

A Synergistic Connection: I Tell the Moon My Secret and the Moon Tells Me Yours

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Figure 1: The installation setup for the current exhibition.

ABSTRACT

I Tell the Moon My Secret and the Moon Tells Me Yours (ITMMSMTMY), created by artist Zoe Li in 2023, is an art piece featuring a robotic arm that repeatedly depicts the waveform of collected secrets, creating light painting photographs with the involvement of Moon. Only when the Moon appears within a certain field of view can the waveform of this sentence be successfully captured by the camera with a long exposure. That is to say, whether the trace of the waveform can be revealed is determined by the natural environment —

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only when the Moon is bright and clear in the night sky can this secret possibly be conveyed. The project experiments on the synergic dynamics among uncontrollable natural environments, a precise data-driven robot system and humans, fostering new discourse on their relationships through synergistic visual imagery. By portraying the robotic system as an active agent connecting humanity with the cosmic environment, the project also intends to depict the interconnection between these parties, shifting perspective from an anthropocentric view.

CCS CONCEPTS

• Applied computing → Media arts.

KEYWORDS

Interactive art, non-anthropocentric, cosmic environment, Moon, Robotic art

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1 INTRODUCTION

When it comes to the artistic perspective on the relationship between human, technology and environment, there's an increasing shift on acknowledging the influence of nonhuman entities. This shift challenges traditional anthropocentric perspectives that often place human agency at the forefront, potentially overemphasizing humanity's influence on our surroundings[1] According to DiSalvo and Lukens, moving away from anthropocentrism allows us to see humans as merely one component within a vast, intricate system of interactions, underscoring the critical need to understand how various forces, both animate and inanimate, collaborate or conflict in molding actions and experiences[1].

Concerning works that take a nonanthropocentric approach, the Kestrel Drone is a project centered on a biomimetic AI drone designed to prevent bird strikes in South Korea by adopting a bird's-eye view [8]. This project facilitates the coexistence of humans and animals through technological application, challenging the intrusive use of technology and human-centric AI while advocating for a redefined role of technology within the natural environment. From another perspective, Joaquín Fargas's work delves into the potential of technology to mitigate climate change [9]. For instance, his site-specific installation in Antarctica, known as Glaciator, features a solar-powered robot aimed at reversing ice thaw by compacting and crystallizing snow, trying to contribute to glacier preservation. Fargas's art engages with the glacier environment as its audience rather than catering to human spectators or participants, addressing the environmental repercussions of global warming. The well-known art project Telegarden directed by Ken Goldberg, featuring an industrial robot in a circular soil-filled container, accessible via the Internet, enables users to remotely control the robot and digital camera to water the garden and plant seeds[5].

These art projects highlight the importance of reconnecting with the natural world, a process that necessitates envisioning ourselves before the differentiation from other life forms. By moving away from prioritizing human activities and desires, this reconnection unveils possibilities for utilizing technology that might otherwise be overlooked or obscured in a conventional human-centered approach[1]. Moreover, adopting a non-human-centric viewpoint opens up novel narratives in the depiction of natural phenomena within art. The approach in the previous artwork, *A Sigh*(2021), by Zoe Li, shifts the viewpoint to a machine's reluctant response to an assigned job[6]. Differently, this project adopts a non-human-centric viewpoint by emphasizing the undeniable role of several natural factors. ITMMSMYMY employs a similar approach as Telegarden to provoke uncertainty by staging uncontrollable natural and cosmic environments and a precise data-driven robot system together, presenting intimate encounters between humans, machines, and environments. By focusing on the moon and weather's influence, it illustrates forces that elude human control and comprehension, thereby illuminating the complex network

of interactions that underpin our reality. It accentuates the interconnectedness of all elements—be they natural, technological, or human.



