Human Centered Design and Artificial Intelligence: HCAI

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Over the last decade technology has expanded from desktop dinosaurs to pocket supercomputers. In the midst of that expansion, the concept of Human Centered Design (HCD) emerged to bridge the gap between human understanding and technological interfaces. Recent years have brought Artificial Intelligence (AI) integration in the form of large language models (LLMs) and virtual assistants. Humans have evolved into a technology first society, and because of that we look for ways to make technology synonymous with human autonomy.

Human Centered Design as a concept is simple; the item being produced, tool or technology, should be created with the user's overall experience in mind. The credit for coining the term 'User Experience' is given to Apple's cognitive scientist, Don Norman, who was working as a "User Experience Architect" (Stevens, 2021). Norman wanted a term to describe the overall experience users had while using an Apple product. He asked; How does the user feel during the *entire* experience? Almost every successful modern company has some form of User Experience (UX) and User Interface (UI) expert or team working towards answering the same question.

User Experience on early computers was rough and sometimes hard for the average person to understand. In the early 1980's-90's early graphical interfaces and the internet started to globalize. What once was tied to a series of 0's and 1's turned into a screen, mouse, and icons. As they entered into the mainstream market, so did the need for them to be more user-friendly. Different companies emerged with different interfaces for accessing the internet, and eventually in the 2000s smartphones exploded onto the scene (Computer History Museum, n.d.). Apple stuck to their sleek modern design, and their competitor Android went with something more customizable and edgy. Both companies were designing for the user's experience in mind, one just wanted to do it better than the other. To this day individuals will stay loyal to a tech brand

just because they *understand* how to use it. That's what makes Human Centered Design so important, because without it there would be no way to improve the way your product connects with people regardless of the company you work for.

Quietly, for years, there has been a powerful technology growing in the background. Artificial Intelligence is not new by any means, but in 2017 a breakthrough was made with how the internal systems of AI think. Most AI was limited to a specific set of data, and not able to make the same connections that humans can. A group of computer scientists introduced Transformer architecture that was able to group large amounts of data together, and make better connections than AI was able to before the introduction of Transformers (Vaswani et al., 2017). Not long after the creation of the Transformer architecture did the LLM's take off, and now almost every website or application has their version built in. The overall creation and integration of Artificial Intelligence has happened simultaneously slowly and seemingly instantaneously. Today, it's hard to remember a time before all the AI assistants and generative media.

The very reason AI was built and integrated has HCD at its core, companies just want their products to be more personable and usable. AI is generally tailored specifically for its user, making it the perfect catalyst for understanding user behaviors and morphing to their needs. Right now we are all in the early stages of AI integration. In the coming years, my guess is that AI will just be assumed to be a part of the experience. I also think that each individual's experience could be tailored for them, like two individuals watching the same movie but experiencing two different endings. Artificial intelligence is still very new in the technology world, I could see it going in many directions, but one thing is certain and that is it is here to stay.

With most companies integrating LLMs into their mainframes, the need for HCD and AI to integrate is exponential. But what does that mean, exactly? It means several things, firstly that AI must be designed to be ‘Reliable, Safe, and Trustworthy’ (Shneiderman, 2020). Reliability in the world of AI means that the systems should provide accurate information consistently. Safe in AI means that no outcomes should harm humans in any way or shape. Trustworthiness is where the user's internal boundaries should step in to maintain control over the systems. The overall goal of designing AI as well as integrating it into any user experience is that we enhance the overall human experience not hinder. We should use AI as a tool not as a replacement; mostly because AI can be, and frequently is, wrong without human intervention.

Artificial intelligence without the guidance of humans is known to ‘hallucinate’- or present information as accurate with no bearing whatsoever. Other times AI has been known to cross personal boundaries with some unregulated LLM models. There should always be a level of transparency when working with AI, and every answer should not be taken at face value.

Ultimately, Human Centered Design and Artificial Intelligence were both created to make life easier for humans. Designers have a responsibility to ensure that systems remain understandable, safe, and responsive to human needs. When AI and HCD work together, technological advancement does not come at the cost of human control, trust, or well-being. Instead I see a future where both can create a technology that is reflective of the capabilities of the human mind.

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