Thesis Portfolio

A User-Friendly Vertical Plant Management System
(Technical Report)

Understanding the Prevalence of Color-Blind Accessibility in Websites
(STS Research Paper)

An Undergraduate Thesis

Presented to the Faculty of the School of Engineering and Applied Science
University of Virginia • Charlottesville, Virginia

In Fulfillment of the Requirements for the Degree
Bachelor of Science, School of Engineering

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Spring, 2021

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Sociotechnical Synthesis

A user interface connects people to information. Some examples of interfaces include phone applications, websites, and IOT (internet of things) enabled devices. When designing interfaces, an important but often overlooked consideration is usability. This focus on usability couples my technical project to my STS research. In the technical project, my team constructed a vertical plant management system that aims to be user-friendly through a smart-phone application. In the STS research, I examine the recent socio-technological state of a specific type of usability, color-blind accessibility in website technology.

The technical project is an electrical and computer engineering project. It addresses automated plant care for those living in environments where space is limited. Each vertical tier of the plant management system can house a different type of plant. The tiers are stacked on top of each other to save space. Automation of plant care is achieved through hardware and software design. A small computer, called a microcontroller, receives data from soil moisture sensors and delegates water and lighting outputs to turn on based on custom plant parameters. A phone application abstracts the electrical hardware, making the system more usable for those with non-technical backgrounds.

The STS research aims to understand a specific area of usability aimed towards people with disabilities called web accessibility. In the research, I focus on the prevalence of color-blind accessibility in websites. Color-blind accessibility is designing websites with certain key features to account for color blindness. This prevalence is affected by a variety of social and technological factors. Delving into these factors provides insight into the complexity of designing for color-blindness in modern website creation.