers are typically published in a two-column PDF format that is difficult to read on mobile devices. Scholaread uses a state-of-the-art algorithm to transform complex PDFs into a seamless, eye-friendly reading experience on your mobile and PC to solve the pain point. The “Reflow Mode” in the app rearranges text into a single column, resizes figures and fonts, and links citations to enable a seamless reading experience. Readers can further customize the reading view through flexible zooming, text resizing, and paper bookmarking features.

Keywords—PDF reader, reformatting, research papers, mobile reader, eye-friendly reading experience

I. INTRODUCTION

Over time, the format of research papers has evolved to meet the changing needs of readers and publishers. Early papers were often handwritten or printed in small quantities, making them difficult to distribute widely. As printing technology improved, papers were printed in larger quantities and distributed more widely, making it easier for researchers to share their findings with colleagues around the world.

The two-column layout and small text size that are now common in research papers were introduced to make them easier to read and fit more content onto a single page. However, these design choices were made with print publishing in mind, and they can make reading on digital devices challenging.

Scholaread, which comes as the game changer, is a freely available mobile application developed to address this issue. This tool transforms complex PDFs into a seamless, eye-friendly reading experience on mobile devices and PCs. The frustration of zooming in and out to read tiny text is eliminated, and a text-focused reading experience is provided. This tutorial paper serves the purpose to introduce how Scholaread works and helps users in their daily research with main features.

II. MAIN FEATURES

Scholaread offers a range of features that set it apart from other similar tools. Its main features include:

- Reflow Mode
- Interlinear Translation
- Integration with Zotero
- Citation Popups
- Clickable Content Navigation
- Customizable Text Size
- Reading Lists

- Annotation
- Dark Mode
- Cross-platform
- Browser Plugin to Save References

The developers used advanced algorithms to detect figures, tables, footnotes, the author and its affiliated information, abstract, text, references, and almost every element in any research paper. To better detect and display tables, the algorithm is based on S.Mandal and his team’s work, which is designed to be computationally efficient [3]. Also, text segmentation is another vital step in building a reader. Using a new local homogeneity measure based on line space, and incorporating this new feature into a region growing algorithm [2], Scholaread achieved robust performance on PDF.

A. Reflow mode

One of the most significant features is the “Reflow Mode”. It automatically transforms PDFs from a hard-to-read, two-column PDF format to a mobile-friendly, one-page mobile reading format.

Automatically reformats two-column PDF research papers into a single scrolling page optimized for mobile devices. This allows readers to smoothly zoom in and out of figures, tables, formulas, and text without squinting.

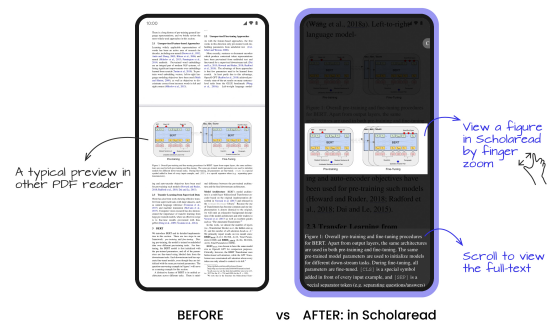


Figure. 1. Comparison between a figure preview in a typical PDF viewer on mobile vs on Scholaread.

As shown in Figure 1, readers must constantly zoom in and out and scroll horizontally to follow the flow of information on a typical PDF viewer [1]. In contrast, Scholaread provides users with an uninterrupted reading experience. Seamless reading is a desirable experience for users, where there is no interruption during the reading process. However, user distraction during page scrolling can disrupt the flow

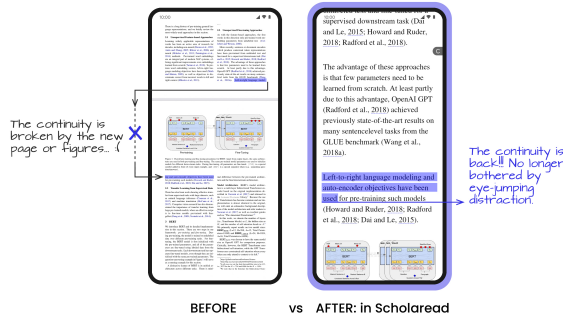


Figure 2. Scholaread addresses the issue of user distraction during page scrolling.

of reading and affect the overall reading experience. In Figure 2, Scholaread offers a solution that aims to eliminate user distraction during page scrolling by reconnecting the broken lines either across pages or columns. The Reflow Mode not only optimally restructures text for improved legibility on mobile devices but also adeptly maintains the integrity of mathematical expressions. Inline formulas, such as the iconic equation of mass-energy equivalence $E = mc^2$, are seamlessly integrated within the text flow, ensuring they are easily discernible without disrupting the reading experience. For more complex, standalone mathematical statements, the mode provides a clear display, such as the Fourier transform equation shown below:

$$F(\omega) = \int_{-\infty}^{\infty} f(t) e^{-j\omega t} dt$$

This capability guarantees that even intricate mathematical expressions are presented with the clarity necessary for accurate comprehension, which is a critical aspect of reading and understanding scientific documentation.

