CSE 340
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Professor: Dr. Jennifer Mankoff
Note-taker email: jial8@uw.edu

Week 2 Lecture 2

Properties of People: Visual Perception

Notes

Adobe Creative Cloud advertisement example

Accessibility Issues: low-contrast text, colors on button do not match overall color scheme, Adobe logo very small, doesn't impact the audience as intended, failing to reach 17% of the world (people with vision impairment, many are men)

Visual Properties of People

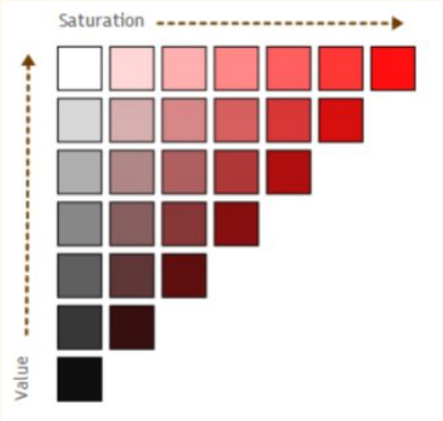
Good design is more accessible design, should consider all visual capabilities.

Cells in your eyes: RGB matches human eyes' model

- Rods: primarily for night vision and sensing movement, intensity, and shades of grey, there are many more rods than cones.
- Cones: senses color, mostly in the center of the retina, only 3 types of cones (RGB)

In Java, CSS, other GUI programming, color is 24 bit + 8 bits for alpha (transparency). 8 x 3 bites for each of red, green, and blue. Why not more bits? Why not have yellow specific LEDs? Our eyes only have 3 rods to perceive color!

Hue, Saturation, and Value (HSV) Table →

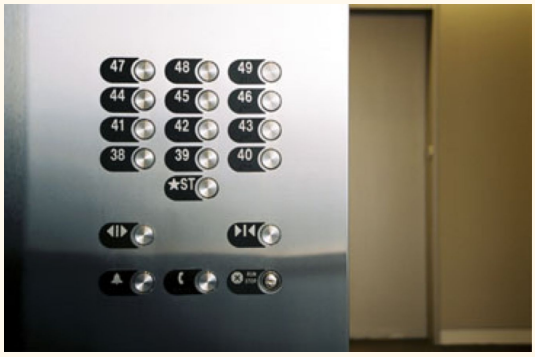


- Hue: Dominant wavelength of light
- Saturation: How much white/black
- Value: Amount of light in color

Perception of color is culturally defined!

Design Tips

- Do not rely on using blue for small objects, not strong enough contrast
    - And blue for older users (sensitivity to blue is reduced)
- Make sure contrast is high enough (WCAG ratio requires 4.5:1 contrast on any website)
- Minimize saturated colors (eyes need refocusing and may get fatigued)
- Use redundant cues (ex: STOP sign)
- Make things distinct in shape, color, and size
- Use small multiples (ex: 4 out of 5 star review symbol)
- Manage expectations (tell people what to expect, solid loading bar may seem faster than striped loading bar)
- Replace subtle tips with obvious ones →
- Use well-tested visual grouping strategies, but not too many!
    - People tend to use binary search as the easiest option when looking at something
- Minimize number of options
- Rely on recognition than recall
    - People have better long-term memory



Types of color-blindness (Red-Green Deficiency, fourth type of cone in women, Blue-Yellow Deficiency, total color-blindness... etc)

How fast can people see things? How the eye moves and sees?

Flashing images, when flickering at more than 50 times per second, begins to look like a continuous static image to us.

- How to implement Greyscale? Use flickering color, Black 25% of the time, 40-60 FPS
- Smooth pursuit: eye can follow a moving finger smoothly
- Constant movement: when reading a page, focus jumps everywhere

< 1-2 seconds typically “good response time” to perceiving images

> 10-15 seconds = “bad response time”

Conclusion

Human physiology influences and limits perception of images. Good design is accessible design. It is good practice to turn screen into Grayscale to see if contrast is enough.