

AFC Forum 3: Science Communication

Smart and Kind Machines for a Better Life: AI and the Future of Human Happiness

Host: Atsumi International Foundation Sekiguchi Global Research Association (SGRA)
Co-Host: Tohoku Gakuin University

August 26, 2026 (Wed), 9:00-12:30
Venue: Tohoku Gakuin University, Itsutsubashi Campus

Language: English • Free participation

Artificial intelligence (AI) is advancing at an unprecedented pace, reshaping how we live, work, and connect. Beyond efficiency and automation, the future demands smart and kind machines—technologies that enhance human dignity, resilience, and happiness.

This panel will examine how AI can improve well-being across some of the key areas. In health and longevity, AI supports early disease detection, personalized treatment, and elder care through assistive robots. For mobility and independence, self-driving transport, and navigation systems empower individuals to live more freely. In housing and living environments, AI enables adaptive smart homes, safe elder monitoring, and sustainable urban planning. Food and nutrition benefit from precision agriculture, equitable distribution, and personalized meal design. Security and safety are strengthened through AI-driven anomaly detection, cybersecurity, and fair surveillance, as well as AI-enhanced unmanned aerial vehicle systems for post-disaster operations that enable rapid damage assessment, search and rescue, and emergency response coordination. In education and lifelong learning, AI tutors, accessibility tools, and workforce upskilling open new opportunities. Finally, in human connection and happiness, companion robots, creative AI, and social platforms foster inclusion and reduce loneliness.

The discussion will also stress ethical responsibility: AI systems, must support human well-being, by embedding kindness into design, AI can help shape a safer, more inclusive, and happier future for humanity.

Schedule**Session 1: Presentations (9:00-10:30)**

Chair: Naiwala P. Chandrasiri (Kogakuin University)

9:00 Presentation 1**AI-Enhanced Unmanned Aerial Vehicle (UAV) Systems for Post-Disaster Operations**

Chinthaka Premachandra (Shibaura Institute of Technology)

In large-scale disasters, conventional approaches to victim search, environmental monitoring, and delivery operations are primarily carried out by human responders and often suffer from limited efficiency due to poor visibility, complex terrain, and operational risks. To address these challenges, recent research integrates cutting-edge AI techniques with UAV platforms, leveraging AI-driven victim detection using UAV-captured voice data, general RGB imagery, and hyperspectral imaging of disaster sites, as well as on-board AI-assisted hardware systems for collecting and delivering vital supplies to victims. Collectively, these technologies demonstrate a promising pathway toward enhancing the effectiveness and efficiency of next-generation post-disaster response operations. This talk presents recent advancements in AI-enhanced UAV systems, highlighting technologies that enable rapid and reliable situational assessment in hazardous environments.

9:30 Presentation 2**Sensitive-Type Robots (STR) for Human–Robot Coexistence**

Emi Yuda (Mie University)

As robots become increasingly integrated into human society, such as self-driving cars and food delivery robots, their acceptance requires not only functionality but also sensitivity. For example, when two people collide at an intersection, humans typically feel pain, back up, fall over, and express concern by saying "I'm sorry." However, current robots do not feel pain, and because they are under general anesthesia, they pause for a short time after a collision before attempting to continue their task.

Our research focuses on developing Sensitive-Type Robots (STR) that can express emotions similar to humans. STR are designed to exhibit empathetic behaviors, such as showing pain reactions during a collision or apologizing after accidental contact. These responses aim to create emotional resonance and mutual understanding between humans and machines.

Comparing the acceptability of standard autonomous robots and emotional STR in real-world scenarios, we found that users trust and feel closer to STR. This research may lead to enhanced coexistence between humans and robots and may promote social acceptance of robots in an era of labor shortages and an aging society with a declining birthrate.

