

Generative AI Futures: A Speculative Design Exploration

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ABSTRACT

What generative AI futures do we want—and what futures do we not want? To imagine what might exist in the future, we apply speculative design to explore plausible scenarios for generative AI and human coexistence. In this paper, we present gAIrden and Onion AI: two in-progress speculative concepts of future generative AI tools, their use cases, and the systems in which they exist. We analyze the designs through lenses of Environment, Data Privacy, Embodiment, and Play. This trip into the future is driven by the research question: how might generative AI tools change how we produce creativity and culture? When we return to the present, we ask ourselves, how might generative AI support positive outcomes for individuals and communities? Can we predict (and potentially mitigate) negative consequences of generative AI tools? The speculative designs purposefully engage viewers in futures thinking to reclaim conversation around the future of technology.

CCS CONCEPTS

• **Human-centered computing** → Interaction design; Interaction design process and methods; • **Computing methodologies** → Artificial intelligence; • **Applied computing** → Arts and humanities.

KEYWORDS

Speculative Design, Generative AI, Creativity, Embodiment, Futures Studies

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1 INTRODUCTION

Generative artificial intelligence (AI) tools have quickly become part of our lives—popular apps like ChatGPT, Dall-E, and Midjourney garner both excitement and fear, and most of all, uncertainty. Conceptions of what constitutes creative practice are changing.

To imagine what might exist in the future, we use speculative design to stir discussion, probing us to consider what futures we want—and what futures we don't want. In this paper, we present two in-progress speculative visuals of future generative AI tools. We analyze the designs through lenses of Environment, Data Privacy, Embodiment, and Play.

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This exploration is driven by several research questions: How might generative AI tools change how we produce creativity and culture? How might generative AI support positive outcomes for individuals and communities? Can we predict (and potentially mitigate) negative consequences of generative AI tools?

2 RELATED WORK

The majority of recent research on creating with generative AI tools investigates prompt engineering [7], human-AI interfaces [3], and design principles [8]—which address immediate challenges in designing for AI-mediated experiences. We expand upon the existing generative AI research by applying speculative design, resulting in new considerations about future socio-environmental implications for creative AI.

3 METHODS

Speculative design is our method of inquiry, usually taking the "form of scenarios, often starting with a what-if question, and are intended to open up spaces of debate and discussion; therefore, they are by necessity provocative, intentionally simplified, and fictional" [2].

While there is no "correct" way to practice speculative design, there are common frameworks. For example, the futures cone illustrates the plurality of possible futures, ranging from probable, plausible, possible, and preferable [2].

Parallel Presents is another method to imagine "fictional parallel worlds" that stem from "contemporary realities" like social issues or cultural movements [5]. We extrapolated current conditions of the world to extremes (for example, climate change results in scarce energy resources, impacting the computing power available globally).

We involved generative AI tools such as Dall-E, Midjourney, and Stable Diffusion to create speculative designs and visualize artifacts that have yet to exist, bringing new, realistic manifestations of ideas to life.

4 DESIGN THEMES

The concepts are explored through four themes, which we chose by reflecting on opportunity areas for user empowerment (Embodiment, Play) and pre-existing concerns regarding technology (Environment, Data Privacy).

4.1 Environment

Kate Crawford's *Atlas of AI* cites that "running only a single NLP model produced more than 660,000 pounds of carbon dioxide emissions, the equivalent of five gas-powered cars over their total lifetime (including their manufacturing) or 125 round-trip flights from New York to Beijing" [1]. Conversations about generative AI are climate conversations.

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4.2 Data Privacy

Data Privacy is already a contested topic, as AI tools require enormous amounts of data, either input directly or indirectly through extracted data. Uploading personal information to AI raises questions about data exploitation, even post-interaction. This lens asks how AI futures protect or compromise personal data.

4.3 Embodiment

Generative AI currently relies on text-based interaction, but the future isn't limited to prompt engineering, and human creativity is situated in physical, social spaces. Through the Embodiment lens, we evaluate if, and how, our concepts support multimodal interaction paradigms to "situate the physically-embodied digital information in physical space" [6].

