

New scrolling technique accelerates skim reading

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The amount of data that we take in from screens each day through documents, email chains, web pages and social media flows is enormous. The continuous scrolling technique we typically use to browse this data is, however, far from perfect.

"In conventional scrolling a number of objects are moving in the viewer window, which is problematic for visual attention. First, [motion blur](#) makes it impossible to focus on an object. Second, the user is not able to direct attention for long enough to comprehend the content before it scrolls out of the window," explains Postdoctoral Researcher Byungjoo Lee.

Together with Olli Savisaari and Antti Oulasvirta they have developed a new scrolling technique which better supports data processing in three different ways.

"Browsing of long texts speeds up by 60% and less than half as much time is spent locating the desired locations in the text. In addition, the probability of noticing points of interest in the text is increased by 210% compared to normal scrolling technique ", Dr. Lee explains.

Important elements to the fore

The new technique has been given the name Spotlights and is based on the spotlight metaphor of human visual attention. According to existing

research, visual attention needs about half a second to focus, which is clearly longer than the average amount of time that a sentence or picture remains on the screen when using the normal scrolling technique.

"The new technique locates on each web page, whether it is a pdf document, video or web document, the visually important elements and presents them using a transparent layer than appears on top of the text. The elements can be, for example, pictures, tables or headlines. It chooses what you should focus and allows you enough time to do that," Dr. Lee tells.

"Our empirical evaluation showed that benefits are significant. In this way people can scroll through as many as 20 pages per second and still retain information. The technique improves recollection of browsed information", Prof. Oulasvirta explains.

"Our technique is the first to try to maximise the amount of the information on the screen for human [visual attention](#). To see such strong results is very encouraging", Oulasvirta summarizes.

"Spotlights is still a prototype. We seek possibilities to put this in practice in browsers, PDF viewers and others."

Provided by Aalto University

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