Undergraduate Thesis Prospectus

Being Customer Centric: The Vital Perspective for Success in the Corporate Environment as a Software Engineer

(technical research project in Computer Science)

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Visually Impaired Americans’ Struggle for Accessible Interfaces

(sociotechnical research project)

By

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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General Research Problem

How can user satisfaction with digital systems be improved?

Digital systems have reshaped information and service delivery. Services once reliant on in-person interactions are shifting to web-based platforms. This digital evolution raises an issue: accessibility. The U.S. Census Bureau reported that, in 2019, around 41 million Americans identified as having a disability. Accessibility is more than convenience, it represents a human rights concern. The significance of accessibility extends beyond social inclusivity. Critical tasks, such as bill payment, job applications, healthcare access, and online education, now rely on digital systems. But, a substantial portion of the U.S. population encounters barriers that hinder access to these services. This results in digital divide that biases against individuals with disabilities, limiting their inclusion and opportunities. Inaccessible digital systems exclude a significant demographic, violating principles of inclusivity and equitable access. Furthermore, it restricts the potential customer base for businesses neglecting accessibility in their digital interfaces.

Legislation such as the Americans with Disabilities Act (ADA) in the U.S. has established accessibility standards and emphasized access for individuals with disabilities. Nevertheless, a disconnect persists between legal mandates and practical implementation.
To bridge this gap and enhance user satisfaction, organizations typically follow established accessibility standards like the Web Content Accessibility Guidelines (WCAG).
Improving user satisfaction with digital systems is more than convenience; it is an essential imperative. Prioritizing accessibility in design bridges the digital divide.

Being Customer Centric: The Vital Perspective for Success in the Corporate Environment as a Software Engineer

Department of computer science, Rosanne Vrugtman.

Introduction

As demands for software engineers continue to rise, an increasing number of aspiring developers are funneled through the computer science curriculum. While the existing computer science education methods effectively impart technical skills, they fall short in adequately preparing students for the intricate demands of the software industry. Notably, there is a lack of emphasis on the concept of customer centricity. In contrast to the controlled environment of the classroom, where the focus is primarily on technical proficiency, a software company's primary objective is to deliver products and services that maximize customer satisfaction. Unfortunately, the current computer science education fails to equip students with the essential techniques and philosophical foundations required to optimize customer centricity. This paper aims to examine my personal hardship during a software internship, as I transitioned from the academic realm to the software industry. Furthermore, it proposes a compelling modification to the existing computer science curriculum, suggesting the incorporation of teachings that instill a customer-centric ethos within the computer science curriculum.

State of the Art

The typical academic curriculum progression consists of fundamental topics, advanced fundamentals, software development strategies, and advanced subjects. This proposal specifically targets the software development strategies phase, with no intention to alter the foundational software principles. In the realm of software development strategies, Agile has

emerged as a widely accepted industry-standard methodology. Agile methodologies prioritize iterative, adaptable approaches, emphasizing collaboration, flexibility, and the incorporation of customer feedback to enhance the efficiency and quality of software development. Many computer science programs offer courses on Agile methodologies, but these courses often adhere to predefined requirements rather than fully engaging with the dynamic aspects of customer interaction.

Rather than a rigid adherence to predefined requirements in the curriculum for software development strategies, it is advisable to introduce an element of dynamism by incorporating the presence of a customer. This can be achieved through the integration of case studies or the introduction of scenarios involving customer interaction. Such an approach better mirrors the software industry, demanding unique and adaptive strategies to achieve the overarching objective of customer satisfaction. This approach not only aligns the curriculum with industry realities but also provides students with valuable opportunities to develop essential soft skills. Engaging with customers in a simulated or case-based environment encourages students to employ effective communication, active listening, empathy, and problem-solving skills, which are vital in the software development field.

Since this has not yet been implemented, additional experiments need to be conducted regarding student satisfaction, feasibility, and efficacy of the curriculum alternation. Gathering this data in the form of experimental trial runs of the class is necessary before implementing it fully in the computer science education process.

Visually Impaired Americans' Struggle for Accessible Interfaces

In the US, how have advocates for the blind and visually impaired pursued more inclusive digital design?

