

BTH545 Lab 4

Learning Outcomes

- To gain practice in creating metaphors and conceptual models

The Problems

- The human visual system responds to colours unevenly. Humans are most sensitive to green (~ 60%), then red (~ 33%) and blue (~ 7%). We are unaware of this but it causes problems when we view images on a computer screen. Internally, the computer stores the true RGB values but, if it displayed these to a human, the colours would look very strange. Therefore the colours are multiplied by the percentages above so that the colours look the way humans expect them to look.

You have been asked to develop an image editor where the user can change the amount of red, green and blue in the image. How should you build an interface to allow humans to change the colour? Should you expect them to know about the sensitivity of the human eye to colour? Should you give them controls that obscure the model? Develop a set of controls that present a simple model to allow the users to select the colour they want. How will your interface present the conceptual model to the user and give them feedback on the colour they have chosen?

- There are several complaints about e-books versus paper books. One is that they do not smell like books --- not much we can do about that one. The other major complaint is that the reader cannot gauge what fraction of the book they have read and do not have an easy way to navigate around the book. For example, you might want to mark one or more pages so that you could return to them later. You also want to be able to skip ahead to the last few pages to see how it ends and go near the beginning to remind yourself of something. Design an interface that is closer to the mental model of a traditional paper book and behaves like a paper book.
- The humble scroll bar has been with us for a long time and has settled into the Microsoft model where there is a bar whose size is proportional to the size of the document currently in the viewport. To scroll forward, beneath of to the right of the bar if the scroll bar is horizontal. Scrolling backward is the reverse. There are arrows at the top and bottom that let you move by small increments. Further, the bar can be dragged to any position to go to an absolute position in the document. People quickly develop a mental model of how this works and are relatively happy with it. What is missing is a good way to change the distance you scroll in the forward or reverse direction when you click to go forward or back. Can you design a scrollbar that will let you change the scroll distance and have it present a simple model that can quickly be mastered by the user?

Reflection

For each of the 3 solutions you have created, comment on the conceptual model that your interface presents to the user. Be sure to show a picture of your interface along with your discussion. For each conceptual model, describe the mental model you expect the user to create.

Submission

You should submit

- a text document with the group member listed and a description of each of the three interfaces, how they are to be used by the user and images of each of the solutions you envision.
- Images can be separate files but must be clearly labelled and referred to by their identifying label from the text document.
- The reflections should be submitted as a text document with accompanying images by midnight 2 days after your lab.