**Thesis Project Portfolio**


**A Proposal for a Web Accessibility Course**
(Technical Report)

**Beyond Compliance: Rethinking Web Accessibility Through a Multi-Level Perspective**
(STS Research Paper)



An Undergraduate Thesis

Presented to the Faculty of the School of Engineering and Applied Science
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Bachelor of Science, School of Engineering



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**Sociotechnical Synthesis**
(Executive Summary)

*No One Left Behind: Creating a Digitally Accessible World*

At the beginning of my summer internship, I met an accessibility specialist who explained that less than 4% of websites on the internet are accessible to those with disabilities. I learned that some people have visual impairments that require them to rely solely on their computer's keyboard and auditory assistance tools. Similarly, others have auditory or cognitive impairments that require websites to have closed captions, transcripts, intuitive navigation, and more. Often, these websites are broken and don't follow web content accessibility guidelines, which makes it difficult for assistive technology to relay information to users. For example, if the HTML code on a website is not clean and concise, then a screen reader will not be able to read out loud the contents of the site to someone who is blind. Web developers may not realize that their disorganized code alienates an entire population of users, and this overall lack of awareness regarding accessibility concerns is a prominent trend throughout society. There is a wide range of abilities across the globe, and everyone must be able to access the internet.

Learning that over 96% of websites discriminate against those with disabilities was a shocking notion that propelled me to reflect on my education about digital accessibility. Out of the twenty computer science courses I had taken at the University of Virginia (UVA), only one class mentioned accessibility. Even so, the discussion was limited to a singular slide on a PowerPoint presentation. Discouraged by this fact, I was inspired to combat the lack of awareness regarding accessibility at UVA. The technical portion of my thesis produced a course curriculum proposal for a digital accessibility class to be taught at UVA. The course teaches undergraduate computer science students about the importance of accessibility, the different

types of disabilities and assistive technologies, Web Content Accessibility Guidelines (WCAG), HTML and document structure, CSS and design considerations, multimedia and JavaScript accessibility, and testing and maintenance. These topics provide students with a well-rounded perspective on the importance of accessibility considerations and how to build accessible websites.

While exploring the lack of education in society surrounding digital accessibility, I found trends that suggested web accessibility is a broken system. In my STS research, I focused on analyzing web accessibility through a multi-level perspective (MLP) framework. Here, I identified the multitude of individuals and groups operating on varying levels of web accessibility and how they contribute to the systemic problems. Examining the web accessibility regime revealed inconsistent enforcement practices and a significant flaw in the design and development workflow. Delving into niches brought attention to the fragmented community and education initiatives. Inspecting landscapes stressed the importance of the web accessibility community staying attuned to technological advancements and developments. These results emphasize the urgent need for systemic changes to web accessibility.

While exploring both the technical and societal elements of web accessibility, I often found myself reflecting on the "why." I recognize that the digital world has expanded rapidly over the past few decades, and inclusivity was not a top priority amidst its development. A broken system fueled a lack of awareness in society regarding accessibility considerations, as aspiring designers, developers, and engineers lacked education on the topic unless they had a disability or someone close to them did. There are many layers to web accessibility, but the current model where actors lack interaction between levels is the crux of the issue. As I further my career in technology, I plan to continue evaluating the "whys" behind systems to ensure that

the products I build promote a more equitable future. I strive to work towards a more inclusive world where no one is left behind.