Figure 2: Final photographic representation of the secret painted by the moon

2 ARTISTIC CONCEPT

Illustrated in Figure 2, the robotic system works with the Moon as the light source to generate light painting photographs depicting the waveform of the gathered secrets. The key element of this project lies in the contrasting nature of the two parties - the robotic arm and Moon, involved in the process of light painting photographs creation. The robotic arm, representing automation and industrialism, with Moon, often symbolizing nature in cultural and literary contexts, creating an intriguing dynamic. The robotic system is controlled by humans using precise data such as coordinates, ensuring the accuracy of the patterns it draws. In contrast, the visibility of the Moon is uncontrollable by humans, rather, it is decided by the situation of the clouds, the weather, the air quality and of course, the phases of the Moon. The process of creation of this project highlights the expression of digital signals in an uncontrollable physical world. The Moon and the surrounding environment play a decisive role in the successful capture of synergistic photography. The potential for achieving a visually appealing image is dictated by the natural environment and the cosmic environment, rather than human or technological factors - Mother Nature can not be rushed. The role of the Moon also undergoes a transformation from a traditionally literary object to an active participant. Similarly, Guljajeva suggests using animal agents for experiencing nature-technology interaction described as in-direct post-participation [2]. In this project, we deploy Moon to complete the interaction cycle. The project establishes a space for nature as a subject, positioning it as a performer rather than merely an object of study or appreciation. This aspect of the work aligns with nonanthropocentric perspectives. It aims to stimulate a new discourse on the relationships between humans, technology, and nature through their synergistic visual imagery.

Furthermore, the act of sharing secrets embodies a profound expression of intimacy and relates to different traditions. Artists have previously employed this interactive approach to engage the audience. For example, Varvara & Mar's *Wishing Wall* (2014) invites

the participants to speak out loud their innermost wishes. The spoken words are then transformed into hand-written text, and then into a cocoon that evolves into a butterfly, displayed on a digital canvas [4].

In certain cultures, people confide their secrets to tree holes. Sharing secrets with nature reflects humanity's inherent trust and intimacy with the natural world. In this project, volunteer participants contribute their secrets, which will be visually revealed only when the Moon, as the light source for light painting photography, is present in the dark sky. This process is akin to humans entrusting the robotic arm as an agent to share these secrets with the Moon. For example, in their paper, Guljajeva and Canet Sola delve into the issue of placing trust in robots and further explore ways to enhance audience interaction with robotics in creative practices [3]. By employing a robotic system to facilitate this interaction, IT-MMSMTMY challenges the prevailing assumption that technology inevitably isolates humans from the natural world[7]. Contrary to this notion, the robotic system in this work functions as an agent, an intermediary, or, one might say, a priest, actively bridging the intimacy between nature and humanity. It acts as an agency in the practice of secret sharing, serving as an intermediary that connects humans with the environment.

The role of the robotic system in this project artistically emphasizes the essence of "relationality" for the audience, which also responds to Zylinska's feminist counterapocalypse, reimagining our connections with the environment as integral relationships [10]. Zylinska advocates for a model of subjectivity grounded in relationality, emphasizing the acknowledgment of precarity and interconnectedness between human and non-human relations, rejecting the concept of a separate ethical subject and appealing for collaborative coexistence in a post-industrial world. The act of sharing secrets with the moon serves as a poetic portrayal, illuminating the inherent intimacy between humans and nature. In stark contrast to the prevalent notion that technology deepens the divide between humans and nature, this piece actively intertwines the relationships between humans and the environment, potentially unfolding a spectrum of possibilities in which humanity, technology, and nature intersect.

3 TECHNICAL DESCRIPTION

3.1 Synergistic light painting photographs

Light painting photographs refer to an image created by 'painting' with a moving light, captured on camera, usually with a long exposure. In this project, the Moon works as the light source for long-exposure photography, depicting the waveform pattern drawn by the robotic arm. The camera, mounted on the robotic arm's flange, records the Moon's trace with a slow shutter speed, akin to the robotic arm using the Moon as a paintbrush.

3.2 System architecture

As detailed in Figure 3, the technical system architecture of our work encompasses three primary transition processes: from voice speech to waveform, from waveform to robotic arm movement, and from movement to Moon painting.

