Thesis Project Portfolio

Developing Design Features to Facilitate AI-Assisted User Interactions

(Technical Report)

An Analysis of User Experience and Web Accessibility of Government Websites in Developing Countries for the Disabled People

(STS Research Paper)

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Executive Summary

In this 21st century, every company aims to be the next defining company in terms of brand, customer loyalty, revenue, customer experience and with AI's introduction, this dynamic landscape has taken over the steering wheel. Customers now expect not just exceptional product interactions but a holistic experience that includes exemplary support, service, execution, and a steadfast commitment at every stage of their journey. Providing customers with these interactions that save time and effort is the top priority, but often various websites fail to incorporate the varying needs of users ignoring the importance of web accessibility. Therefore, my STS and Technical project revolves around the intersection of user experience, inclusivity, and effective information access, acknowledging that diverse user needs must be considered in the design of interfaces, whether for business intelligence tools or government websites.

Interactive software tools employing generative artificial intelligence (AI) that help users formulate custom system queries are increasingly needed with growth in data quantities, relationships, and complexity. The technical work develops and evaluates design features to facilitate AI-assistive user interactions in the domain of log management. Applications in this domain must address needs of experienced users wishing to formulate queries by writing lines of code, as well as novice users lacking coding skills and an understanding of relationships between system variables and attributes. The design features seek to balance user desires to make goal-oriented, customized queries, with minimal constraints on exactly articulating pre-defined prompts. To conceptualize user interface designs and workflows, we iterated through a series of wireframe prototypes ranging from low fidelity to high fidelity with continuous feedback from the client to improve and increase the accessibility of our designs. Usability evaluations were conducted with subject-matter experts in log management, and usability experts in heuristic

evaluation. We introduced three important design features, which included 1) refinement of search categories, 2) context-aware prompt recommendations, and 3) customization of query input per a user's technical ability. We focused on these key elements to make searching easier for clients and improve the accessibility of the platform to incorporate different levels of technical expertise. In our results, we found that the user behavior varied based on different levels of AI assistance and each feature illustrated the impact of design choice on guiding the user to a desired result.

Technology is not just a tool but a transformative catalyst, fostering innovation, efficiency, and connectivity. It addresses global challenges and redefines the human experience, emerging as a fundamental agent of empowerment and change. Despite its transformative potential, many websites in developing countries fail to meet Web Content Accessibility Guidelines (WCAG), particularly disadvantaging the disabled population. An estimated 16% of the global population, or over 1.3 billion people, live with some form of disability, a multifaceted concept referring to impairments limiting an individual's ability to engage in typical daily activities. In an increasingly digital world where rapid advances are being made each day, the accessibility of websites for people with disabilities has emerged as a pivotal and often overlooked facet of inclusive design. Therefore, my STS project focuses on understanding and analyzing how user interfaces of government websites accommodate people with disabilities across developing countries specifically Turkey, Pakistan, and Bangladesh in the form of case studies. The paper analyzes the current adherence of these countries to WCAG standards along with uncovering the potential gaps present in the policies and the societal view of disability. All these case studies had similar conclusions of government websites failing to address the issue of disability-accessibility with general failure to meet minimum web accessibility standards.

Dedicated awareness programs with alignment of public policies to international web accessibility standards are needed to prevent the disabled population from being marginalized. Further, the paper introduces the limitations of this study and offers some potential solutions that should be implemented to create an inclusive environment for the disabled population.

In conclusion, both projects provided valuable exposure to diverse website interfaces, spanning business analytics and government sectors. Designing interfaces for potential client implementation enhanced professional skills and helped build project management acumen. The STS project broadened my understanding of accessibility and diverse user needs. Moving forward, the research for this paper could be expanded by conducting wider user testing to yield more meaningful insights and by performing comparative analyses among other developing countries for the STS project.