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CSE 8316

Project Proposal - Analysis of Site Color Scheme

Summary

This project is an attempt to collect usability data based off one independent variable: color scheme. I will implement a website that utilizes A/B testing to collect data on users - information like success rate, time to completion, and overall satisfaction. Variation will come in the form of changing color scheme for different users in order to better predict how design influences user behavior.

Introduction

Designers often have to make difficult decisions when choosing to implement a design decision. When given two options, which should designers choose? One problem is that there is a real lack of data associated when choosing things like colors, fonts, and overall design styles. Most designers have to make decisions based off customer preference, but if

given the the choice, what are the perfect design decisions to make? I will solve a subset of this problem, that is: Can color scheme affect product usability and overall consumer satisfaction?

Background

Not much data exists that can help designers make decisions, but A/B testing gives designers an opportunity to test different designs and analyze their results. In this exercise, I would like to do the same analysis with using different color schemes. I'm curious, can we model the relationship between a website's color scheme and a user's completion time and overall site

usability? Do schemes with red make a user more anxious? Do blue color slow them down? Does green cause the site to be more "satisfying"?

My introduction to computer science started when I took Web Design I my sophomore year of high school. Before we students were allowed to learn how to create websites with HTML and CSS, my teacher insisted on teaching us about color theory, typography, alignment, and general user interface design principles. Making these decisions, however, was always very difficult for me, and I often chose color schemes at random.

Now as a computer science student interested in data science, I want to know: Why can't we make design decisions based off data?

Strategy

My plan for tackling this problem can be broken down as follows:

1. Implement a website that features built in A/B testing of different color schemes i.e. a site that changes colors for different users. This site will be in the form of a basic survey that users will complete. Part of that survey will include questions on usability and satisfaction. I want to use an online survey as the interaction style, because I believe it will help collect the largest set of numerical statistics - both through responses from the user and website data.

2. Distribute flyers around SMU's campus that encourage people to fill out the form I've created. Using the chance to win a $50 Starbucks gift card as motivation, my plan is to

get as many students to fill out the form in a week.

3. Collect data on students as they fill out the form. Some of the form data will include: how much they use technology, how technologically savvy they are, and basic demographic questions. This information will be used later to weight their responses.

   At the end of the form will be questions *based off* but not equivalent to the [NASA-TLX](#), which will help measure the effort that the user put into the form. I'm using this evaluation technique, because it will include questions like "How rushed were you while completing this form?", which I believe will correlate with color scheme.

   Finally, the site will keep track of basic user information like browser, device used, time to complete the form, whether or not the form was completed, and other technical statistical data that can be used to analyze user behavior.

4. The final part of this project will include an analysis of the data collected. I'm interested in what kind of conclusions about usability can be drawn based off changing color scheme.

Follow Up Actions

If the data collected is sufficient, I would like to create a machine learning model to try to predict some statistic. I'd be interested if color scheme is one of the major variables that accounts for the decision that the machine learning model makes. Moving forward, I'm very interested in doing formal academic research on this topic.

Rough Schedule

Timeframe: two months

      Week 1: Backend implementation

      Week 2: Frontend implementation

      Week 3-4: Data collection/preliminary analysis

      Week 5-7: Data analysis and model implementation

      Week 8: Project summary and presentation

Project Presentation

I would indeed like to present my findings to the class, but do not have a preference for a date yet.