10:00 Presentation 3**Companion robots and assistive technology for Social Care in Home Environments**

Patrick Holthaus (University of Hertfordshire)

In housing and living environments, assistive robots and artificial intelligence enable adaptive smart homes, safe monitoring of older people, and sustainable urban planning. Assistive companion robots, are one of the upcoming approaches designated to support people in their daily activities at home, enabling them to live independently for a longer time. In this keynote, I will discuss how such robots can deliver assistive functions as social actors in the home, and what scientific questions are important to address in this context. My presentation will introduce the University of Hertfordshire's Robot House, a unique facility for researching human-robot

interaction and artificial intelligence, along with its robot residents and smart people perception and monitoring capabilities. Robot House provides a realistic home environment where our research team can investigate the aforementioned questions looking towards a future where robotic companions and ambient assisted monitoring play a greater role in caring for older people. Within that environment, research addresses fundamental research questions of social robots, for example, how nonverbal communication can facilitate interactions between humans and robots. For that, I will present a few studies with human participants that look at what effects robot social behaviours have on human trust and acceptability towards them.

10:30 Break (30 minutes)

Session 2: Discussion and Q&A (11:00-12:30)

Moderator: Naiwala P. Chandrasiri (Kogakuin University)

11:00 Discussion participants:

Presenters: Chinthaka Premachandra (Shibaura Institute of Technology), Emi Yuda (Mie University), Patrick Holthaus (University of Hertfordshire)

Discussants:

Vlaho Kostov (Panasonic), Keiko Uohashi (Tohoku Gakuin University), Tamon Miyake (Waseda University), Sudeera Gunathilaka (National Institute of Advanced Industrial Science and Technology)

12:30 End of session

Profiles

Moderator: Naiwala P. Chandrasiri

Naiwala P. Chandrasiri is currently a Professor at the Faculty of Informatics, Kogakuin University, Tokyo. He earned a Ph.D. degree in information and communication engineering from the University of Tokyo, Tokyo, Japan, in 2001. His current research interests include Artificial Intelligence, Computer Vision, Machine Learning, Human-Machine Interface, and Human Communication Engineering. Dr. Chandrasiri received various awards including the Best Paper Award from the World Multi-Conference on Systemics, Cybernetics and Informatics, USA, in 2001, and the Best Conference Paper (Implementation and Development) from the IEEE International Conference on Cyber Technology in Automation, Control, and Intelligent Systems, Thailand, in 2012. He was the Local Organizer of 10th Asia-Pacific Symposium on Information and Telecommunication Technologies (APSITT 2015). He is a member of IEEE, IEEJ, ITE etc.

Speaker 1: Chinthaka Premachandra

Chinthaka Premachandra received the B.Sc. and M.Sc. degrees from Mie University, Tsu, Japan, in 2006 and 2008, respectively, and the Ph.D. degree from Nagoya University, Nagoya, Japan, in 2011. From 2012 to 2015, he served as an Assistant Professor in the Department of Electrical Engineering, Faculty of Engineering, Tokyo University of Science, Tokyo, Japan. From 2016 to 2017, he was an Assistant Professor in the Department of Electronic Engineering, School of Engineering, Shibaura Institute of Technology (SIT), Tokyo, where he subsequently served as an Associate Professor from 2018 to 2022. In 2022, he was promoted to Professor in the Department of Electronic Engineering, Graduate School of Engineering, SIT, where he currently serves as the Director of the Image Processing and Robotics Laboratory. His research interests include AI, UAVs, image processing, audio processing, intelligent transportation systems (ITS), and mobile robotics. He has received numerous awards, including the IEEE Sensors Letters Best Paper Award from the IEEE Sensors Council (2022) and the IEEE Japan Medal from the IEEE Tokyo Section (2022). He is also the Founding Chair of the International Conference on Image Processing and Robotics (ICIPRoB), which is technically co-sponsored by IEEE.

Speaker 2: Emi Yuda

Emi Yuda is a Professor at the Innovation Center For Semiconductor And Digital Future and the Graduate School of Engineering (Information Engineering) at Mie University, positions she has held since 2024. Prior to joining Mie University, she served as an Assistant Professor and then an Associate Professor at the Graduate School of Engineering and the Graduate School of Information Sciences, respectively, at Tohoku University. She holds a Ph.D. in Engineering from Niigata University. Her research focuses on biological signal processing and biometric big data analysis. Her work spans fundamental research, including elucidating the mechanisms of biological fluctuation and the interaction between the brain and heart rate, as well as applied research conducted through industry-academia collaboration.

