

Automatic vs. Manual Color Selection For Software Interfaces

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ABSTRACT:

When designing an interface for a software application the current techniques and knowledge for evaluating the use of color seem to come from three sources: Color theory classes, which teach particular techniques more suited for print design, Programmers repeated exposure to the same “color palette” used in a particular software application, and HCI related professions with limited knowledge of the use of color while using a “color picker” application. A prototype application called “Ace”, a color expert system that utilizes color rules and applies them to user interface design, is one application that attempts to automate the color selection process. A modified automatic color expert system prototype application will be built using Axure prototyping application. In addition to having defined interface specification and color rules implemented into the application will also include environment modules, which can be selected from a drop down menu. A manual color selection “story board” will be constructed, demonstrating how these activities will be carried out. A research proposal comparing automatic vs. manual color selection for an interface application will be layout, defined, and expected results will be presented. Implementation of research proposal will take place at a later date.

KEY WORDS

Color Expert System, interface colors, selecting colors, affect of colors, color guidelines.

Introduction

Applying color to a software interface application: What are the rules? What knowledge do you need to effectively implement colors? Josef Albers, one of the 20th century’s great abstract painters who’s teachings profoundly changed and shaped art education in America, taught his university classes on the theory that an increase of perception and awareness, rather than solely relying on color rules to guide the selection of colors would afford the students with the knowledge to effectively adapt to various interface environments.

Manually applying these color rules effectively and efficiently into your interface, takes 100 percent mental acuity. Putting aside people with photographic memories, most people have to reference material or asked co-workers in order to remember and then apply the rules. In

addition workers have to consider the work environment in which the application will be used because as Albers points out in his “interaction of colors” book. It has been seen that color differences are caused by two factors: by hue and by light, and in most cases by both at the same time. Manually selection does have merit when applying color to an interface application, but can the process be optimized?

Barbara J. Meier and her team at Brown University have developed a prototype application called ACE, which utilizes color rules and applies them to user interface design. When you are running the ACE application it employs user interface specification in addition to color rules as constraints to determine the best colors for particular items. In theory this automatic color expert system tool can enable the people with limited knowledge of color selection to have similar knowledge at the time of development to expert color selection personal. Furthermore, expert color personal can be supplied with the benefit of efficiency while accomplishing tasks.

Perception

Don Norman describes the affect of color in his book “The design of everyday things”. He describes how color affects how we perceive, decide, and react. I am going to use these three concepts and tailor-make it to fit color utility in software applications.

Color helps us define regions. The regions in a software application help us to identify tools and to accomplish tasks, which in the long term should lead to increase efficiency. Many design application such as Adobe Photoshop, Illustrator, and InDesign, define these “regions” by floating menus with degrees of shading to achieve shape. (Stone) The color shading selection for these floating menus are not extreme in nature but follow various degrees of hue and saturation. Each “region” can have multiple layers with distinct functions that may be selected.

The perceived navigation has to have a “sense of order” to the user. Applications do allow you to pull floating menus into separate regions, place numerous ones onto the desktop but the initial impression of menus should be one of uniformity. The “start up” menu regions if you will should be customized to the experience level of the program. For instance, certain “standard” heuristics

evaluations proclaim the value of software that accommodates different experience levels of users. If you accommodate the “standard” heuristic results to mold your particular audience software, you will end up with a *swiss army knife* of software, which is not a good thing for a particular level of audience. To accommodate an experience level, which is not your primary user, you can have quick tutorials or sections in your user guide with “beginner” or “advance” information.

Decide

The application should give the user an intuitive feeling that this is the application to accomplish the task(s) they have. The “start up” menus should have items that the user instantly distinguishes as required to start the task. While the user is accomplishing a task, various levels of information might be displayed and color can be formatted to achieve salient information as needed to the user. Using the information that is provided to them, labels (color as a noun) can enable the user to transfer that knowledge acquired in one region to another to perform manipulations with the data for a desired result.

React

Phrasing individual elements in a systematic manner with color can create an environment. Individual color by itself can have a meaning, but combined it with other colors can create a multitude of signification. This “environment” can induce feelings of inspiration, satisfaction and efficiency. In the greater scheme of things, software applications developed in the future, will be assembled with color interlacing these elements that will softly impose a prescribe mindset. Switching from a music application to an image editing application will actually be used with the phrase “stepping into another world.”

Research Proposal

Layout:

The following diagrams layouts the automatic vs. manual color selection testing lab set up and interface.

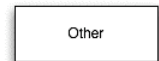
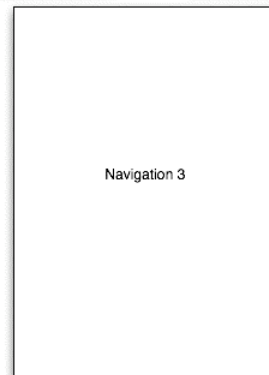
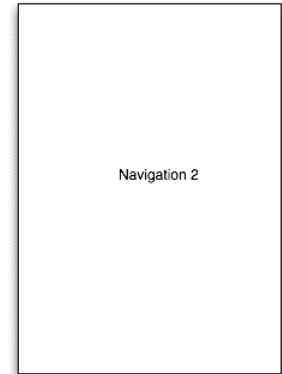
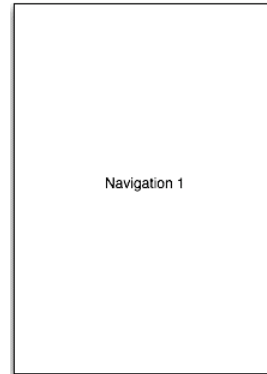
Adjust color rules "module" in prototype to various lighting conditions



Select Operating System



Microsoft Windows



You have selected navigational scheme 2



How would you describe the relationship between the variable

- Next to
- On
- Behind
- Next to
- On screen at the same time
- Not on screen at the same time

You have selected navigational scheme 2

Navigation 1

How would you describe the relationship between the variable

- Next to
- On
- Behind
- Next to
- On screen at the same time
- Not on screen at the same time

What type of lighting conditions do you have?

- Option 1
- Option 2
- Option 3
- Option 4
- Other Drop Down Menu

If the user includes a non-standard item, the user can select properties that describe the items physical and functional characteristics, including, size, shape, and how it is used.

3. CONCLUSION

Some of the benefits of developing this type of color expert system are the following:

- Creating an appropriate color environment with a reduction in resources used. This will not only improve the whole user experience but also save money on labor and project cost.
- Margin of error might be high for certain types of application building. Interfaces that use uncommon interface elements or color rules have not been appropriately defined might obtain undesirable results.
- Could be used for high fidelity prototype building. Capturing the “look and feel” in a prototype will contribute to more accurate usability results, which could also lead to a closer match to users needs and goals.

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