Evolving UI Design: CNN's Article Elevate

(Technical Paper)

The Evolution of Web Design: Analyzing Innovations and Ethical Imperatives

Over Two Decades

(STS Paper)

A **Thesis Prospectus Submitted to the**

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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
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A. Introduction

In the rapidly evolving digital landscape, user interface (UI) and user experience (UX) design have become cornerstones of modern web development. They not only shape how users interact with online content but also influence the inclusivity and accessibility of digital platforms. With websites like CNN experiencing immense traffic (especially during the time of this paper), balancing cutting-edge design with functional and accessible interfaces is critical. The challenges are multifaceted: ensuring optimal performance across devices, adhering to accessibility standards, and fostering user engagement.

This thesis prospectus situates these challenges within the broader context of digital inclusivity and innovation. It will examine how CNN's recent Article Elevate project, exemplifies the complexities of modern UI/UX development. The research also explores the implications of these innovations on user accessibility and engagement. Drawing on Actor-Network Theory (ANT) and technological momentum, the prospectus will investigate the dynamic interplay between human and non-human actors—developers, users, design frameworks, and accessibility guidelines—that shape web design evolution. This interdisciplinary approach aims to bridge technical and societal perspectives, offering insights into how digital platforms can better serve diverse user needs while staying at the forefront of innovation

B. Technical Topic

During my software engineering internship at CNN, I worked as part of the Web Foundations Team, a group dedicated to optimizing the CNN.com user experience. The internship was a blend of technical challenges and collaborative teamwork, where I contributed

to projects that aimed to improve both the functionality and design of the website. My primary focus was on the "Article Elevate" project, which sought to enhance the presentation of CNN's articles using their proprietary Stellar framework. This experience not only honed my technical skills in web development but also deepened my understanding of large-scale digital platforms.

A significant achievement during my internship was quickly learning CNN's proprietary Stellar framework. Stellar, which lacked comprehensive documentation, served as the foundation for the website's modular and scalable design. I played a pivotal role in contributing to its documentation while learning, ensuring future developers would have clearer guidelines. My team recognized my quick adaptation to the framework, which was instrumental in securing a return offer. One of my most challenging and rewarding tasks was the redesign of the navigation bar. This component was critical as it existed in multiple variations across CNN's site, including specialized sections like CNN Crime. Each variation required precise attention to detail, ensuring brand consistency while accommodating unique functional requirements. The new design is now live, marking a tangible impact of my work.

Agile Development and Collaboration

In collaboration with the team, I helped develop key JavaScript functions, isElevate and elevateWhenNeeded, which streamlined the implementation of elevated components. These functions allowed us to reuse existing components with minor modifications, avoiding the need for entirely new ones. This approach improved efficiency and maintained consistency across different article layouts. The internship presented numerous dependencies between teams and components. Understanding these interconnections was initially overwhelming but provided valuable insight into managing large-scale projects.

Working in an agile environment, I actively participated in ticket grooming sessions, where Figma mockups were reviewed, and tickets were assigned based on complexity. I collaborated with designers and product managers to clarify requirements and ensure the technical feasibility of proposed changes. Tools like Slack, Outlook, and Confluence facilitated seamless communication and project management.

Ethical Concerns

A key ethical principle in modern UI/UX design is ensuring that digital platforms are inclusive and accessible to all users, regardless of their abilities or the devices they use. A task I took part in with my mentor was implementing responsive design techniques to ensure that the website provided a seamless experience across different screen sizes. Using media queries, I defined breakpoints for small, medium, and large devices, dynamically adjusting margins, padding, and layout elements. This approach ensured that content remained accessible and visually clear, whether viewed on a smartphone, tablet, or desktop. By prioritizing alignment and spacing for diverse devices, my work contributed to making CNN's Article Elevate accessible on all platforms

Limited Experience with Figma

While I contributed to the technical implementation of design mockups, I didn't have the opportunity to deeply engage with Figma, a tool widely used by our design team. Gaining hands-on experience with Figma would have enhanced my ability to bridge the gap between design and development.

Reflections & Future Rollout

The work I contributed to, particularly on the navigation bar and Article Elevate components, is already live on CNN's website. Plans for A/B testing the new designs will help refine the user experience based on real-world engagement metrics. This gradual rollout strategy highlights the importance of data-driven decision-making in modern web development. This internship reinforced the importance of maintainable, scalable code. Through projects like Article Elevate, I learned the value of writing future-proof code that can adapt to evolving content and platform needs. Additionally, the collaborative environment taught me the importance of clear communication and teamwork, essential skills for any software engineer.

My time at CNN was a transformative experience, blending technical growth with professional development. I am proud of the contributions I made and the skills I gained, which have prepared me for future challenges in software engineering. The feedback and recognition I received from my team further affirmed my potential in this field, and I am excited to continue my journey as a software engineer returning with them.

C. STS Topic (Problem for Your STS Topic)

User Interface (UI) and User Experience (UX) design are critical elements shaping the usability and success of digital platforms. Over the past three decades, the rapid evolution of web technologies has redefined how users interact with websites. From static, text-heavy interfaces of the early 2000s to dynamic, interactive, and mobile-first designs, the transformation in web design has been driven by a combination of technological advances, changing user preferences, and business objectives. My research will focus on the innovations in UI/UX design across major digital platforms, while also using CNN's ongoing web transformations as a case study.

