

A Ludic PSY AI-Game-Engine for Utopia: Exploring PI[AI] for a Viable Future

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ABSTRACT

This paper contributes to the discourse on human-AI co-creation through art-based gaming, drawing insights from a case study: the “Ludic PSY AI-Game-Engine” research project at the University of Applied Arts Vienna. The central output of the project is an “AI-Game-Engine” for experimental gameplay, tested in a public exhibition in Vienna in 2025, with 527 participants. Following the conceptualization of the “Ludic method” as developed by Margarete Jahrmann (2021), gameplay is a transformative experience that helps participants become ludic citizen researchers. By interacting with the AI-Game-Engine, programmed using the open-source Godot Engine and the Wave Function Collapse, participants create their utopias in collaboration with AI. The gameplay is designed not only for the pleasures of gaming but also to allow participant-researchers to reflect ethically on narratives within the game, such as the risks of user profiling and implications for technological freedom, as well as the emancipatory potential of AI, particularly regarding climate change.

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Ludic Method and Profiling

Following the Ludic method (Jahrmann et al., 2025), citizen-researchers start the game as their faces are scanned using Facial Recognition Technology (FRT), where profiling of individual characteristics results in tailored game personalization. While user profiling and personalization are often viewed as inherently progressive in robotics (e.g., Rossi et al., 2017), we focus on the risky and disruptive aspects of FRT as a unique subject for artistic and ethical inquiry. FRT is considered ethically sensitive because it closely analyzes human faces—the most identity-bearing aspect of selfhood—collecting data and generating categorizations based on participants' most unique and intimate features. This raises vulnerabilities for users, particularly given the controversy surrounding this technology in relation to privacy issues associated with surveillance (Müller, 2020) and Big Data (McAfee et al., 2012). As a result, player-researchers may experience discomfort and reluctance to trust the technology when sharing facial data for age and gender classification. However, they can influence their profiling through emotional expressions, shaping the game's course and making the experience more playful and potentially liberating.

Co-Creation and Ecology

Social imaginaries of utopia often emerge in science fiction as future paradises where technologies act as friendly helpers, enhancing our lives (e.g., Williams 2014). Using the open-source Godot Engine for real-time world-building, these utopias evolve through game-play supported by a Wave Function Collapse algorithm, which generates environments based on predefined rules and participant interactions. This human-AI co-creation unfolds as players reshape the virtual environment by building blocks, while FRT integrates data from their facial expressions into the utopia creation. However, the environment is populated with AI-objects which we term as creatures. These creatures' behaviors either disrupt player-researchers or support them in creating their ideal worlds. Ultimately, the potential of these worlds to become utopias, rather than dystopian environments, depends on how players navigate the tension between nature and concrete-like structures, as each block created necessitates sacrificing more greenery. Thus, the gameplay serves as a test-bed for ecological thinking, allowing for a reflection on the role of AI in issues like biodiversity loss and climate change. As an output of the gameplay, segments of these new worlds were 3D-printed as unique art objects, exhibited at TED AI Vienna and Angewandte Innovation Lab 2025.

AI-Game-Engine in Context

Considering that art-based engagement is a powerful method for involving the public in discussions about emerging and risky technologies (Roeser et al., 2018), we embrace AI-based critical gameplay as a playful strategy to explore citizens' experiences of AI and their ethical imaginaries on AI-trajectories. In doing so, we employ an approach to artistic research that aligns closely with technology ethics, taking into account both the risks associated with AI and its potential for human advancement (Coeckelbergh, 2020; Müller, 2020). Our focus lies in the novel forms of interaction emerging through human-AI co-creation, particularly as LLMs become increasingly integrated into creative and collaborative practices, thus challenging traditional notions of creativity (Coeckelbergh and Gunkel, 2025; Kaila et al., 2025).

Creature Evolution Findings

Creature behaviors are generated in real-time through prompts informed by interactions with other creatures. Reproduction spawns offspring with evolved code, emphasizing behavioral emergence over parameter variation. Across 486 behaviors and 402 creature types, patterns emerge: the most common evolutionary trait is the use of light. Early iterations use light for mood expression, later species evolve to use it as a tactical defense mechanism. Another branch of creatures evolved to survive by manipulating the game engine's time and physics, rather than just moving through space. While many creatures exhibit aggression, others evolved cooperative behaviors benefiting the group, suggesting a move toward hive-mind complexity. This real-time generative approach produces algorithmic life that evolves beyond designer intention, questioning where authorship ends and emergence begins.

Observation

During the 52-day exhibition at the Angewandte, 527 participants played the game. We evaluated players' emotional-sensory experiences in the context of the method of behavioral observations (Chamberlain and Broderick 2007). Initially, there was much reluctance regarding FRT, which to an extent shifted to intrigue and acceptance once we explained the facial data processing. More than two-thirds of players attempted to trick the facial recognition, adding an interesting dimension to the critical play. While roughly half of the participants seemed to play merely for pleasure, many embraced their roles as citizen researchers, discussing critical issues embedded in the game.

Future Vision

Technical improvements focus on real-time LLM "creature-evolution" and Wave Function Collapse generation to increase utopia complexity. We will also expand categories for biometric profiling, to deepen the critical investigation. Given the ethically sensitive nature of FRT-based profiling, we will further prioritize transparency and data protection, especially in terms of data safety measures including data minimization, anonymization, and encryption. The Ludic PSY AI-Game-Engine will be presented at exhibitions and conferences in 2026 and 2027.

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