

SHORT PAPER

Visual design for a webpage

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Abstract

Visual appearance is one of the important criteria to distinguish high quality web sites. Empirical studies have reported user responses to the effects of web design attributes such as attention, memory, and information search time. However, very little research has been found to focus on the users' psychological feelings in response to the design of web pages. This paper discusses an investigation into psychological feelings and web interface features for the design of a web page. It adopts part of the Kansei Engineering Type 1 approach as its framework. (Nagamachi, 1989) The results indicate that the design of the web pages' visual appearance based on "font type", "font colour", and "image size" is not sufficient to provide positive psychological feelings. To embed the web page with human qualities is one way of tackling the problem.

Keywords: design, feelings, Kansei, semantic differential scale

1. Introduction

The World Wide Web has grown strongly since its creation. It uses technologies that enable interactive and multimedia data to be shared online. This in turn increases the potential for further development of information and communication systems. The Internet is in direct contact with the recipients of a message compared to traditional paper documents and other communication media. It has the ability to reach millions of users across cultural, social, and geographical boundaries. Today, web-based information systems may be found in applications spanning commercial, social, educational, and entertainment domains. (Teo, Oh, Liu & Wei, 2003)

Aesthetics/visual design is one of the important criteria that distinguish high quality web sites. Visual design is the appearance of the site. It is more than just a pretty homepage and it does not have to involve cutting edge or trendy techniques. Good visual design is high quality, appropriate, and relevant for the audience and the message it is supporting. It communicates a visual experience and may even take your breath away. (Sinha, Hearst & Ivory, 2001)

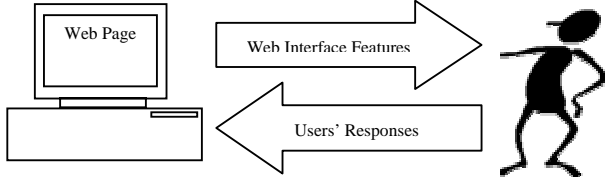
There is abundance of design guidelines and recommendations for the visual/graphics design community as well as web design books. However, designers have traditionally experienced difficulty in following these guidelines. Advice is often given in the form of such high level examples that it is unclear how to implement it. A typical example of those heuristic guidelines is “support users’ goals” which is mute to actual execution in a design context. This situation makes it even harder for occasional web designers to understand the generalized design laws and interpret them in the web interface.

Furthermore, guidelines can conflict with one another and there is no general agreement about which is correct. Proposed laws for aesthetic design are contentious because the visual/graphics design community follows an experiential approach rather than an engineering design philosophy. Although these guidelines may align well with common sense, they have not been justified by empirical evidence and are difficult for actual implementation. Researchers, such as Cunliffe (2000), have cautioned that existing design guidelines may be inappropriate, too rigid, or overly vague to be of value.

2. Related studies

Empirical studies have reported the effects of web interface features on user responses such as attention, memory, recall, information search time and attitude towards the web site. (Hong, Thong & Tam, 2004; Lee & Benbasat, 2003; Sutcliffe, 2002) Table 1 summarizes the work of empirical studies. However, very little research work has been found on the design of web pages which focuses on the users’ psychological feelings.

Table 1. Summary of the studies on effects of web design attributes on users’ responses



Web Interface Features	Users' Response	Study
Image size Fidelity (clarity of an image) Motion	Attention Product memory	Lee & Benbasat, 2003
Text-only VS Image-text Presentation Mode List VS Array Information Format	Attitudes towards the screen design and using the website Information search time	Hong, Thong & Tam, 2004
Aesthetic Design such as use of colour, choice of media, and aesthetic style	Attractiveness Usability	Sutcliffe, 2002
?????????	Psychological Feelings???	

3. An investigation

This paper reports an investigation of the design of a web page embedded with psychological feelings. The purpose of the study is to find the relationship between web design attributes and the users' psychological feelings. The study adopts part of the approach of Kansei Engineering Type 1 as its framework. (Nagamachi, 1989)

When a customer wants to purchase something, for instance, to buy a car, TV set or clothing, he/she will have a kind of feeling such as "graceful and looks intelligent, but not so expensive..." This feeling is called "Kansei" in Japanese. Kansei refers to a customer's psychological feeling about, and image of, a new product. (Nagamachi, 1995) Kansei engineering aims to implement a customer's feeling and demands in product function and design. (Nagamachi, 2002) It is defined as "translating the customer's Kansei into the product design domain." (Nagamachi, 2002)

