

Thesis Project Portfolio

Back-end Software Development: A Look into the Importance of Data Verification

(Technical Report)

Designing Accessible 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

Jonathan Hail

Spring, 2023

Department of Computer Science

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Executive Summary

My technical project follows the work I did at my summer internship as a Walmart Software Engineer. During my internship, I developed a back-end service to ensure Walmart financial services associates have the proper training for the service that they are providing to the customer. My STS project focuses on how websites can be designed to remain accessible to potential users. These two are connected because this research will allow me to properly research how software could be more accessible, so I can design better software at my jobs in the future and not exclude a certain population.

For my technical project, I worked on financial services back-end software. To ensure proper training of financial services employees, I implemented a service to check whether each associate has taken the course required for the actions they will perform. This was implemented as an API which provided course information of the associate based upon their employee identification. To do this, multiple services had to be integrated together in order to create the end result. In the future, this could be applied to ensuring training across multiple other departments.

In my Capstone Report, I detail further choices put into creating the API. This includes choices such as which language and framework to use. From there, the process of creating the API was detailed. This process includes steps of programming the API and communication in order to ensure it met the requirements. As aforementioned, the API also had to communicate with multiple services in order to function, so integration of them was a key step in the process. Once created, it had to be tested and reviewed to integrate with the main back-end service. Documentation was created once the code was approved.

For my STS Project, my underlying questing is how websites could be designed to improve accessibility. In my paper, I explore the history of website accessibility in legislation and court cases relating to it. From there, the importance of web accessibility is explored and how it could be improved. This also includes challenges that are faced in incorporating a good level of accessibility in websites and how they can be tested to ensure that they are accessible.

This topic is important to ensure that new technologies can be utilized by the widest audience as possible, as excluding people from technologies that can empower them is not ideal. If more developers are aware about differing disabilities that prevent a certain population from using their software, they could add more design features that allow the wider audience to use their software. This would be mutually beneficial for both developers and the general public as the developers would increase the audience of their software and it would allow the public to have equal opportunity to put said software to use. Also, issues excluding populations should be resolved, as they can have certain political consequences, some directly and some indirectly. The direct consequences of this would be the immediate exclusion of the potential users from using the software. This is not ideal as it not only excludes potential users for the developer, but also is preventing certain people from using it. The indirect consequence of this is whatever the software could be enabling users to do, such that potential users that cannot access the software are also excluded from the end use. The relevant social groups are people who need accessibility features (such as colorblindness).