

GIST-MIT, advanced ai robotics workshop held: 'Human-centered ai' solution sought in global cooperation

- GIST Department of AI Convergence Professor SeungJun Kim's team shares the results of joint research on human-centered AI and robotics convergence technology with MIT's research team and discusses future vision... Visits MassRobotics in the US to strengthen industrial ties



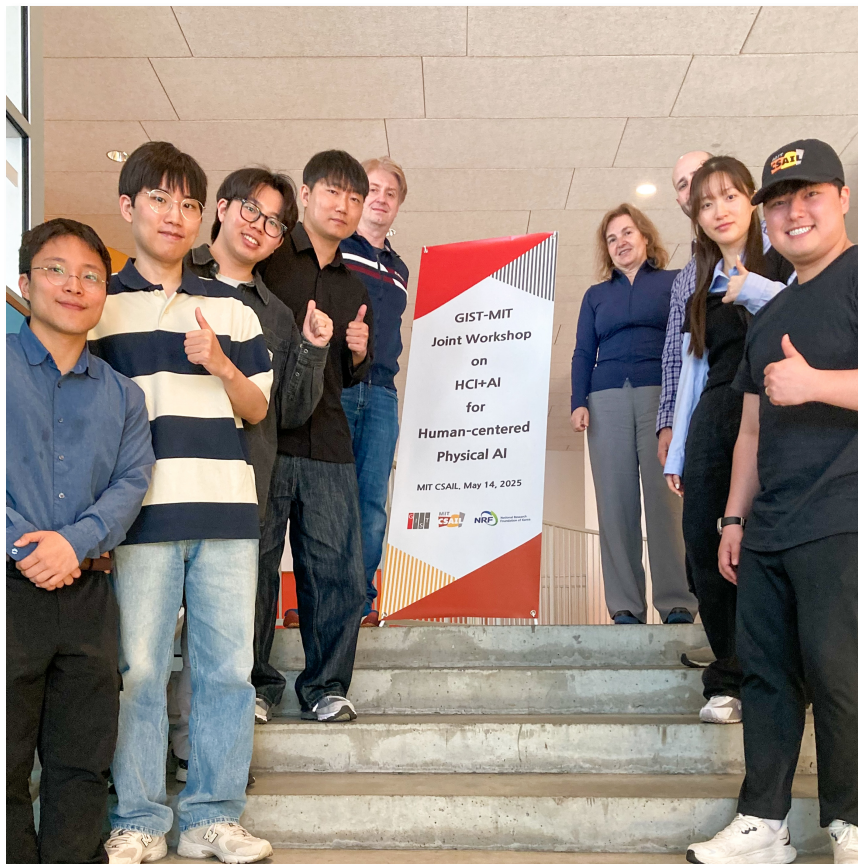
▲ GIST-MIT Joint Workshop Meeting. At the workshop held at MIT, the GIST research team is discussing HCI (Human-Computer Interaction) convergence technology for human-centered physical AI design with Professor Daniela Russ (Director of the Computer Science and Artificial Intelligence Laboratory) at MIT.

The Gwangju Institute of Science and Technology (GIST, President Kichul Lim) announced that Professor SeungJun Kim's research team from the Department of AI Convergence successfully held an international joint workshop on advanced artificial intelligence (AI) and robotics convergence technology with the Massachusetts Institute of Technology (MIT) from May 14 to 16 at the MIT Computer Science and Artificial Intelligence Laboratory.

This workshop was held under the theme of 'Human-Computer Interaction (HCI) + AI Technology Workshop for Physical AI Interaction' and was conducted during the GIST research team's mid- to long-term research visit to MIT in May and June. Researchers from both GIST and MIT participated and shared the results of their collaboration over the past five years: ▲ physical AI such as robots and self-driving cars, ▲ sensors for multimodal interaction between people, and ▲ robotics technology, and discussed future directions for joint research.

'Physical AI' is a technology field in which humans and AI systems interact in a physical environment. This workshop focused on multimodal interaction technologies in various application fields such as robots, autonomous driving systems, and wearable devices.

The GIST-MIT research team presented ▲ explainability, ▲ inclusiveness, and ▲ immersion as core values to increase the acceptability and sustainability of physical AI technology, and specified technical solutions to implement them and user-centered interaction design directions.



▲ Group photo of the GIST-MIT HCI+AI Joint Workshop. At the ‘GIST-MIT HCI+AI Joint Workshop for Human-Centered Physical AI’ held at MIT CSAIL, researchers from both institutions shared the results of interface technology and AI convergence research for human-centered physical AI design and discussed ways to expand joint research.