Introduction

Today, we live in an era dominated by digital interfaces. Due to the reliance on digital mediums, many believe that equal access to information and services is a fundamental right that should be extended to all members of society, including those with disabilities. Among them, the visually impaired have faced unique challenges in navigating the digital landscape. Since the introduction of the internet, the United States has witnessed a growing movement aimed at ensuring that the digital world becomes inclusive for this demographic. This research paper examines the strategies and efforts employed by advocates for the visually impaired to pursue more inclusive digital design. In doing so, aim to understand the key participants, their motivations, and the impact of their work.

Related Research

The call for inclusive digital design aligns with broader national efforts to promote accessibility and digital equality. In the United States, the Americans with Disabilities Act (ADA) has played a pivotal role in advocating for accessibility in digital interfaces. The ADA established the legal framework for equal access for individuals with disabilities, but the specifics of digital accessibility have been further explored and shaped by ongoing research. In particular, publications like "Web Content Accessibility Guidelines (WCAG)" from the Web Accessibility Initiative (WAI) have set industry standards for digital accessibility. Despite this, Over 90% of websites don't even meet single-A compliance with the WCAG (Cahalane).

Researchers have also conducted studies on the challenges faced by visually impaired individuals in the digital realm, highlighting the need for change. Unlike standards set by WCAG, additional research summarizes that the one-solution-fits-all model is inadequate without considering the levels of visual impairment when providing customized web experience (Fetari). Despite the mixed opinions, most advocates and researchers agree upon the lack of accessibility in most websites.

Participants

National Federation of the Blind (NFB), one of the most prominent advocacy groups for the blind and visually impaired, has been at the forefront of the fight for digital inclusivity. Their agenda focuses on ensuring equal access to information, employment opportunities, and education through advocacy, litigation, and education. In the words of an NFB advocate, "The tools to build web and software accessibly are there, but many businesses and developers don’t know the importance of accessibility" (Mason).

American Council of the Blind (ACB), is another influential organization working to improve digital accessibility. Their primary goal is to break barriers for the blind and visually impaired, either through legal action or advocacy, enabling them to lead independent lives. Kim Charlson, ACB's President, explains, "Digital accessibility is about making sure our community isn't left behind in the digital age." (ACB). For example, in a recent court case on October 24, 2023, The American Council of the Blind won nationwide Disability Rights Class Action Against Quest Diagnostics for use of inaccessible touch screen kiosks.

World Wide Web Consortium (W3C), an international community that develops web standards, plays a crucial role in setting guidelines for digital accessibility through the Web

Accessibility Initiative (WAI). The consortium's approach is guided by four principles "Perceivable, Operable, Understandable, and Robust" (POUR) to create a more inclusive digital environment. "Accessibility is not a feature, it's a fundamental aspect of the web," notes Tim Berners-Lee, the inventor of the World Wide Web (W3C).

Government agencies have also taken steps to promote digital inclusivity. The Federal Communications Commission (FCC) and the U.S. Department of Justice (DOJ) have both issued guidelines and settlements related to digital accessibility. These initiatives reflect the government's commitment to upholding the ADA in the digital context. From the FCC's accessibility program, their goal is to " require all electronic and information technology that is developed, procured, maintained, or used by a federal agency to be accessible to people with disabilities." (FCC).

Technology companies are critical participants in the pursuit of digital inclusivity. Major players like Apple, Microsoft, and Google have made efforts improving accessibility features in their products. For example, Google has made accessibility a focal point for all their interfaces quoting, "Access is only the starting point. We're co-creating a world where people with disabilities can thrive."

Conclusion

The pursuit of more inclusive digital design for the visually impaired comprises accessibility, technology, and social equity. As this research paper prospectus has outlined, these advocates have made significant strides in raising awareness, advocating for legislative changes, and pushing for inclusive design practices in the digital realm. This research endeavor aims to delve deeper into the strategies employed, the challenges faced, and the outcomes achieved by

these advocates. By highlighting these efforts, this research seeks to contribute to a broader understanding of the evolving landscape of digital accessibility.

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