

Pupil Dilatation and Stress in User Studies

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Internet offers more and more services and information via web pages to people. Thoughtless to complexity of content on web pages, user interface has to be intuitive, simple and users should have positive experience from using it. On the contrary, users can leave a web page and go over to the competitor. Therefore, it is really important to create pleasant user interface on any kind of application, which is used by masses.

This task is more difficult than it seems, because it requires many user experience tests of the web page, especially when the web page is upgraded to a new version with different design. There are many ways to find out if the user interface is good or bad. From simply survey on the web page to the detailed user experience testing with a participant in a laboratory. After testing in the laboratory, moderator has to analyze testing records manually. This analysis is very time-consuming process because if we want to find a problem in a user interface, it is necessary to watch whole record of the testing and focus on all its outputs. Based on experience of my supervisor, forms belong to the most problematic features of the user interface. As we assume that problematic forms have a negative effect on the mood of participant, we focus on the detection of problems during filling forms on web pages in our work. These phenomena are manifested by pupil dilation (*mydriasis*), which we are able to measure with eye tracker.

Pupil diameter is influenced by many factors. The most well-known factor is amount of light. Pupil diameter is contracted to about 1mm in bright environment, but it can dilate to 9mm, when the environment is dark. As the size of the pupil is individual, these values differ as well. In ordinary circumstances, the pupil constricts to light changes within 0.2 sec with peak from 0.5 sec to 1.0 sec [1]. Another factors are positive or negative sounds **Chyba! Nenašiel sa žiaden zdroj odkazov.**, age **Chyba! Nenašiel sa žiaden zdroj odkazov.**, cognitive load **Chyba! Nenašiel sa žiaden zdroj odkazov.**, changes in emotional state [4] and pain **Chyba! Nenašiel sa žiaden zdroj odkazov.**

Our primary metric is pupil size. Alternatively we use emotions (using the tool Nodulus Face Reader) and skin conductance response (GSR). In our work we create forms, which should bring participants to following states:

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- stress
- cognitive load
- negative emotion

If we find a correlation between mydriasis and at least one of the mentioned states caused by problematic areas of forms, we will be able to determine time at which the participant had a problem. The goal is to develop a tool which determines times of problematic areas and saves moderator's time which he would spend on finding these areas.

References

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