3.1 Experimental procedures

3.1.1 To select important design features

It has been found that text and graphics are the two fundamental ingredients of web pages. (Ivory & Hearst, 2002) Font type is a major element when communicating on a more cerebral plane with audiences. (Holzschlag, 1999) It plays a dual role in both verbal and visual communication. (Lynch & Horton, 2002) Colours have the power to influence human feelings and play a role in every design created. (Boyle, 2001) Size is one of the most primitive cues human have about the environment. (Lee & Benbasat, 2003, p. 243) It is manipulated on websites, especially on e-commerce websites (Lee & Benbasat, 2003). To give the investigation more focus, three design features "font type", "font colour", and "image size" have been selected for analysis.

Font types from different font categories have been selected since each category has its identifiable attributes and specific psychological influences. (Holzschlag, 1999) Font types chosen for the investigation are common and familiar to web users. Red, blue, and green colours have been selected since they are the three most used colours in the RGB colour model. Black is also included as a colour in the study since the most legible colour combination is black text on a white background. (Boyle, 2001) Relative differences are used on the effects of image size. The largest size is set as 8cm*8cm to fit in a PowerPoint slide. Twelve types of design features as shown in Table 2 have been identified for the investigation.

Table 2. Twelve types of design features

Font Type	Font Colour	Image Size
Book Antiqua	Red (R225, B0, G0)	Large (8cm*8cm)
Courier New	Green (R0, B0, G225)	Medium (6cm*6cm)
Impact	Blue (R0, B225, G0)	Small (4cm*4cm)
Lucida Console	Black (R0, B0, G0)	
Verdana		

3.1.2 To select Kansei evaluation adjectives

Five adjectives: “friendly”, “like”, “novel”, “comfortable”, and “professional” have been chosen for analysis. These five Kansei words are selected since they appear most often in web design guidebooks, websites, and journals. In general, they are typical adjectives used for the evaluation of the visual appearance of a web site. Other adjectives which are also collected from web design guidebooks, websites, and journals but relatively insignificant to the five selected adjectives are shown in Table 3.

Table 3. Other collected Kansei adjectives

Open	Cold	Enjoyable	Amateur
Warm	Pleasant	Fun	Trustworthy
Rejecting	Relaxing	Boring	Credible
Simple	Serious	Tedious	Authoritative
Clean	Considerate	Sophisticated	Believable
Understandable	Rude	Engross	Tacky
Complicated	Appealing	Reassuring	Elegant
Unimaginative	Interesting	Humane	Moderate
Complex	Salient	Personal	Familiar
Creative	Stimulating	Impersonal	
Clear	Original	Disconcerting	
Vague	Dazzling	Meaningful	
Exciting	Standard	Luxuriant	

3.1.3 To create samples

A total of 25 samples have been created to test the users’ psychological feelings about the combination of the three independent design features. Each sample contains an image and a simple sentence. The layout of the samples attempts to create an appearance of a simple web page. Figure 1 shows the 25 experimental samples in which each has a different font colour, font type and image size.



Figure 1. Evaluation samples

3.1.4 Kansei evaluation

A PC-controlled projector was used to present the samples. University students were asked to evaluate each sample using the five point Semantic Differential Scale (SD) with the chosen Kansei word pairs: “friendly – not friendly”, “like – not like”, “novel – not novel”, “comfortable – not comfortable”, and “professional – not professional”. Figure 2 shows the survey for the Kansei evaluation experiment.

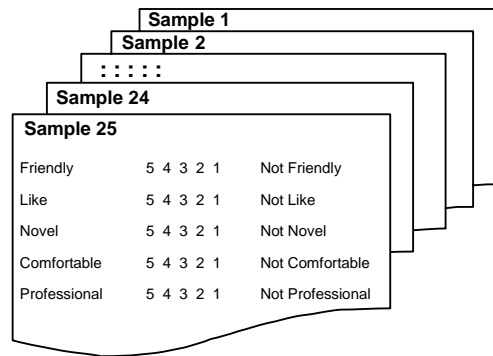


Figure 2. Survey for the Kansei evaluation experiment

3.2 Sentimental effects

Figures 3–7 illustrate the sentimental effects between font type, font colour and image size to Kansei “friendly”, “like”, “novel”, “comfortable”, and “professional” respectively. Most rating scores for each sample and each Kansei are below point 3, which is below average. It means that the subjects’ feelings to the experimental samples lean towards negative.

