

AnnotationOne: A Global Annotation System

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ABSTRACT

Our study presents a web-based annotation tool, AnnotationOne, developed to facilitate the easier creation and global sharing of annotations. Our aim is to create conversations around scholarly content benefitting everyone and forging new connections between scholars. Using this tool, users can read and make globally accessible annotations shared with a large scale of users. User studies were conducted to investigate the utility of this universal annotations system. Subjects completed tasks including making annotations, initial reading with annotations and re-reading with annotations on our prototype system. Both observations and interviews were conducted to explore whether and how this annotation tool would be beneficial for scholarly communication. Moreover, we also collected subjects' suggestions to improve this tool's usability.

KEYWORDS

scholarly communication, annotation, electronic reading, digital library

INTRODUCTION

In academic settings, one challenge in electronic reading and sense-making is to make annotations in specific parts of articles. Unlike the traditional print-based annotation approach which normally can be completed with a pen, making digital annotations relies on the utility of certain functionalities of certain tools in electronic devices. Taking notes in a separate document while reading digitally can somewhat complement the reading with a basic tool, but it loses information that annotations contain – the location of the corresponding text of the notes.

Some limitations exist in current widely used reading tools. For instance, in Adobe Reader one of the most commonly used annotation tools, annotations are made in sticky notes-like boxes. These sticky notes are made everywhere on a document, as opposed to being displayed in one single annotation panel. To avoid them blocking the main text, the sticky notes are oftentimes folded, making it highly inconvenient to browse the content of all the annotations without having to click on them one by one. It would be even more inconven-

ient when the amount of annotations is large. Another limitation is the cumbersomeness when switching between the highlighting and the annotation functionalities. The collaboration feature is also an important consideration in reading and annotation tools, especially in academic activities where sharing is critical to the dissemination of knowledge. Adobe Acrobat, which requires a fee-based license, allows the sharing of article documents with annotations but is only limited to relatively smaller groups of users as opposed to the public.

In this visual presentation proposal, firstly we introduce the construction and current functionalities of AnnotationOne. A brief description of the design of multiple rounds of user studies is provided. Due to limited space, our literature review will be available in our follow-up publication. We will present our preliminary results at the conference. The annotation functionality has existed in electronic reading for a long time, but its usage in academic settings is underexplored. Our study hopes to fill in this niche and potentially initialize more discussions on this topic.

FORMAT OF PRESENTATION

Our presentation will include two parts: a printed poster and a laptop with a live display of AnnotationOne. An enlarged static screenshot of our tool will be displayed on the poster. Study design details and our preliminary results will be presented. Meanwhile, we will welcome the audience to interact with our tool on our laptop – to browse existing annotations, to make their own annotations and to play with settings of the tool, etc. On the poster, a link (TinyURL) and a QR code to an example article on AnnotationOne will be provided so that the audience can play with our tool on their own laptops after the poster session. We will also be collecting their opinions on potential improvement that can help enhance its usability.

ANNOTATIONONE INTERFACE

As is shown in Fig. 1, the annotation tool interface mainly consists of two panes. The left pane displays the text of the article, and the right pane is the annotation area. Annotated text is highlighted with either different shades of yellow (other users') or light blue (the current user's). Both the text and the corresponding annotations become highlighted in pink when either of them is hovered on, allowing users to match the annotations with the corresponding text.

In this tool, we conceptualize highlighting and annotating in one functionality. A *highlight* is a span of highlighted text and an empty highlight; an *annotation* includes a span of highlighted text and an annotation with actual text.