Professor SeungJun Kim’s research team from GIST introduced a technology that analyzes users’ behavior and biosignals in real time and improves user experience by directly intervening in interactions with users in the real world through physical actuators.

This technology can be used to enhance immersion and improve proficiency in various fields such as manufacturing, healthcare, sports training, and virtual reality by linking with MIT’s sensor framework. For example, it analyzes biosignals to detect users’ behaviors and conditions, and robots provide feedback or actions accordingly.

The MIT research team collected human behavior data using high-precision tactile sensors and demonstrated natural and human-friendly robot movements using imitation learning technology based on this.

This technology has attracted attention as it enables seamless collaboration with AI in work environments, including visual, auditory, tactile, and kinesthetic senses, by sharing senses between people and robots in real environments that include physical contact.

During the workshop, collaboration plans with the MIT Media Lab's Multi-Sensory Intelligence Research Group (Professor Paul Pu Liang) were also intensively discussed. GIST-MIT plans to jointly develop a human-centered AI system capable of multi-sensory interaction, including tactile, by integrating multimodal sensor/actuator technology and AI algorithms.



▲ GIST-MIT Media Lab Exchange Photo. GIST researchers are discussing multimodal AI technology collaboration with Professor Paul Pu Liang (Multisensory Intelligence research group) of MIT Media Lab. The researchers are sharing their research results through technology exchange and have concretized plans to expand existing collaborations with MIT CSAIL in areas such as tactile intelligence to multiple institutions including MIT Media Lab.

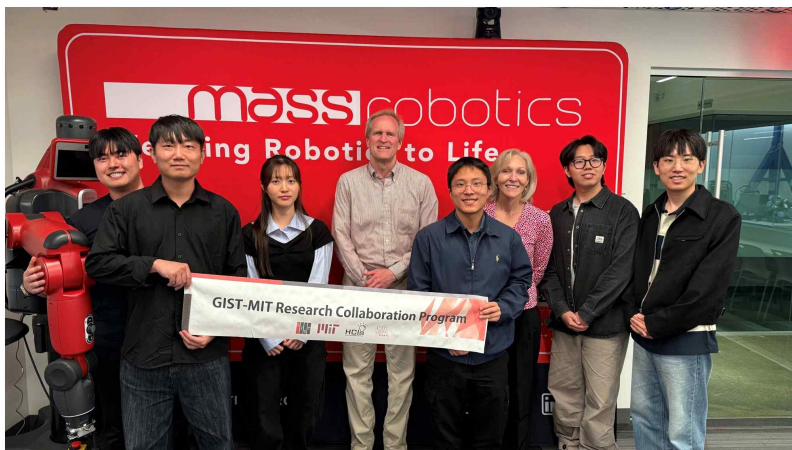
This can make a practical contribution to solving various social problems such as responding to an aging society, smart manufacturing, rehabilitation treatment, and education. It is expected that the combination of MIT's AI and sensor technology and GIST's user interface and physical actuator technology will present a new paradigm for next-generation human-robot collaboration.



▲ GIST-MIT Joint Workshop Technology Exchange. GIST and MIT researchers are discussing physical AI interaction technology using wearable interfaces. The research team is discussing ways to measure user behavior and provide real-time feedback using tactile gloves.

During the workshop, Professor SeungJun Kim's research team visited MassRobotics, the world's largest non-profit robotics innovation hub located in Boston, USA, to discuss technology commercialization and industrial linkage plans, and visited the Toyota Research Institute to discuss human-centered intelligence of physical AI such as autonomous vehicles and robotic arms.

This visit is expected to serve as an important bridge to develop the results of GIST-MIT joint research into global products and services.



▲ (Left) MassRobotics, (Right) Toyota Research Institute visit and exchange photos. As part of this workshop visit, the GIST research team visited MassRobotics and Toyota Research Institute to discuss ways to support the commercialization of robotics technology.

MassRobotics is the world's largest independent robotics startup incubator. During this visit, they shared commercialization cases of spin-off startups and research institute companies, and discussed global technology commercialization strategies for GIST-MIT joint research results and ways to support overseas expansion of domestic companies.

Meanwhile, Professor SeungJun Kim, the head of the GIST-MIT collaborative research project, has published more than 18 joint papers with Professors KyungJoong Kim and Jin Hyuk Hong of GIST and Professors Daniela Rus and Wojciech Matusik of MIT over the past three years, and has won the best paper award at prestigious academic conferences such as CHI and IMWUT four times for research on robot and autonomous vehicle interaction, continuing world-class research collaboration.

Through this workshop, the GIST-MIT research team reaffirmed their shared vision of further strengthening the collaborative system and leaping forward as the center of a global research network in the field of physical AI.