

Case Study Eye Tracking: Mobile Devices



The University of Trier conducted an eye tracking study with the SMI HED mobile eye tracker to analyze patterns of news reception on mobile devices. The pin-point accurate eye tracking data helped to observe tiny shifts of user attention on the small display and to develop practical advice for designing mobile communication interfaces.

BACKGROUND

The use of mobile Internet grew 2.6-fold in 2010. Besides interpersonal communication “Smartphones” offer additional functions to the user via special applications (Apps) and mobile optimized websites (MoW).

To determine the general reading and navigation patterns people use with mobile communication devices, the department of media studies (Medienwissenschaft) of University of Trier conducted a news reception study on the iPhone in June 2010.

<http://www.medien.uni-trier.de>
https://www.xing.com/profile/Martin_Krieg6

FURTHER READING

Bucher, Hans-Jürgen; Schumacher, Peter (2006): The relevance of attention for selecting news content. An eye-tracking study on attention patterns in the reception of print- and online media. In: European Journal of Communications Research 31 (3), S. 347–368.

CHALLENGE

Results of former media reception studies are not transferable to research on mobile devices due to the rapid development of mobile communication and the lack of adequate research methods and tools.

Traditional observation methods, for example, do not allow for the recording of subtle shifts in attention on small screens.

SOLUTION

A usability-centered reception study on popular news apps for the iPhone was conducted with the SMI HED head-mounted mobile eye tracking device.

The eye tracking data was used to visualize scanning behavior as well as the focus of visual attention on text and navigation elements.

CONCLUSIONS

Most participants scanned the text instead of reading it. When the headings were recognized, they appeared to be important for orientation.

The eye tracking data helped to identify three different types of users: reader, scanner and navigator.

The reader examines the text carefully while the scanner just skims over the text. The navigator is not reading at all and skips the text completely.

BENEFIT

Based on the analysis, the methodology for mobile communication studies can be refined and practical advice for designing mobile communication interfaces on smartphones can be developed, (e.g. where to position headings or navigation elements).



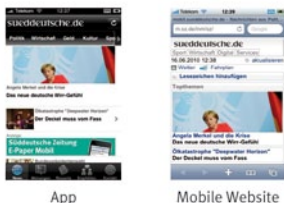
Martin Krieg, University of Trier, Media Studies:

“...The SMI HED mobile eye tracking device delivered very accurate data which allowed us to analyze differences in scanning behavior and interaction even on small displays...”

STUDY DESIGN

The goal of the study was to gain insight about how users read and navigate mobile news applications and websites. Main questions:

- How do users navigate and seek specific information?
- How are mobile news received? (reading vs. scanning)
- Which elements navigate users' attention? (headings, images)

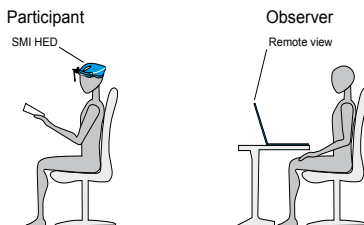


Mobile app and mobile website

Fourteen users participated in the study. In a pre-study questionnaire, they were asked about media use and socio-demography.

After “natural exploration” users had to “speak aloud” while:

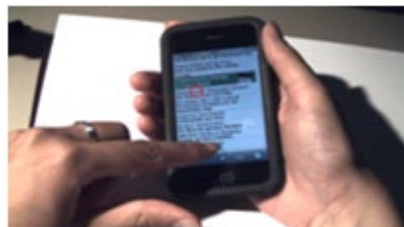
- Searching “free” for news (activity mode)
- Searching for specific news (goal mode)



Study setup

The analysis combined eye tracking data on visual attention and interaction data. The recorded user videos were coded on three levels:

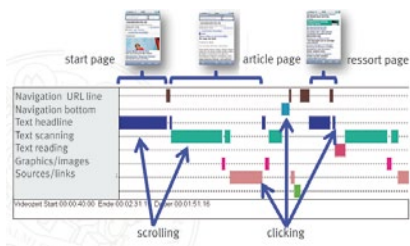
- The type of elements on the display (e.g. headings, buttons)
- Users' eye gaze data with regard to these elements (e.g. dwell time)
- Interaction of the user (e.g. scrolling or clicking on links)



Red gaze cursor on display

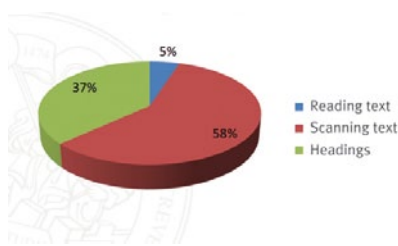
FINDINGS

1 Combined analysis of eye tracking and interaction data!



When analyzing the gaze data of users for each type of element on the display, the dimension of user interaction was incorporated into the analysis.

2 Text is not read, headings are used for orientation!



Most participants scanned the text instead of reading it. When the headings were recognized, they appeared to help with orientation.

3 Three types of users' search strategies for news!



The reader examines the text carefully while the scanner just skims over a text. The navigator skips the text completely.

SMI EYE TRACKING

SMI HED allowed for natural user interaction while conducting the test directly on the mobile device interface. Due to the pin-point accuracy of the SMI mobile eye tracking device,

it was possible to identify tiny shifts of visual attention between objects on the small mobile device display. Analysis was conducted with video coding software.



SMI HED

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