Relationship between Human Computer Interaction and Web design

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Abstract

User-evaluation experiments play one of the important roles in human computer interaction (HCI) and web design. This report will introduce two experiments that are related to human computer interaction. One is about testing stress levels when users read stressful content and non-stressful content. Another one is about testing the usability of different devices through a scenario based approach. The report will also compare those two experiments and then will discuss the relationship between HCI and web design based on those two experiments.

Introduction

With the development of web technology, more and more websites published and appeared on the internet. With the enrichment of website content and functions, how to design a good website is becoming more and more important.

User-evaluation experiment plays a very important role in understanding how well the web design of a website is. The first experiment in this report used the galvanic skin response (GSR) data to record the stress level of participants while they read stressful content and non-stressful content [1]. This experiment used physiological data which is objective. The second experiment in this report uses a scenario based approach to testing the experience of using different eReaders for the same tasks [2]. This experiment used psychological feelings which are more subjective. After introducing the two experiments, I will compare the difference and similarities between those two experiments. Lastly, I will talk about the relationship between HCI and web design by using experiments as examples.

Experiment Participation

Experiment 1: Stress Classification for Gender Bias in Reading

The experiment aims to collect galvanic skin response (GSR) data from participants of different genders when they read the same stressful and non-stressful materials. Because of the complexity of the definition of stress, it cannot be measured directly and objectively. However, the level of stress

can be measured by GSR or heart rate variability. The GSR is also called electrodermal activity response. Because skin conductance would increase when someone was under stress [1]. The data collected by the experiment can be used in finding the relation between psychological condition (stress level) and two types of reading materials and also can be used to find whether is there different patterns of stress levels for different genders.

Firstly, every participant had to understand all the requirements by reading through the written instructions and then can sign the consent form. Secondly, wearing the equipment which can record the GSR of the participant while they are reading. The instructor provided three stressful paragraphs and three non-stressful paragraphs. Both types of paragraphs were about the same length and displayed on a computer monitor at the same location on the monitor. After finishing the reading, the participants were asked to do an assessment.

Fig.1 Experiment process of experiment 1 [1]

The experiment is quite easy to follow, and the environment was relaxing. All we need to do is sit on the chair with arm rest and read the paragraphs displayed on the screen. All the other things would be done automatically And the GSR equipment was on the left hand. It is small and does not cause discomfort to the participants. The experiment used disposable electrodes which made the data reliable.

Experiment 2: Popular eReaders

The aim of the experiment used a scenario based approach to testing the usability of the eReaders with four different brands. All the participants are new to using eReader devices, and every eReader downloaded 70 books in advance to emulate the real situation of using an eReader. Because it is the most common scenario for real users of eReader [2].

Fig.2 eReader ownership in the US [2]

The task for all participants is to find a model number which is in section3 and paragraph 2 of a book called "Somedevice XY User Guide" and then look for that model number in the "Dates 2013". And the tasks were undertaken by pairs of people. One of the people in the pair used devices to find the model number and another person acted as a scribe who recorded the joint decision on each device. After finishing one device, the pair swap role and repeat the same task on another

device. Lastly, all participants selected on a Likert scale: Very good, Good, OK, Bad, or Very bad. The scores for those options are 5, 4, 3, 2, and 1 respectively [2].

The instruction for the experiment is quite clear, and the task we need to do is simple even though we need to use different devices. And I think the experiment we took was what we called usability evaluation in HCI and the results of the experiment were subjective. Everyone gave their feelings about the different devices subjectively. However, the results were given by twelve participants which made the results reliable.

Experiments Comparison

Both of the experiments are related to Human Computer Interaction but there are some differences between them. For the first experiment, it used the GSR to represent the level of stress when the participants read those paragraphs displayed on the screen, which used the physiological signal to test the psychological feelings of participants. It makes the experiments more objective. As for the second experiment, the participants marked the different devices based on their experience of using the devices to do some tasks, which made the results of the experiment more subjective. From the HCI and web design perspective, the first experiment is more related to the content in websites. And the second experiment is more related to the usability of websites.

HCI and web design

Usability includes aspects related to interaction, such as use effectiveness and task completion, but also includes aspects related to design such as easy to navigate or search and layout of the websites. There is a correlation between these structures, especially because website designers often strive to optimize websites in terms of content, usability, and aesthetics. Therefore, if a website wants to be successful, it must have interesting content, good usability, and well structure [3].

The first experiment is related to the content in the design. On the other hand, the second experiment is related to usability evaluation in web design. I think the content plays the most important role
In the website, because in most cases the reason why the users visit your website is the topic of your content shown in the websites. And stress is not just something that makes people feel uncomfortable. It stimulates the impulse of "fight" or "flight" [1]. No one wants to visit a website with stressful content, so bad content on the website may cause visitors to escape from your website and never return. Palmer emphasized the general importance of website content [4]. Meanwhile, though the content of the website is important, Usability is essential for web design, because usability determines the experience of finding specific content on your website. As shown in experiment 2, it used a scenario based approach. It is useful to use scenarios when defining usability tests. It makes the participants focus on key tasks in the system. Scenario based approach can help the developer to understand how well the web design is. As Steve Jobs, the Apple founder said; "Design is not what just what it looks and feels like. Design is how it works." [5].

Reference

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