

Combining Tracking Technologies with Web Usage for Website

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Abstract- This paper introduces a novel approach for collecting and processing data originated by web user ocular movements on a web page, which are captured by using an eye-tracking tool. In order to build an online effective communication between the participants, one of the most important factors is interactivity. In the last decade it received extensive attention in the marketing literature, but few are the studies which have seen new methods to measure it. Eye tracking technology has been broadly used in the cognitive sciences. also describes the eye tracking technology in general, extracts various examples from the eye tracking research field, with different applications, highlights its importance when analyzing the online consumer behavior, giving examples from various studies and finds the key points of the methodological difficulties.

Index Terms- Web mining, Eye tracking, Website Key objects

I. INTRODUCTION

With more than two billion pages created by millions of Web page authors and organizations, the World Wide Web is a tremendously rich knowledge base. The knowledge comes not only from the content of the pages themselves, but also from the unique characteristics of the Web, such as its hyperlink structure and its diversity of content and languages. Analysis of these characteristics often reveals interesting patterns and new knowledge. Such knowledge can be used to improve users' efficiency and effectiveness in searching for information on the Web, and also for applications unrelated to the Web, such as support for decision making or business management.

There is a saying: 'the eyes are the window to the soul'. Their investigation and their path can provide us valuable information concerning the users' personality, preferences and their behavioral intentions. When investigating the websites, our eyes can reveal various patterns by following the eyes' pathways, the preferences for certain characteristics, the time spent on these characteristics, the frustrating characteristics for the user. Eye-tracking

technology offers the possibility to measure the users' eye movements when scanning the website and searching for information. Thus, we can identify the most commonly viewed pages and regions of the website, the time spent on these regions and the moment when the eyes moved from one object to the other. Achieving this information, one can understand the user's visual process and the factors which determine a loyalty behavior.

Using the eye tracking technology, when measuring online interactivity, one can validate the final results gathered, by using another method, previously applied. All in all, the eye tracking technology can be used and it is used mostly directly, without any other methods, when assessing the interactivity's characteristics. This technology is now used in the Romanian marketing research, namely in the online consumer behavior. Initially applied in medicine and psychology, today the eye tracking technology is used in the marketing research.

Figures and tables from this article:

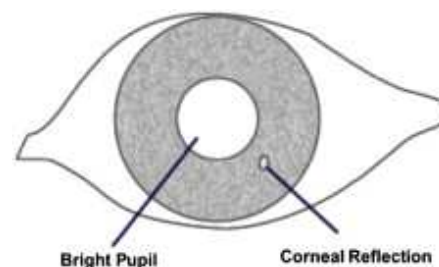


Fig. 1. Corneal reflection and bright pupil.

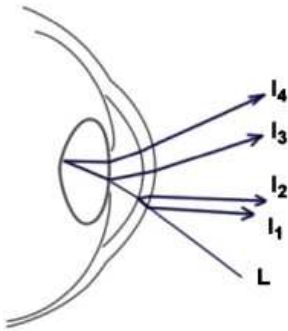


Fig. 2. Pukinje images with a direct light.

II. BACKGROUND WORK

The visual attention represents an important factor in information processing and in pursuing the long term objectives. The visual attention can reveal more than it is expected, not being any more a simple incipient phase, but an essential element in understanding the human behavior. Duchowski (2007) delivers us a detailed analysis of the visual attention, evaluating different authors who along the time elaborated various definitions of the visual attention. From this perspective, the visual attention is defined through three characteristics: where, what and how. From the Von Helmholtz's "where" perspective (Duchowski, 2007, p.5), the user has the tendency to identify all the new objects he meets. This type of attention can be controlled in a conscious way, thus it is led to the elements which are placed at the periphery. The eye movements show exactly the voluntary action of the user to inspect these elements in detail. From the "what" perspective, Duchowski (2007) emphasizes the user's need to inspect the object in detail, namely foveal. The two aspects, "where" and "what", can be explained by introducing a stimulus. Thus, introducing a stimulus like a certain banner, the user will be attracted by certain regions inside it. In the first phase, the user will perceive parafoveal, namely overall and subsequently he will feel the need to analyze in detail, namely foveal inspection. Certain marginal elements from the image will lead the user "where" to look further and "what" to examine in detail.

III. METHODS

Eye tracking techniques over time, the techniques for measuring eye movements have evolved from the simple analysis of the photos and till today when we have the eye tracking technology. The development of the measuring systems for eye movements took place initially in the physiological research of the oculo motor system. Hammond and Mulligan distinguish between these systems. They can be invasive and inactive, on the one hand, noninvasive and passive, on the other hand. Noninvasive systems differ toward

the invasive ones. They are not attached to any part of the human body, the participant expressing in his natural environment.

IV. CONCLUSION

This paper offered a starting point for the future studies interested in using eye tracking technology and for those who are interested in the new methods and instruments in the marketing research. To improve a web usage mining methodology for finding the most important objects in a web page. The application of an eye-tracking system for analyzing the web user behavior in a website. The eye movement data as a novel web usage data for analyzing the web user behavior in a website. To identify the relevant objects in a web page for helping the designers in the website creation. Even if the eye tracking technology is told to be hard to implement, because of the calibration process and hardly accessible because of the higher prices, today it is used more and more due to the technological advances, improvements and a much lower price.

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