4.4 Play (Designing for ludic engagement)

Looking through the lens of Play lets us design to "promote curiosity, exploration and reflection" [4], which can broaden more diverse participation and interest in building technology. Counter to today's fixation on productivity tools, we wonder how generative AI might center joy, delight and leisure in support of desirable futures.

5 CONCEPTS IN PROGRESS

5.1 gAIrden

gAIrden (Figure 1) draws on the Parallel Presents method and is situated within the Plausible futures cone. The nature analogy shifts our temporal perceptions of computational speed and encourages sustainable resource management. gAIrdeners "plant" inputs (textbased or art requests)—but the AI-generation is not instant.

5.1.1 Environment. gAIrden creates "fast versus slow" AI, drawing from the fast fashion movement. gAIrdeners might monitor local climate patterns, identifying optimal conditions where human demands align with resource availability. While popups and badges increase eco-consciousness, the receipt's pay-to-play system will likely exacerbate inequities.

5.1.2 Data Privacy. The gAIrden's plants are directly owned in the way one might have a garden in their backyard or co-own a family farm. gAIrdeners hold full ownership of inputs (seeds) and outputs (plants). Local cities would receive individual's AI-energy usage data.

5.1.3 *Embodiment.* gAIrdens are composed of tangible robotic plants, with pots as computers running the AI model locally. gAIrdens become mini data centers. The plant physically grows to demonstrate progress and mechanically shrinks once rendering is finished. This tech "garden" may encourage people to connect to the materiality of AI, disrupting our notions of "invisible" computing.

5.1.4 Play. Gardening is often about nurturing progress, focusing the human-AI collaboration on process over product. The anticipation period creates a delightful (or surprising) reveal, reminiscent of a tree's first fruit after months of care. Generated pieces are minted with a badge indicating the sustainability of the production

(similar to LEED certifications) and could lead to a gamified system promoting "slow AI."

5.2 Onion AI

Onion AI (Figure 2) is inspired by participatory design and artmaking. A long-time resident tells the story of moving to this city, which becomes the prompt for an AI-generated layer. Two friends select the mural's sky and jump in excitement, resulting in an energetic apricot-pink horizon. Over time, the murals evolve as people interact with it—and become time capsules for the community.

5.2.1 Environment. The replacement of concrete walls and sidewalks with digital interfaces introduces more artificial technology into the environment. Large scale, constantly active generative AI is environmentally expensive. This leads us to question the necessity of technology in supporting art and creativity, especially when sustainability is compromised. Why not have real paint?

5.2.2 Data Privacy. While all contributors collectively own the resulting art piece, ownership of the input data (personal stories, voices, body mapping) is ambiguous. City-owned inputs may give rise to citizen surveillance. Art-making can be incredibly personal—and Onion AI makes it public. Even with playful technologies, we must be cautious about the data supply chain.

5.2.3 Embodiment. The voice and drawing inputs create inclusive touchpoints for co-creation that aren't reliant on prompt engineering proficiency. People express their lived experiences through "human" methods of communication (eg. storytelling or body language).

5.2.4 Play. Collaborative art-making involves taking turns, building on ideas, and elements of the game Telephone. People simultaneously work on a portion of the piece, with the art evolving through diverse inspiration and interpretation. Onion AI broadens participation—from kids, graffiti artists, locals—to co-create in a fun, low stakes way. Here, generative AI promotes delight to reclaim community-centered public spaces.

6 FUTURE WORK AND IMPLICATIONS

Our next steps include refining visuals, worldbuilding, and crafting origin stories to flesh out our speculative designs, exploring new systems of human-AI coexistence. We plan to experiment with ChatGPT for narrative generation and gather feedback on the emotional resonance of our speculations. Speculative designs can become an entry point to engage the public in futures thinking and imagine alternatives for the environment, policy, urban design and technology.

Based on our experience engaging in speculative design, one future research question of interest is: how might we empower the public to evaluate the impacts of AI and diversify participation when designing AI futures? We imagine a generative AI design toolkit and workshop that applies speculative design frameworks to codesign AI, restoring ownership to users to determine the future of technology.

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Figure 1: gAIrden speculative design concept. Visuals by Lauren Lin and images created with the assistance of DALL E 2.



Figure 2: Onion AI speculative design concept. Visuals by Lauren Lin and images created with the assistance of DALL E 2.

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