

# WikiTUI

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## 1 Introduction

WikiTUI is a tangible multimedia annotation system that allows users to manipulate multimedia information in common physical books. WikiTUI also facilitates the exchange of information with other readers through wiki services. Using tangible interface techniques, we seek to bring the collaborative annotation and authoring capabilities that are supported by the growing space of online wikimedia into the real world, thereby extending the use of paper books into new realms.

While there have been some research projects that seek to provide digital enhancements to physical books or paper documents (e.g. [Wellner 1993, Koike et al. 1998]), they have not been geared towards the idea of collaborative and distributed authoring with tangible interfaces. WikiTUI not only bridges the real and digital worlds, but facilitates multiple contributions to a reference base spanning across these worlds.

## 2 Technique and Scenario

WikiTUI makes use of computer vision technologies to detect user interactions with ordinary paper books. Gesture-based interactions and the tactile feedback of paper make direct manipulation possible and more tangible to users. Annotations are enabled through a wiki server, which supports the authoring and display of multimedia elements at each page of a given book. WikiTUI allows users to enter annotations for a specific book page via a PDA or laptop, and later retrieve these annotations through fingertip interactions on the pages of the physical book itself.

We envision WikiTUI for public libraries or home settings, in the form of an augmented desk that provides interaction via an overhead camera and projector. After selecting a book to read, a user carries her book and PDA to WikiTUI and sits down. The overhead camera detects the movement and turns on the projector. Next, the user scans her ID card and the bar code of the book at a specific scan zone projected onto the desktop. Once both the user and the book's identities have been recognized, WikiTUI displays the corresponding information. As she reads, multimedia elements are projected onto the book's pages. Occasionally, she looks up a video on her laptop and uploads it to the wiki server. The annotation is immediately projected onto the book and she drags it to the desired location on the page. Since the database is connected to Internet, other readers of this book can see her entered data as well. By moving her fingertip to the trace, a projected icon on the book, she watches the video attached to the trace (see Figure 1).

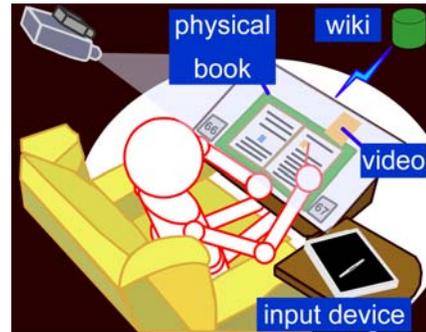


Figure 1. The WikiTUI system setup.

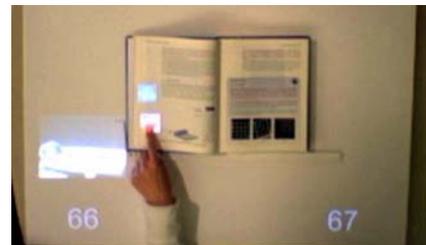


Figure 2. A user places her fingertip over a video trace to trigger playback of the corresponding video.

## 3 Research Implications

WikiTUI introduces the notion of editable wikimedia to physical books through reader-created multimedia traces. Since the database of annotations changes and grows over time, different contents could be shown according to the environment or users' identities, and eventual mechanisms for filtering the content will be needed. For example, in a context-aware reading application, a book's contents could depend on the place of reading. Therefore, readers from different regions of the world might create their own culturally relevant contents in different languages. This research extends the concept of coupling atoms and bits using a non-destructive method, giving new interpretations to physical books.

## References

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