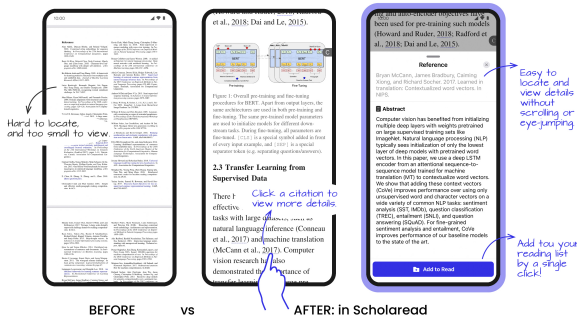


Figure 3. Citation details will pop up when user click.

B. Interlinear Translation

Scholaread now facilitates the understanding of foreign research papers through the Interlinear Translation feature. This feature seamlessly integrates advanced AI translation engines, enabling readers to compare the original text with

translated content in real time. With support for multiple languages, including English, French, German, and Korean, this feature provides a fluid reading experience for scholarly literature. Readers can effortlessly grasp the essence of scientific papers by reviewing the original and translated texts side by side, enhancing comprehension and expediting the research process. This innovative feature empowers readers with the ability to extract vital information from scholarly works while maintaining a fluent reading experience.

C. Integration with Zotero

Scholaread seamlessly integrates with Zotero, enabling one-click synchronization of academic papers from Zotero to the Scholaread platform. This integration ensures convenient access to the Zotero library within Scholaread. This feature enhances the scholarly research experience, providing centralized access to academic resources and promoting efficient and organized workflows.

D. Citation Popups

Scholaread also makes it easy to view citations and bibliographic information without jumping to the bottom of the page. With just a click, you can view the citation and the corresponding bibliographic information simultaneously as shown in Figure 3. This feature saves your time and makes it easier to keep track of the sources.

E. Clickable Content Navigation

The Clickable Content Navigation feature automatically generates a navigable table of contents based on the paper's subheadings, facilitating efficient access to critical sections of the document. This functionality streamlines the academic reading process, guiding readers directly to the essence of the article and reducing the cognitive load associated with manual searching.

F. Customizable Text Size

Another great feature of Scholaread is the ability to resize the text according to your needs. No more struggling to read small prints. With Scholaread, you can adjust the text size to your liking, making it easier to read and understand the research papers. This feature saves your time and makes it easier to keep track of the sources.

G. Reading List

Scholaread also allows you to discover research at your own pace. You can add papers to your reading list and access them later from any mobile device or laptop. This feature makes it easy to keep track of the research papers you want to read and ensures that you never lose track of an important paper.

H. Annotation

The annotation feature of Scholaread allows users to highlight important passages and add notes directly to research papers. This feature is particularly useful for keeping track of your thoughts and ideas while reading, making it easier to refer to important information later.

I. Dark Mode

Scholaread includes an optional “Night Mode” viewing theme that enables reading in low-light conditions while minimizing eye strain. The Night Mode interface displays documents with a black background and shades all document elements in a light text color. The color inversion decreases the luminosity intensity difference between the display and ambient surroundings, improving readability and reducing distraction. Scholaread supports comfortable and sustained reading during all times of the day by providing a Night Mode reading option.

J. Cross-platform

Use Scholaread on both mobile devices and PC. Your highlights, annotations, and reading progress will sync between devices. Once you created an account and signed in, your personal research library will automatically sync between devices, allowing you to switch between reading on your mobile device and PC without losing your place or annotations.

K. Browser Plugin to Save References

Scholaread’s browser plugin allows you to save academic journal articles and references directly to Scholaread from your web browser with a single click. It is also a helpful tool for synchronizing reading lists from websites to smartphone devices. This seamless integration streamlines the process of gathering research materials from online sources, promoting a more efficient and organized approach to academic research.

By optimizing PDF files for digital devices, Scholaread creates an intuitive reading experience that enhances accessibility, readability, and convenience. Scholaread brings complex research into the hands of readers and is poised to change the future of how scientific knowledge is disseminated and consumed.

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III. BENEFITS

Scholaread provides several benefits to users. First, it eliminates the frustration of zooming in and out to read tiny text, making the reading experience more enjoyable. Second, it saves time by allowing users to view bibliographic information without jumping to the bottom of the page. Third, it provides a text- focused reading experience that is easy on the eyes. Finally, it allows users to discover research at their own pace, making it easier to stay up-to-date with the latest research.

IV. CONCLUSION

Scholaread is an innovative mobile application that transforms the way people read and engage with research papers.