Mini Project 3

Designing for color blind individuals

Deadlines

- October 14: Project announced.
- October 16: Need finding.
- October 23: Data collection.
- November 4: Project 3 discussion.

Background

- The (fictional) Dayton Transportation Company runs the following routes: Red, Brown, Green, Orange, Yellow, Blue, and Purple servicing the areas of Kettering, Beavercreek, Fairborn, Troy, Xenia, Dayton, and Riverside.

Background

- The bus schedule interface allows bus schedule operators to click on icons for each route each time a bus arrives at a stop.
- Once the route icon is clicked the system logs the current time and compares it to expected arrival time to determine how early or delayed the route is.
- The time (either positive or negative) is broadcast over the Dayton Transportation Company mobile application as well as the company’s X page.

Bus Colors

Colors and hex values from left to right:

Red (FF0000), Brown (7F6000), Green (9DE951), Orange (FEBC02), Yellow (FFFF00), Blue (002F8E), Purple (7030A0)

Challenge

- The Dayton Transportation Company is facing issues as some of the schedule operators suffer from varying forms of visual agnosia and are taking longer to click a bus route icon or clicking the wrong icon.
- This is costing the transportation company significant losses and creating a bad image amongst its riders.
- The company felt that it was more feasible to hire human-computer interface experts (i.e. you folks) to select a different Red, Brown, Green, Orange, Yellow, Blue, and Purple.

Your Task

- Your team must perform a need finding interview to determine the extent of color-blindness faced by the operators.
- You have been given 5 minutes to interview schedule operator Mr. Sean between 2:00pm – 3:20pm on October 16.
- Mr. Sean may or may not be color blind, but the company does not know this due to privacy regulations.
- You will gather data from Mr. Sean and additional operators on October 23 using a data collection interface you design. You will be given 5 minutes to collect data from each operator.

Your Task

- After need finding you need to select new colors for Red, Brown, Green, Orange, Yellow, Blue, and Purple.
- You cannot pick any new colors.
- You cannot add names to the colors.
- You cannot add borders to the colors.
- You cannot add color gradients.
- You cannot change the shape of the color icons.

Grading Criteria

- Data Collection Procedure (40 points)

  You must design an interface to record accuracy and speed when performing collection on October 23. The operators will use your collection interface to provide data for you to analyze.

- Experimental Design (20 points)

  You need to think of your experimental design when performing data collection as this will influence the statistical tests. Are you collecting data from one color at a time or all colors? Are you randomizing between old and new interfaces? Are you randomizing the color palette if you are using all colors?

Grading Criteria

- Statistical Analysis (20 points)

  Using the collected data, all teams must test the following hypotheses: (a) does accuracy change between interfaces and (b) does speed change between interfaces. This must be done for all operators.

- Overall Performance Improvement (20 points)
  - Your interface should improve speed and accuracy. If your interface causes a reduction in speed and accuracy, then your product is not usable.