She also holds concurrent appointments as a Visiting Professor at the Graduate School of Engineering, Tohoku University (Cross-Appointment), and a Visiting Professor at Chitose Institute of Science and Technology.

Speaker 3: Patrick Holthaus

Dr Patrick Holthaus is a Reader in Interactive Assistive Technology (Associate Professor) in the Robotics Research Group at the University of Hertfordshire. He is a Fellow of AdvanceHE and registered as a Chartered Engineer. Dr Holthaus has authored more than 80 peer-reviewed scientific papers in the field of human-robot interaction, in which he drives forward best methods and practices as the coordinator of UKRI-funded UK-HRI topic group. He co-leads the Horizon Europe project SWAG and Dinwoodie-funded hospital@home. As lead of the Robot House, a unique facility for human-robot interaction, Dr Holthaus brings together real-world applications and fundamental robotics research. His research involving the Kaspar robot has a direct impact on the life and learning of children with autism and learning difficulties.

Discussant 1: Vlaho Kostov

Dr. Vlaho Kostov is an R&D Executive at Panasonic, Head of CEE and Mediterranean region, Board Member of CI+ LLP, Member of the Board of Directors of HD Forum Italy, member of the Advisory Board of Macedonia 2025 and outgoing Chairman of the Board of Directors of CI+ LLP. He represents Panasonic in several management boards of industry consortiums and associations. He has more than 20 years of expertise in Consumer Electronics, Telecom, and Automotive industries within the private sector, the public organizations, and academics. He is member of the Advisory Board of Macedonia 2025, International, independent and non-political 'think & do' tank, Senior Member of IEEE and received a Gold award of the Lincoln Foundation Graduate Design Competition (Stanford Univ./TMIT for Toyota Corp.).

Discussant 2: Keiko Uohashi

Keiko Uohashi is a Professor at Department of Mechanical Engineering and Intelligent Systems, Faculty of Engineering, Tohoku Gakuin University. She received her Bachelor's, Master's, and Doctoral degrees from Osaka University, Japan, in 1991, 1994, and 1999, respectively. From 1999 to 2006, she served as a Lecturer and later as an Assistant Professor at Osaka Prefectural College of Technology (current Osaka Metropolitan University College of Technology), Japan. From 2007 to 2012, she was an Assistant Professor at Tohoku Gakuin University. She was promoted to Professor in 2013 and has held that position ever since. She studies information geometry, the foundation of AI, from the perspective of differential geometry. Her research fields also include related system control theory and human blood flow control. She is a member of the Mathematical Society of Japan, the Society of Instrument and Control Engineers, etc.

Discussant 3: Tamon Miyake

Tamon Miyake is a Junior Researcher at the Future Robotics Organization, Waseda University, Tokyo, Japan. His research focuses on human-robot interaction and healthcare robotics, with projects covering wearable sensing, gait analysis, and AI-empowered humanoid for physical caregiving. He has developed methods for various assistive robotics, such as socks-dressing assistance by a versatile humanoid, as well as training robotic systems for obstacle negotiation and humanoid repositioning assistance. His work has been published in journals including IEEE Robotics and Automation Letters and IEEE Transactions on Human-Machine Systems, IEEE Transactions on Visualization and Computer Graphics, and presented at multiple international robotics conferences.

Discussant 4: Sudeera Gunathilaka

Dr. Sudeera Gunathilaka is a scientist at the National Institute of Advanced Industrial Science and Technology (AIST), Japan, working on quantum computing and advanced computational methods. He earned his Ph.D. in Artificial Intelligence from the Tokyo Institute of Technology in 2025. He is affiliated with the Global Research and Development Center for Business by Quantum-AI Technology (G-QuAT), one of the world's three emerging national-level centers dedicated to Quantum + AI fusion. His work explores how quantum algorithms, quantum-inspired optimization, and emerging computing paradigms can be applied to solve large-scale, real-world problems. He is particularly interested in the intersection of quantum technologies, machine learning, and high-performance computing, and has contributed to projects involving analog and hybrid (photonic-digital) computing models, mathematical optimization techniques, enhanced signal processing, and related areas.