The User Evaluation in Experiment and Their Application in Web Development

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Abstract

The report would discuss about the user interface evaluation by reviewing two prior experiments, both of which were delivered online and included features relevant to user interface. It then outlines my personal experiences in these experiments and analyses their similarities and differences to evaluate if elements can be further developed. In the final session, the relevance between user-participation experiment and web development is discussed, along with web development's expanding involvement in this area.

Introduction

Nowadays, people inevitably engage with computers to carry out tasks, and the user interface is the link between human and computer interaction. This has compelled web designers all across the world to reconsider how information is displayed and engaged with. For user interaction to be satisfying, Human Computer Interaction(HCI) design principles must be taken into account throughout web development. Poorly designed website can possibly make someone less likely to utilize a programme or lead to negatively impact result at work or experiment. This report would analyze two earlier experiment that I participated, both of which had components critically related to user interface evaluation. It describes my own experiences and examines the experiments. At the conclusion of the report, the relationship between user-participation experiment and web development would be addressed.

Experiment Background

The first experiment is designed by Stephanie Goodhew which is about the visual attention. The goal of this study is to learn more about the mechanisms behind dynamic scaling of visual attention. It aims to produce new theoretical understanding on visual attention re-sizing and ideas into how to enhance it.

The second experiment named Bayesian Modelling of the Well-Made Surprise is developed by Patrick Chieppe, which creates a Bayesian model of stories with the surprise hypothesis that can forecast key elements of the surprise. The researcher created many models of various story aspects for this goal, and it aims to collect labeled assessment data on these aspects for the model.

Participation & Experience

Visual Attention Experiment

The typical approach in the first experiment comprises displaying visual stimuli on the computer screen and asking participants to give the opinions. To confirm that the visual scale on different participants' screen were consistent, I was requested to put a physical card (I used the student ID card) on the screen to match with the length of line on the screen at the start of the experiment. After the preparation, a hierarchical letter, which is a large global letter made up of little local letters, was shown on the screen for me to identify for the majority of trials. I had to determine if the letters "T" or "H" were present and attempt to ignore the letters "E" and "F" during this experiment. The trial was inserted has with one in which I was given an isolated letter, and I was required to try my best to press the key as quickly and accurately as possible that corresponded to that letter on the keyboard to indicate whether it was the letter "T" or "H".

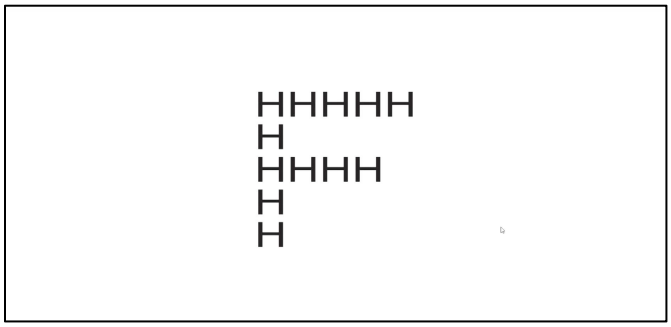

Fig.1 Screenshot in the visual attention experiment

The activities are mechanical, so as the process goes on, I started to become fatigued. Furthermore, the experiment has no progress indicator to illustrate when should I stop and most of the background of the experiment was blank, which made the situation worse and gave me the impression that the experiment was endless and exacerbated my restlessness. During the experiment, I can not controlled myself not to occasionally stop and doubt if there is process issue with the experiment. Also, as the practise trial was through, I could see that my reactiveness was at its highest point, however, when the experiment went on for another ten minutes, it became significantly slower. Referring to the experience I stated, I find it difficult to accept the accuracy of the data in this study. The experiment's interface and structure were not thoroughly considered through, which resulted in a significant impact on the essential data, which was the participants' response speed. In order to remind participants that the experiment is still continuing, the experiment may be improved by including more instructions on the switching pages. Additionally, building a progress indicator for the user interface should be taken into consideration.

Bayesian Modelling of the Well-Made Surprise Experiment

The second experiment was delivered with a series of brief tales, I was required to participate by indicating how much I agreed or disagreed with a series of

statements. These statements include the story's degree of satisfaction, coherence, plausibility, and how I feel about the surprise in the story. Every story was presented repetitively with two distinct endings—one typical and the other surprising—but the rest of the story remained the same.

