

PRESS RELEASE

Redefining Robotics: Enhancing Human Interaction with the World's Most Humanoid Android

A New Era of Robotics Focused on Empathy and Understanding in
Human-Robot Relations

Tokyo, June 27, 2024 - ATR and KiQ Inc. are excited to unveil their latest robotic art installation, "Shosa -Future Dialogue-." This human-centric android connects hearts through Japanese non-verbal communication, utilizing cutting-edge AI and sophisticated design to bridge the gap between technology and human empathy. The project envisions a future alongside robots with more humanity than ever before.

According to Nikkei BP, out of 100 different technologies, over 60% of media and lab directors chose robotics as the most anticipated tech of 2024. Supporting this anticipation, a 2023 survey by the Pew Research Center revealed that 45% of respondents felt humanoid robots would become part of daily life within the next decade. However, the question remains of how to seamlessly integrate robots into society. "One of the challenges robots face is how people feel a sense of heart through their interaction with robots. This project addresses that issue. Suppose robots that convey a sense of heart are developed; in that case, various appliances in our daily lives can evolve into more harmonious entities with us, leading to a more enriched society," stated robot supervisor, Hiroshi Ishiguro.

The "Shosa -Future Dialogue-" installation offers a unique one-on-one experience with an android, aimed at cultivating one's own "shosa." Originating from traditional Japanese culture, "shosa" refers to non-verbal communication that connects the body and heart, harmonizing oneself with others. In this exhibit, "shosa" is reimagined for the modern era. Participants will explore creating meaningful connections with a humanoid robot through this distinctive form of non-verbal communication, expressing a diverse and rich spirit in relationships with all forms of life.

The installation features sound design and lights that reflect the emotional state of both the android and the participant. Tomo Funayama developed the android's advanced interactive system along with Takashi Minato, Kurima Sakai, and Ryusuke Mikata. The

sensor system combines a depth sensor and an optical motion capture system, allowing the android to recognize human skeletal movements and hand gestures. As a result, while participants are engaging with the android, it responds with its own gaze, facial expressions, and body movements similar to human interactions. Surrounding sounds are generated according to the speed and coordination of the hand movements of both the participant and the android. The more harmonized the interaction, the more exhilarating the sound. The creator of this sound design, Kaito Sakuma explained, "We design sounds considering the ambiguity of transitions, creating multi-interpretative interactions." Kazuya Horibe designed the LED lights and visual display behind the android to evolve in conjunction with the android's emotional state and the current level of harmony. By combining expressions of movement, sound, and light, "shosa" is richly expressed, allowing participants to feel the heart of the android. Horibe elaborated, "Expressions of human 'heart' have been addressed in various forms of visual expression, but the idea to express the 'heart' of robots is new."

During the initial launch in October 2023, 65% of participants said they felt an emotional connection with the android, while 70% said they felt kinder towards themselves after the experience. "Humans are inherently designed for multimodal, whole-body interactions, which are intrinsic to our existence and richness. As people engage less with one another, robots could remind and possibly train us in more enriched forms of connection," said Funayama.

In addition to the subjective evaluations from participants, all the movement data during the experience was recorded by sensors. By comparing this data with the subjective evaluations, the research team aims to understand the movements of participants who felt a deeper connection. This analysis seeks to define the state of emotional connection using objective indicators derived from movement data [1]. By understanding which movements most effectively foster a connection between humans and androids, this insight can be used to develop Shosa and human-robot interaction even further.

"Shosa -Future Dialogue-" is not just a robotic art installation but a glimpse into a future where humans and robots coexist harmoniously, enhancing each other's lives through deep, meaningful interactions. This innovative project invites us to rethink our relationship with technology and envision a world where empathy and connection transcend the boundaries between humans and robots.

For more information about “Shosa -Future Dialogue-” and to book your experience, visit <http://www.geminoid.jp/projects/shosa/> or contact Minaka Homma for events and technology (hil-contact@atr.jp) and Hikaru Oka for creative inquiries (info@kiq.ne.jp). Media Kits: https://drive.google.com/drive/folders/1mXAT9-sJs8q0GfNsHqeBEDKTq-5wG_sa

[1] Moe Sato, Takashi Minato, Tomo Funayama, Hidenobu Sumioka, Kurima Sakai, Ryusuke Mikata, Hiroshi Ishiguro, Kazuya Horibe, Akane Kikuchi, and Kaito Sakuma, Analysis of heart-to-heart communication with a robot using transfer entropy, Proc. of the 33rd IEEE International Conference on Robot and Human Interactive Communication, Pasadena Convention Center in Pasadena, California, USA, Aug. 26-30, 2024 (to appear)

Project members

Experience Design & General Director: Akane Kikuchi (KiQ) (<https://kiq.ne.jp/en/profile>)

Robot Supervision: Hiroshi Ishiguro (Osaka University & ATR)

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Main system creator: Tomo Funayama (ATR) (<http://www.geminoid.jp/en/members.html>)

Sound design: Kaito Sakuma (<https://kaitosakuma-batic.com/>)

Visual expression design: Kazuya Horibe (RIKEN) (<https://kazuya-horibe.netlify.app/en/>)

Robot system development: Takashi Minato (RIKEN & ATR)

(https://www.riken.jp/en/research/labs/r-ih/guard_robo_proj/interact_robo/index.html),

Ryusuke Mikata (ATR), Kurima Sakai (ATR) (<http://www.geminoid.jp/en/members.html>)

About ATR and KiQ Inc.

ATR (Advanced Telecommunications Research Institute International) is a leading research institute in robotics and AI, dedicated to pioneering advancements that improve human life. (<http://hil.atr.jp/en/index.html>)

KiQ Inc. specializes in creating innovative experiences that merge technology with human emotion, aiming to foster deeper connections and understanding through their projects. (<https://kiq.ne.jp/en>)

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