Specifically, I aim to explore how these platforms balance aesthetic innovation with accessibility and user engagement, considering the ethical implications of these design choices. This analysis will draw upon Actor-Network Theory (ANT) to investigate how human and non-human actors—such as developers, users, accessibility guidelines, and algorithms—interact to shape design decisions.

Research Problem

The central issue of my study is the challenge digital platforms face in adopting modern UI/UX trends while ensuring core functionalities and inclusivity. As websites integrate sophisticated design elements like infinite scrolling, dynamic content loading, and responsive designs, they often encounter tensions between improving user engagement and maintaining accessibility. This tension is particularly pronounced in media websites, where high traffic and user satisfaction are pivotal for revenue and brand credibility.

Analytical Framework

To frame my research, I will employ Actor-Network Theory (ANT), which allows for a nuanced examination of how technological innovations, social contexts, and regulatory frameworks interact to shape the evolution of UI/UX design. ANT posits that both human actors (designers, users) and non-human actors (algorithms, design frameworks, accessibility standards) form networks that influence technological outcomes

In addition to ANT, I will utilize the concept of technological momentum to analyze how historical design trends and early technological choices constrain or enable current innovations. I

aim to identify patterns and inflection points where technological and societal forces align or conflict

Methodology

This study will involve a mixed-methods approach, including:

1. **Case Studies**: Analyzing the UI/UX evolution of CNN.com along other popular platforms (X, Facebook, etc.). These case studies will focus on specific redesign projects, such as CNN's "Article Elevate" initiative, which modernized article layouts to enhance visual appeal and engagement.

2. **Content Analysis**: Reviewing design guidelines, accessibility standards (e.g., WCAG 2.1), and platform-specific UX design principles to understand the constraints and opportunities faced by web developers.

3. **Historical Analysis**: Tracing the evolution of web design trends over the last three decades to contextualize the current state of UI/UX innovation.

Case Study: CNN's "Article Elevate" Project

The "Article Elevate" project at CNN exemplifies the complexities of modern UI/UX design. This initiative sought to revamp article layouts to improve readability, visual engagement, and mobile accessibility. While the redesign introduced interactive elements and cleaner aesthetics, it also raised concerns about potential trade-offs, such as longer load times and decreased compatibility with screen readers.

By examining the decision-making process behind this project, I aim to uncover how CNN's design team navigated competing priorities, such as aesthetic innovation, user retention,

and compliance with accessibility standards. This case study will provide a microcosm of the broader challenges and opportunities in the field of UI/UX at an engineering standpoint.

Discussion

The evolution of web design is not merely a technical process, but a socio-technical phenomenon shaped by diverse stakeholders. Innovations like responsive design and dark mode enhance user experience but may also introduce new challenges for users with disabilities. The ethical implications of these trade-offs are significant, as they affect digital inclusivity and equity. For instance, as platforms prioritize mobile-first designs to cater to a growing base of mobile users, they must also ensure that these designs are accessible to individuals relying on assistive technologies. Failure to do so risks marginalizing segments of the user base, leading to ethical and legal repercussions. This research will contribute to a deeper understanding of how UI/UX innovations impact user engagement and accessibility. By applying ANT and technological momentum theory, the study will illuminate the complex interplay of technological, social, and ethical factors driving web design evolution. Ultimately, the findings will offer actionable insights for designers and developers seeking to create more inclusive and engaging digital platforms.

4. **Conclusion**

In an era where digital platforms are indispensable, the balance between UI/UX innovation and inclusivity is more crucial than ever. This prospectus has explored the technical and societal dimensions of web design, using CNN's ongoing transformations as a focal point. By employing ANT and technological momentum, the research highlights how human and non-human actors collaboratively shape the digital landscape. The findings aim to provide actionable

strategies for developers and policymakers to create more inclusive and engaging online

experiences, ensuring that technological advancements benefit all users equitably.

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References

IBM. (n.d.). *What is user experience (UX) design?* Retrieved October 4, 2024, from

https://www.ibm.com/design/thinking/page/framework/

Interaction Design Foundation. (n.d.). *The basics of user experience (UX) design.* Retrieved October 4, 2024, from https://www.interaction-design.org/literature/topics/ux-design

Nielsen Norman Group. (n.d.). *The definition of user experience (UX).* Retrieved October 4, 2024, from https://www.nngroup.com/articles/definition-user-experience/

Latour, Bruno. *Reassembling the Social: An Introduction to Actor-Network Theory.* Oxford University Press, 2005.

Norman, Donald A. The Design of Everyday Things. Basic Books, 2013.

Grimes, Matt, and Alex Siegel. "Building Modular Web Frameworks: Lessons from CNN's Stellar Framework." International Conference on Web Engineering (ICWE), 2023.

Hughes, Thomas P. Technological Momentum: Essays on the Dynamics of Technological Change. MIT Press, 1994.

Friedman, Batya, and Peter H. Kahn Jr. "Human Values, Ethics, and Design." The Human-Computer Interaction Handbook, CRC Press, 2002.