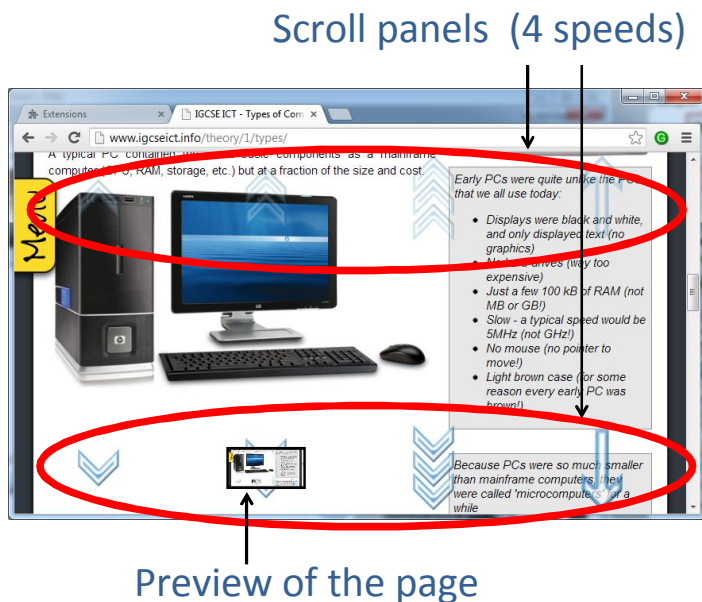


Previewable scrolling by gaze

Introduction

Browsing long documents and web-pages in gaze-controlled interfaces is a challenging task for users: the existing methods suppose to keep looking at the dedicated page areas or buttons to scroll it. This approach does not allow inspecting directly the amount scrolled, and users have to rely on their peripheral vision. We propose using thumbnails placed into these areas.

Design



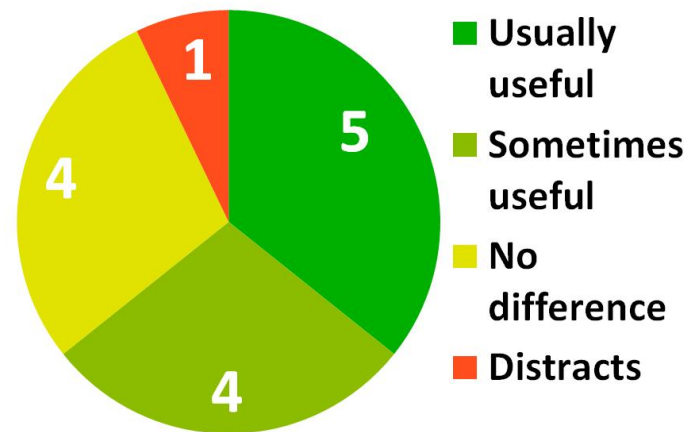
Our solution implies two transparent panels superimposing the top and bottom of a web-page displayed in a browser, so that each panel is equally divided into 4 areas designated by a semitransparent icon. Each area corresponds to one of the scrolling modes: slow, medium, fast (all for smooth scrolling), and scrolling by page. When a user glances at any area, a thumbnail of the visible part of the page fades in. After a dwell time the page starts scrolling according to the chosen mode, and the view in thumbnail refreshes in real time. We hypothesize that the combination of in-place preview of the scrolling result combined with scrolling modes brings more efficient and convenient interaction in gaze-controlled interfaces.

Experiment

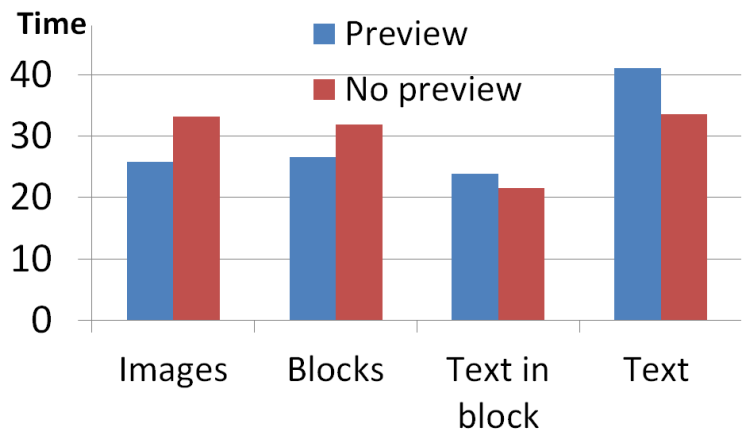
Fourteen participants completed 20 search tasks of four types having previews available in half of them. We used Tobii T60 eye tracker.

Results

The participants felt being more efficient with the preview available (5.0 vs. 3.8 on 1-7 scale, $p < 0.001$) and rated the invention positively:



The difference in task completion time was not statistically significant, the scrolling direction had no impact. Participants were faster with previews available when searching for images and slower when searching for text, but the difference was also not statistically significant:



Conclusions

The ability to preview the web page content while scrolling improves the gaze-based interaction experience, although does not necessary benefits objectively.