

Thesis Project Portfolio

Enhancing the Computer Science Curriculum with Web Accessibility in Web Development
(Technical Report)

**An Analysis of the Actors of the Internet: The Push for a Coordinated System to Create a
More Accessible Web**
(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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Table of Contents

Sociotechnical Synthesis

Enhancing the Computer Science Curriculum with Web Accessibility in Web Development

An Analysis of the Actors of the Internet: The Push for a Coordinated System to Create a More Accessible Web

Prospectus

Sociotechnical Synthesis

(Executive Summary)

Scrutinizing the Systems Surrounding the Internet for a More Accessible Web

An examination of the million most popular websites conducted by WebAIM found that over 97% had accessibility issues. This means that someone with a disability has an extremely high chance of encountering a website that is, at best, mildly frustrating to use or, at worst, impossible to use. Both projects are proposing changes in order to make the web more accessible. My technical report examines the existing computer science curriculum at the University of Virginia (UVA) and proposes novel content to provide future web developers with a better foundation about web accessibility. My STS research paper uses actor-network theory and the power in translation model to examine the sociotechnical system surrounding the web and proposes changes to make the system more effective at fostering accessibility.

Web developers are at the forefront of web development. My technical project scrutinized computer science curriculum at UVA; it is a reflection on my own education, both what I had learned and what I wished I had learned. My project examines CS3205 – HCI in Software Development and CS4640 – Programming Languages for Web Applications which are electives whose content is most relevant to web development. CS3205 provides the basic foundation of user interface design with accessible design being a periphery topic. CS4640 provides the basics of web programming but does not adequately emphasize the consequences of poorly written code. However, both classes fail to provide a solid understanding about web accessibility and its importance. Both classes have web accessibility as a periphery topic that is referenced rather than being directly discussed. My technical project proposes teaching how

disabilities impact people's ability to engage with the web and the importance of web accessibility in order to fill this gap in education.

However, web developers are not the only contributors to the internet. My STS research examines the system surrounding the internet as a whole. I determine that the actors in the system are law making bodies, regulatory bodies, companies, web developers, technology, and individuals with disabilities. Using actor-network theory and the power in translation model, I derived the roles, flaws, and motivations for the actors. Seeing how the system was not operating efficiently to best foster web accessibility, I propose new roles, ways to overcome flaws, and motivations for the actors. The greatest shortcoming of the system is a lack of applied power in the system causing the system to operate as a disjoint unit rather than a cohesive whole. By defining new relations between actors and framing the system as one whose purpose is to foster accessibility in the web, the system may be more effective at making the web more accessible.

Pursuing both projects in tandem highlights the complexity of the web accessibility problem. My STS research project contextualizes the place of the web developer in the greater system surrounding the internet; without my STS research project, I would have thought web developers to be independent agents solely responsible for the web. Both projects examine the gaps in responsibility or education that have led to the accessibility issues the web faces today. The findings from both projects emphasize the importance of self-awareness about the consequences of one's actions and personal responsibility.