The entire experiment is straightforward and simple to grasp, I believe the aim of experiment can be gained, as the questions were well considered. However, the overall experience of experiment is a bit annoying. There were mainly two features that result in my impatience. Firstly, the question lists were extensive. To ensure the reliability of the participants' responses, the experiment was constructed with numerous similar questions for us to respond from alternative perspectives. I had to read the questions very carefully to ensure the answers are logically consistent, which is energy-consuming. It enhances the credibility of the data at the expense of user experience, resulting in both the experiment's strength and weakness. Secondly, in my viewpoint, the use of colour in this experiment was neglected. As suggested by the article of Stone(2006), an effective use of colour may improve and clarify data visualization, when utilized incorrectly, colour may conceal, confound, and confuse the result. However, despite of the black and white, no additional colour was utilized for highlighting key points or defining priority for participants in this interface of experiment. The lack of color using resulted in my inability to concentrate on the experiment after completing numerous questions, as there was no stand out element to attract or stimulate my attention. The weakness could be easily overcame by changing the button’s color or categorizing the questions by gradient color to achieve better visual hierarchy.

Experiment Comparison

Similarities

First of all, two experiments were both conducted online and were delivered in a neat and well formed structure, which provide the experiment with more possibility to collect enough data for analyzing. However, due to the limitation of delivering online and the lack of good interface design, both of experiment has the difficulty to enable participants to not distracted in the experiment and provide participants with interesting experience.

Moreover, both of the experiment were not designed with well considered color. The overall tone of both interface were only black and white, which was potential for interference avoidance. However, as mentioned in the previous paragraph, the lack of using color on the interface could lead to bad influence on the data reliability. Both of the experiment could improve the interface by considering the using of color to achieve better presentation of the instructions.

Differences

The requirement for data collection is one of the primary distinctions between the two experiments. The visual attention experiment requires mechanical activity, but the Bayesian Modeling of the Well-Made Surprise want an intelligent participant to

participate and interact with personal ideas. In addition, the visual attention experiment requires you to participate and complete tasks, as well as submit data that the investigator may compare to the results of other participants. Though the data from the second experiment might potentially be evaluated in the same manner, the procedure of this experience can also be altered to an experiment in the other way. For example, in the experiment of “Popular eReaders” that developed by Tom D. Gedeon and Ujala Rampaul, the participants were asked to complete tasks and collect data for comparison, and they allow them to function as experimenters. The participants were able to compare the device by themselves, and also observing other’s action. After the activity, they would also fill out the data on their own. This type of experiment will be less subjective as a result, but the data obtained will be more dependable and reliable. The second experiment can learn to allow participants compare the stories on the similar way, the way of delivered can potentially improve the data credibility of it.

Conclusion

Relevance of user-participation experiments to web development

In conclusion, my experience in the experiments demonstrated that human computer interaction is vital in web development, and the topic and procedure of both two experiments are positively related to the interface design and web development from the perspective of Human-Computer Interaction.

The benefits of taking the user's visual attention into consideration when designing user interface are suggested by the study by Göbel and Giannopoulos(2016). By adjusting visual scale to the users' present demands, efficient user interfaces can assist users in completing their activities, which suggests that the result of the visual attention experiment is positively relevant to the interface development. Therefore, the procedure and outcomes of this experiment could possibly be applied to web development when taking into account font size or graphic effects when GUI pages transition. As for the second experiment about the surprise model, previously, surprise was quantified in HCI research for measuring the trust in Human-Computer Interactions(Hirshfield et al., 2011), which means the more people know about surprise the more benefits would be brings to the study.

What’s more, as discussed in the previous paragraphs, several design faults have a detrimental influence on the user experience. The dominant example would be the lack of process bar. According to Neil Patel (2019), the usage of progress bars can significantly lower the probability that users would abandon tasks since the uncertainty is minimized when they can visualize when the task will be completed. The progress indicator also gives the procedure a sense of movement and accomplishment, which deeply affect the entire process. My experience of the experiment I conducted apparently suggests the same theory, the absence of progress bar had a negative impact on my experience and the experiment's outcome. It have clearly demonstrated the connection between web design and human computer interaction, and the user experience in both of experiment can be improved by more considerable web development.

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