

## 1 Graphical User Interfaces

2 The Graphical User Interface (GUI) is a channel through which the users can communicate with  
3 the system or an application. The GUI needs to be well designed to convey the desired messages  
4 effectively and effortlessly to the users. This essay discusses how designers can apply some  
5 concepts of perceptual organization, visual attention and color perception to achieve a better GUI  
6 design that can communicate effectively with the viewers.

## 7 Perceptual Organization

8 One of the main principles of an effective GUI design is good organization, which can be  
9 achieved by applying grid structures and Gestalt laws to the design's elements [3]. By applying  
10 the Gestalt laws such as proximity, similarity or symmetry to the GUI's elements, the designers  
11 can make their GUI communicate the relationship between its elements to the viewers. Some  
12 ways of achieving this is by applying similar colors, textures, shape, typography, alignment or  
13 even spacing between the GUI's elements. For instance, aligning design's elements rather than  
14 placing them arbitrarily in the interface could help viewers to conceptually link the GUI's  
15 elements, guide their eyes rapidly through the design, signify their needs and easily understand  
16 the essential message of the GUI [1]. Figure 1 illustrates how designers could guide viewer's  
17 eyes differently through the design by applying different buttons' alignments.



Figure 1: Different buttons' alignments guide the eyes differently

## 18 Visual Attention

19 Making important information or elements in the design different from their surroundings  
20 makes them stand out and grab the viewer's attention [2]. This can be accomplished by giving  
21 those important elements different color, texture, size or shape. For example, designers could put  
22 something in a different color when it is critical that users notice a certain part of the screen.  
23 However, designers should limit colors used on the design because it would compete with other  
24 uses of color in the interface leading to distract viewers rather than drawing their attention to  
25 specific elements [2] as shown in figure 2c. Alternatively, in such cases designers could use  
26 human sensitivity to motion to focus viewers' attention [2] to an element at a time.

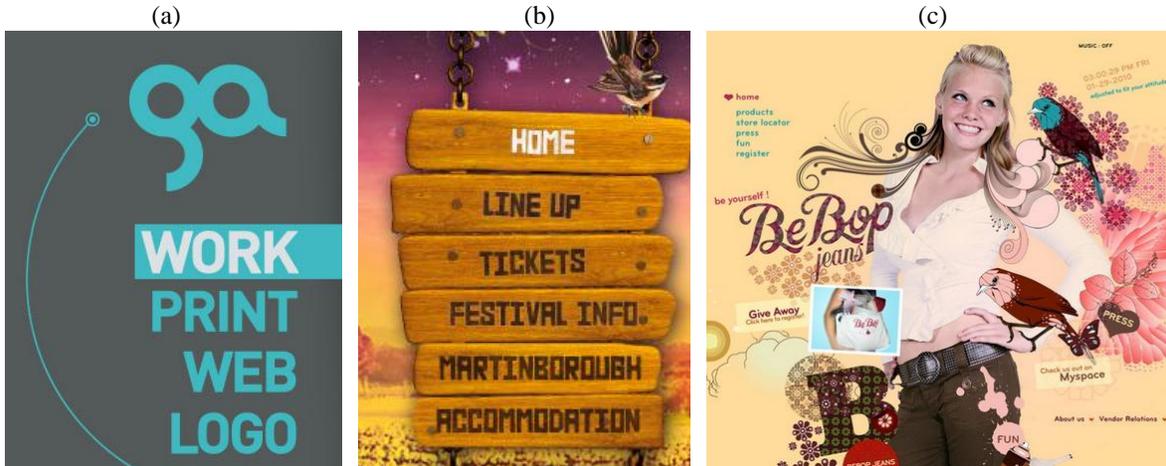


Figure 2: Contrast in color or shape grabs the viewer's attention (a,b), and many colors distract attention (c)

## 27 Color Perception

28 In order for the GUI design to effectively communicate with the users, it needs to be designed  
29 so that its parts show up well against the background [1]. Thus a careful choice of colors and  
30 sizes should be applied to suit users with different needs. In addition, since human's color  
31 perception has different sensitivity to different light wavelengths, designers need to be careful  
32 when choosing colors for the background and the foreground, so that the information is readable  
33 and legible. For example, designers need to pay careful attention when using complementary  
34 colors side by side in the design because due to the way our eyes work this can create visual  
35 vibration, illusion of movement or afterimages [5]. Complementary colors create high contrast  
36 [4] which causes tension, refocusing and tiring the eyes [1]. However, visual vibration can  
37 sometimes be used to attract attention but not for large areas [4].



Figure 3: Visual vibration creates color motion illusion (left), acute visual interest (right)

38 In conclusion, this essay describes some examples and guidelines that the designers can use in  
39 creating an effective GUI design by understanding the basis of visual perception. There are many  
40 more guidelines (read [1, 2]) which are not included here and which need a deeper understanding  
41 and careful attention from the designers.

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