Touchscreen-based Ebook Navigation Interface for Paper-like Interaction

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By the year 2018, traditional computing devices, such as the desktop and laptop are integrated into a small tablet device. People are working, studying and enjoying entertainment through this single smart device. Analog media including paper documents and books are almost nowhere to be seen. Instead, they are absorbed by thin, light touchscreen tablet devices. Despite the fact digital devices have brought a smarter life, the tablet device does not seem to provide as much degree of freedom, convenience and familiarity as paper books. Hence still a large portion of the population are living another world with the ebooks. This is critical whereas all the paper textbooks for elementary education have all been switched into ebooks from the year 2015. They are having a hard time adapting to this new environment leading to decreased learning efficiency. By applying this technology, the paper-like friendly user interface and ebook navigation interface is able to absorb both analog and digital book readers. Moreover even toddlers or preschoolers can easily adapt and read ebooks on a digital tablet device.

The paper-book-likely nature of our ebook navigation interface is intuitive yet efficient for digital book reading tasks. It could enhance the experiences of millions of current ebook users as well as paper book users.
Our technology can not only be applied to current touchscreen tablet devices but also flexible display devices which are in the near future. The various page manipulation techniques developed are expected to bring the flooding news, media, novels and textbooks well into the hands of the readers.

Figure 1. Thumbing-through gesture on the fore edge(boxed area)

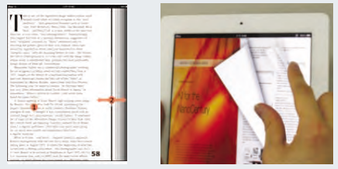
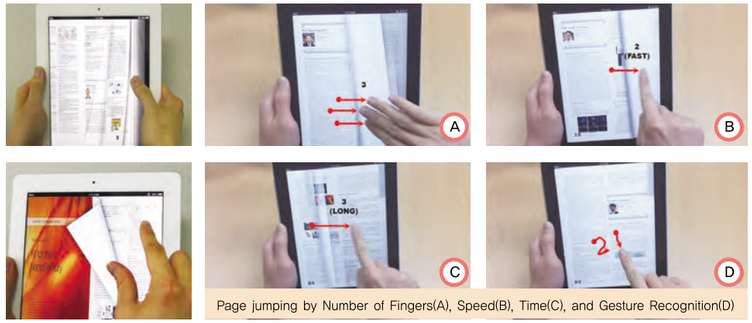


Figure 2.
Temporal bookmarking gesture



Page jumping by Number of Fingers(A), Speed(B), Time(C), and Gesture Recognition(D)

Bezel touch gesture recognition based interface and ebook navigation prototype

Touchscreen tablets and ebooks are well known for their convenience. Yet there are a great portion of people either unwilling, or cannot move on to the digital world due to the familiarity of the paper books, which they have been using from the childhood. By activating and deploying ebooks to broader users, we could reduce use of paper, leading to green growth. Also it could enhance work efficiency and digital convenience across the social domains.

Bezel gesture based page flipping technology (Thumbing Through)

During a paper book reading task, we may not know explicit information (eg. page number) of where the content is. Then we perform the "thumbing through" gesture on the fore edge area (Figure 1.) of the book.

Research Funding

- Awards, Published Paper and Invited Lectures :
- [Media] Reuters (2012). "Smart E-Book Turns the Page on Reading Technology"
- [Media] Wired Magazine (2012). "Multi-Touch iPad E-Book Lets You Flip Pages Like a Deck of Cards"
- [Media] KBS (2012). "E-book with a look and feel of a paper book"
- [Media] MBC (2012). "Paper book like E-book developed"
- [Standardization] Jaejeung Kim, Sangtae Kim and Soobin Lee, "Enrichment of eBook User Interfaces: A Skeuomorphic Approach," W3C Workshop on Electronic Books and the Open Web Platform, Feb, 2013.
- [Publication] Sangtae Kim, Jaejeung Kim and Soobin Lee, "Bezel-Flipper: Design of a Light-weight Flipping Interface for E-Book," ACM SIGCHI 2013.
- [Patent] 24 Issued/Filed Korean Patents, 2 Issued US Patents, 4 Issued PCTs