Reimagining the Goals and Methods of UX for ML/AI

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Abstract

This position paper for the "Designing the User Experience of Machine Learning Systems" symposium challenges UX conventions and proposes new approaches for Machine Learning (ML) and Artificial Intelligence (AI). Through live demos and a presentation, I'll discuss how designers can reimagine the goals and focus of UX for the unique potentials of ML/AI. Using animistic design as an example, I'll propose how using simple intelligence, machine learning, and autonomous personalities can allow the designer to shift from crafting task oriented experiences for *users*, to building evolving, diverse, autonomous *ecologies* that support collaborative exploration and creativity for machine and human participants alike.

A new medium requires new approaches

Machine Learning (ML) and Artificial Intelligence (AI) are fundamentally different contexts for design than mobile, web, and product. ML/AI is often non-visual and focused on behaviors and extended interactions with other digital systems (in addition to people). For example, Autonomous cars will interact with a wide range of similarly autonomous ML/AI based systems including sensors, other cars, light posts, smart agents that negotiate human preferences, municipal traffic management systems, and, occasionally, humans.

The same will be true in AR/VR contexts, where ML/AI driven virtual "objects" live and interact with each other and people in digital environments. These smart virtual objects will represent data, serve as avatars for services, record "life" within the virtual, autonomously construct (and clean up) stuff, and collaborate with ML/AI systems in the real world. The ways in which these autonomous things behave, interact, communicate, embody a "lived" history, and evolve, calls for entirely new design methods and patterns.

Will conventional approaches to User Experience (UX) work well in contexts like this? What would a journey map look like? How would user interviews work? What would a content strategy be? How would a competitive analysis be useful? Would personas be an effective model for understanding interactions?

How do these methods make sense when the interactions are complex negotiations between multiple autonomous ML/AI systems, each with different characteristics? Who is the "user," or is "user" even an appropriate way to understand the problem?

More fundamentally, the notion of Human Centered Design (HCD) breaks down in sophisticated ML/AI systems like autonomous cars and living virtual worlds. When each digital participant has their own goals, needs, intentions, ethics, states, and methods, an organic, unpredictable, and evolving ecology is created. The human is no longer the center.

The advent of ML/AI requires the reimagining of design conventions, especially because the designed artifacts and the contexts they live in are radically new. To create systems that successfully use the constraints and opportunities of ML/AI to the fullest, the design of the complex, networked interactions must itself be designed (and cannot be left to pure engineering approaches). Autonomous cars need ethics, chatbots need personality, smart cities need to open-source themselves to other cities, and IoT systems need human configurable but autonomous protocols for data exchange.

Moreover, if we are to move beyond designing automation systems that replace humans, and instead build new ways to enhance human creativity, labor, learning, and collaboration, we have to design different kinds of interactions. And that requires different goals and methods for designers.

Reimagining Goals and Methods

My position is that designers of ML/AI need to set aside the goals of conventional HCD in order to adapt to this new context. I'm not arguing that they be abandoned, but instead be secondary to new goals and methods that fully embrace the affordances and potentials of ML/AI.

First, I'm interested in provoking a discussion that explores a wide range of new approaches. To move the field forward at this early stage, we have an opportunity to rethink the role of design, break from limiting conventions, and invent new standards.

By challenging participants to see ML/AI, as well as interaction design, in a fresh way, I hope to stimulate a productive brainstorming session with the goal of surfacing new perspectives.

Second, I'm proposing and demoing one approach that highlights some interesting possibilities, and attempts to address the challenges I've raised. This can help provide an example and strawman for the brainstorming.

Animistic Design

To seed the discussion, I will introduce Animistic Design. I've been exploring animistic interaction design over the last five years, and it uses the natural tendency of people to perceive inanimate things as being alive. In adults, this perception is understood to be a fiction, yet it remains a powerful metaphor that can open up the black box of "smart" objects (real and virtual).

Animistic Design proposes that digital things have distinct personalities. And rather than working with a single AI system, people engage with multiple systems, where each object has its own (non-anthropomorphic) intentions, moods, goals, data sources and methods.

By designing a multiplicity of autonomous personalities that interact with each other, humans and shared data, a rich ecology arises. This ecology changes over time as conversations occur, material is introduced, patterns are learned, and relationships are developed.

The goal for the designer then, is to create a rich, serendipitous and diverse milieu in which the independent things and people are conversing, exchanging, competing, provoking, making and collaborating.

This approach is in stark contrast to the solutionistic, master-slave relationship people seem to have with their devices. We want our things to accomplish tasks, and so we issue commands. Not that this isn't valuable, but there is so much more potential if people had the opportunity to work in a more interactive, conversational and propositional way with smart systems. What if we could treat smart systems as idiosyncratic colleagues and friends rather than as slaves?

There's another important benefit to Animistic Design. ML/AI systems have significant limits, and are actually kind of dumb. But by interacting with multiple systems, the smart human can select from and choose the most appropriate contributions from their hand-picked menagerie of personalities. This means the ecology is less brittle and can tolerate a higher error rate. And by embracing risk, unpredictability, and multiple points of view, there is an added benefit of a useful and relevant serendipity.

In addition, by giving objects appropriate personalities, designers can telegraph the point-of-view of the object, as well as its limitations. This provides a much needed transparency to smart systems. Not a literal transparency, but a curated, designed, metaphorical transparency that's an interpretation of inherently inscrutable ML/AI systems.

Animistic Design is one alternative to HCD that proposes, perhaps, an Ecology Centered Design.

More details on Animistic Design and its theoretical basis can be found in the referenced supporting papers and articles.

Animistic Demo

I'm currently developing a working prototype of a simple ML-based animistic system. In my presentation I'll present a short demo to provide addition stimulus for discussion.

The demo is being developed on a set of different sized iOS devices communicating with each other and a shared database of links, collected texts, images and other materials.

Current Research

As an educator, entrepreneur, researcher and practicing designer, I've been involved in interaction design for nearly 30 years. My current research interests are in tools for design experimentation and Animistic Design.

For the past five years, I've been experimenting with Animistic Design through a series of projects, prototypes, and writing. This has resulted in talks around the world, a 2013 CHI paper with Joshua McVeigh-Schultz ("AniThings: animism and heterogeneous multiplicity"), a 2016 journal article with Dr. Betti Marenko in Digital Creativity, Post-Anthropocentric Creativity Issue ("Animistic design: how to reimagine digital interaction between the human and the nonhuman"), and the first in a series of non-academic articles on Medium ("Rethink IxD"). In addition, some of my graduate students have created their own projects in response to Animistic Design, for example the recent "Trans-Actor" project by Sche-I Wang, Lee Cody and Xing Lu.

Supporting Papers and Articles

van Allen, P., and McVeigh-Schultz, J. 2013. "AniThings: Animism and Heterogeneous Multiplicity." CHI 2013, New York, ACM Press. 2247–2256.

Marenko, B., and van Allen, P. "Animistic Design: How to Reimagine Digital Interaction between the Human and the Nonhuman." *Digital Creativity* 27, no. 1 (January 2, 2016): 52–70. doi:10.1080/14626268.2016.1145127.

van Allen, P. "Rethink IxD." *Medium*, May 9, 2016. https://medium.com/@philvanallen/rethink-ixd-e489b843bfb6#.1f46dxf31.