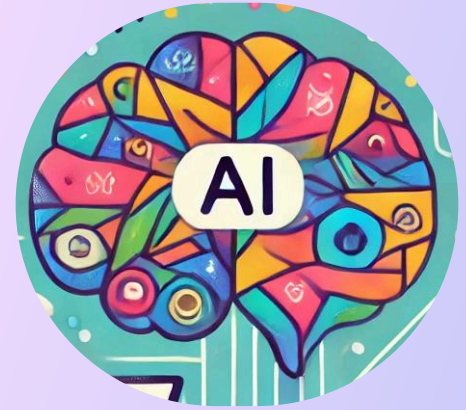


Considerations for AI Accessibility

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Over the last few years, we have seen a large increase in the number of AI technologies. These technologies are revolutionizing the way we live and work, and their impact over our lives is vast. However, we must also consider how AI impacts or can be used to simplify and improve the overall accessibility of an application.



The role of AI on elevating accessibility in our experiences

At the core of most AI applications is machine learning, which we can define as the way in which computers learn from data and improve their performance over time without explicit programming (Render, 2023). This means that the program identifies patterns to make predictions with minimal human intervention. AI does this by using what is called neural networks to acquire and process data through multiple layers that can recognize increasingly complex features of the data, this is known as Deep Learning. This way, applications like ChatGPT are trained in Deep Learning tools called transformer networks that allows them to generate responses based on prompts (McKinsey & Co., 2024).

In 2023, during the Artificial Intelligence and Accessibility Research Symposium, Jutta Treviranus, Director of the Inclusive Design Research Centre (IDRC), warned that while AI offers efficiency and objectivity in decision-making, it inherently biases against those who deviate from the norm, particularly people with disabilities. The reason for this is that in any normal set of data, disability is often an outlier, it is not the common pattern. As a result, because AI optimizes successful patterns of the past that do not take into consideration the outliers of the data set, they tend to fail in atypical scenarios.

Treviranus describes it best when said that disability is the Achilles heel of AI, the tool is built to be biased against difference. Different ways of doing a job, different digital traces, different work and education history, different social media topics, etc. (Treviranus, 2023).

The immediate question that arises is, how are AI technologies trained? How can we avoid biases in the data utilized to train them?

How can we as UX Designers contribute in this regard?

In the symposium's conclusions it was noted that laws and policies are needed to be developed to account for, and to address discriminatory decisions. With the emergence of AI tools and user involvement, opportunities can arise to generate fairness and ethical practices.

From our end, we can consider the different ways in which we can use AI to improve and expand the user experience to all users. A great case is the multiple ways in which AI can help with media accessibility, for example through Natural Language Processing (NLP) ¹, different techniques can be applied to AI to generate textual descriptions for images and other visual media on webpages.

1. Natural Language Processing (NLP) is the use of machine learning so that computers and digital devices can recognize, understand and generate text to communicate with human language (IBM, 2024)

For example, we can enhance automated alt text by improving accuracy and the richness of descriptions through AI. We can summarize information to even fit time constraints. We are able to train AIs in multiple languages, provided that we focus on a plain use of it. We can also train AI with stakeholder input and personalized user preferences. However, we must consider challenges such as addressing social sensitive information or biases, poor quality descriptions, the challenge of efficiently conveying appearance-related information, the length of descriptions, and the focus of the AI description that needs to be tailored to context and user needs (Wu, Singh, Pavel, Cooper, 2023). AI empowered captioning can also be difficult given that while it aids accessibility, it often lacks accuracy, especially for atypical speech or technical terms (Trewin, 2023).

A good solution is a Human-in-the-Loop (HITL) approach, which is crucial for maintaining the human element in AI-driven UX design. This involves continuous human intervention from both designers and users, and feedback throughout the AI development process, ensuring that the system evolves in alignment with human values and preferences. Another consideration could be to use a larger general model and fine-tune it with smaller, specific datasets to improve accuracy. Some authors recommend the use of tagging the media as "automatically generated" to mitigate the risk of poor-quality descriptions impacting the user's expectation or their agency. On the other hand, for complex information, breaking down a single alt text into a hierarchical structure can improve accessibility. (Pavel, Singh, Cooper, 2023).

Making AI a champion for accessibility

In short, AI has the potential to make accessibility a core foundation of user experience design, but achieving this requires deliberate and inclusive design practices. While these technologies can be promising, we also need to be aware of the challenges posed by the biases of AI systems. As UX researchers and designers, we must address these biases through collaboration with experts and a holistic approach such as HITL models, stakeholder inputs, and ethical AI training and monitoring practices.

In recognizing disability as an integral part of our design process rather than an outlier, we can shape technologies with inclusive designs for all. Thus, making AI part of a solution that fosters inclusivity.

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