The following results show the best responses to the individual word:

- friendly sample 13 with font type Book Antiqua, blue font colour, and medium image size has the highest rating of 3.19;
- like sample 13 and also sample 14 with font type Verdana, red font colour, and large image size have the highest rating of 3.19;
- novel sample 15 with font type Impact, green font colour, and large image size has the highest rating of 3.04;
- comfortable sample 14 has the highest rating (see Figure 6); and
- professional sample 6 with font type Book Antiqua, blue font colour, and large image size has the highest rating, below average, of 2.96.

Another finding is the marginal difference between the highest and the lowest rating score for each Kansei is within one SD. It means that subjects are not sensitive to the experimental samples.

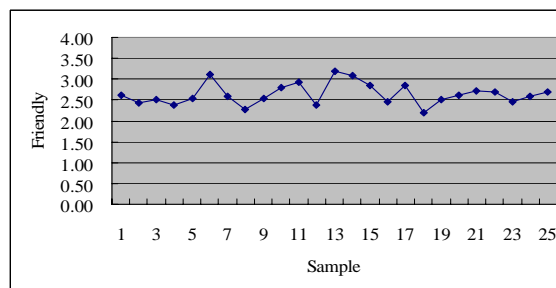


Figure 3. Sentimental effects to “friendly”

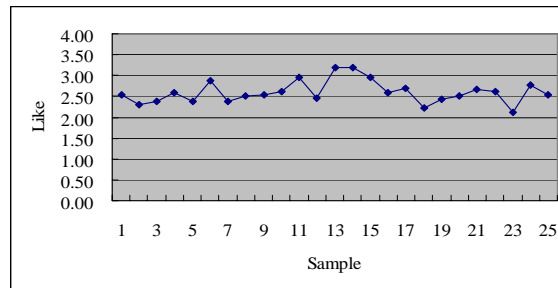


Figure 4. Sentimental effects to “like”

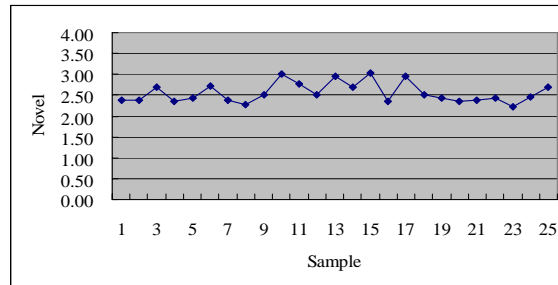


Figure 5. Sentimental effects to “novel”

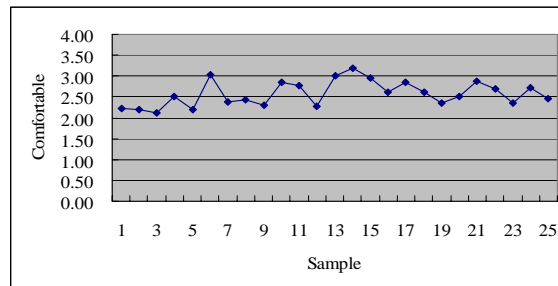


Figure 6. Sentimental effects to “comfortable”

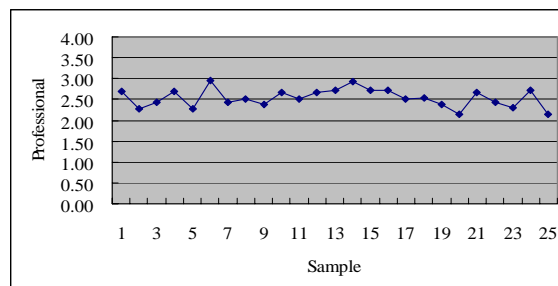


Figure 7. Sentimental effects to “professional”

4. Conclusion

The findings have shown that web users are not sensitive to common and familiar web visual design. Although, the twelve types of important web design features in the study are selected from existing web sites and web design guidebooks, they give rather negative sentiments to users. The experiment indicates that the design of visual

appearance based on “font type”, “font colour”, and “image size”, as suggested by design guidebooks, is unable to provide positive sentiments. Colourful design does not necessarily give good Kansei feelings.

At present, the structure of many websites is heavily reliant on “font type”, “font colour”, and “image size”, which do not really offer good psychological feelings to users. Emotions and feelings are important ingredients in human-computer interaction. Further study about the design for a web page with embedded human feelings is required.

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