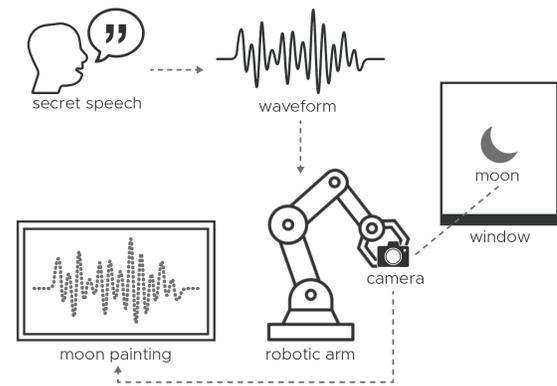


Figure 3: The technical system architecture of this work

From Voice Speech to Waveform: We recorded a secret sentence from each volunteer participant and transformed the audio recording into a waveform using Processing. This waveform is a 2D curve characterized by peaks and valleys. The corresponding waveform for each secret speech is then separately sent to the robotic system.

From Waveform to Robotic Arm Movement: To operate the robotic arm, the 2D waveform must be converted into 3D coordinates. Through extensive experimentation, we determined that the most visually appealing Moon Painting results from projecting 2D coordinates onto a spherical surface. This surface is centered at the base of the robotic arm, with a radius approximately 62.5% of the arm's span length. Consequently, we constructed an appropriate sphere, projected the 2D waveform onto this spherical surface, and derived its 3D coordinates. These coordinates are then transmitted to the robot arm's controller.

From Movement to Moon Painting: As the robot arm moves, it carries a webcam at its flange, which follows the robotic arm's movements, translating them into the Moon's trajectory. This visual representation is then displayed on a screen at the installation site, allowing the audience to witness the secret waveform being traced by the Moon. When it comes to the actual light painting photographs shooting, the flange carries a camera with a slow shutter speed, capturing the Moon and providing a final photographic representation of the secret as painted by the Moon.

4 CONCLUSION

I Tell the Moon My Secret and the Moon Tells Me Yours offers a unique exploration of synergic dynamics involving a robotic system, Moon, and humans. By gathering human secrets and visually representing them through a collaborative photography of technology and nature, the project aligns with Zylinska's feminist counterapocalypse, advocating for relational subjectivity and interconnectedness. The act of sharing secrets with the natural environment and the determined role of the natural environment in this work shift perspectives from anthropocentric and technicist notions, inviting contemplation on the multifaceted dynamics shaping our interconnected existence.

5 MORE ABOUT THE ARTWORK

Video link of the work: <https://vimeo.com/906985010> More images of the work: <https://zoelismwork.persona.co/itmmsmtmy>



Figure 4: The robotic arm depicting a waveform under the Moon

BIOGRAPHIES:

Zoe Qi-Jing Li is a PhD student in Computational Media and Arts at the Hong Kong University of Science and Technology (Guangzhou). She is an interdisciplinary artist investigating the abstract roles of human beings in a technological world and exploring the position of "self" within a system. She exhibited her projects at Shanghai Ming Contemporary Art Museum, xCoAx 2021, 2022 Beijing Biennial, Macao International Art Biennale 2023, TEI 2024, etc.

YuFan Li is an interdisciplinary researcher with backgrounds in engineering, design, data and art. She is a PhD student of Computational Media Art, Hong Kong University of Science and Technology (Guangzhou). Her current research interest lies in exploring color-related cross-modal phenomena with a focus on emotional meditation. Her research findings have been published in conferences and journals about AI art or data visualization, while her artworks have been presented in several exhibitions such as the Shanghai Biennale and Deviant Colors in Beijing.

Dr Varvara Guljajeva is an Assistant Professor in Computational Media and Arts at the Hong Kong University of Science and Technology (Guangzhou). Previously, she held positions at the Estonian Academy of Arts, Elisava Design School in Barcelona, and the University of Art and Design Linz. Her PhD thesis, "From Interaction to Post-Participation: The Disappearing Role of the Active Participant," was selected as the highest-ranking abstracts by Leonardo Labs in 2020. As an artist, she works together with Mar Canet forming an artist duo Varvara & Mar. Their works were shown at MAD, Barbican, Ars Electronica, ZKM, etc.

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