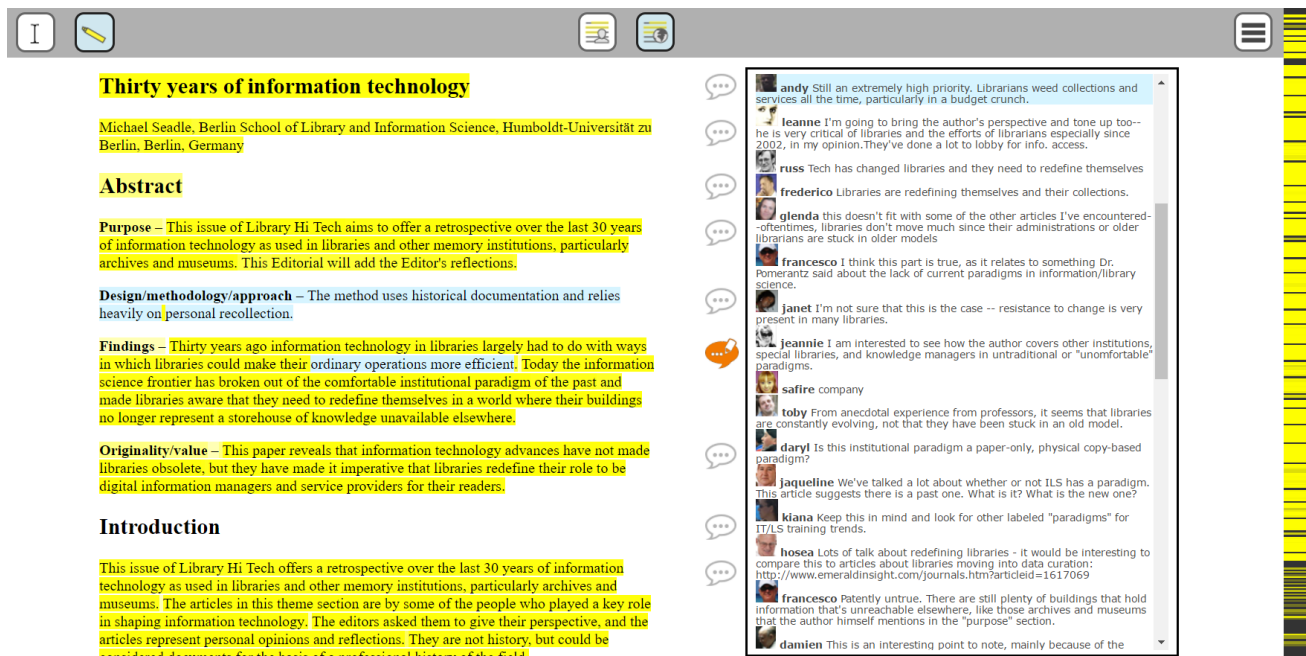


Figure 1. Screenshot of AnnotationOne interface

The two buttons on the upper left corner allow users to switch the functionality of the mouse between a selector and an annotator. In the selector mode, the cursor functions as a normal one; in the annotator mode, text selected by the cursor is automatically annotated on. The two buttons in the middle of the upper menu allow users to turn on or off the highlights from other users. In the “show mine only” mode, only blue highlights are shown; in the “show all highlights” mode, both blue and yellow highlights are shown.

Other settings can be accessed in the “hamburger” button in the upper right corner. Statistics of annotations and users can be viewed. Annotations can be displayed in “Icons,” “Snippets” or “Full.” Empty annotations can be hidden. Moreover, a heat map index bar can display the density of annotations, thus assisting users in article navigation.

An example article can be accessed at <http://secure-dusk-1121.herokuapp.com/version9/a2?db=annotationplaypen&user=andy>.

STUDY DESIGN

In Phase I of our study, 28 doctoral and master students were recruited from School of Information and Library Science at UNC-Chapel Hill. They were asked to play different personas and make annotations using different marking styles and note-taking styles on six articles.

In Phase II, the same participants read two articles in their own personas and were interviewed. They each read a new article (initial reading) and an old article on which they had made annotations (re-reading).

Phase III is intertwined with tool improving, testing and more user studies with more participants.

Phase IV is the final round of user studies. We recruited 27 new participants. Each of them completed two initial reading tasks and was interviewed.

DISCUSSION

With large scale of annotations, AnnotationOne has the potential to accelerate academic reading, sense-making and scholarly communication. If properly filtered and displayed, the annotations can assist in both initial reading and re-reading of articles. AnnotationOne might help in classroom discussions, collaborative research project, online courses, reading groups, peer review, class assignments, personal research and other types of discussions among trusted people. Moreover, it could potentially generate helpful data for altmetrics as well.

One main challenge of the tool design is dealing with the large scale of annotations. It is necessary to work out a more sensible way of ordering the annotation list. Filters and ranking systems might provide complementary assistance in improving the readability of the annotations. Moreover, the functionality of searching across annotations is critical for locating the content of users’ interest.

Credential and authority of users in academic reading are a big concern, especially in an environment of information overload. The inability to provide such information would hinder the utility of such an academic annotation system.

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