"Autonomous robots guide you, and haptic technology allows you to feel with your fingertips" GIST and the Gwangju National Science Museum unveil customized exhibition viewing technology for the visually impaired

- GIST Korea Culture Technology Institute and Gwangju National Science Museum will conduct a demonstration of the Ministry of Culture, Sports and Tourism's R&D project for both visually impaired and non-disabled visitors until October 31st... Expected to expand the social value of cultural technology

- Immersive exhibition experience combining haptic gloves, voice guidance, and autonomous robots... Visually impaired visitors can safely navigate and experience scientific exhibits like waves and tornadoes with their fingertips

▲ A researcher at the GIST Korea Culture Technology Institute experiences a demonstration of a personalized exhibition concierge service for the visually impaired, guided by a robot.

The Gwangju Institute of Science and Technology (GIST, President Kichul Lim) announced that it will operate a "Personalized Exhibition Concierge Demonstration Service" at the permanent exhibition hall on the second floor of the Gwangju National Science Museum until Friday, October 31st. This demonstration service will be available to visually impaired students from Gwangju Seogwang School and general visitors.

This demonstration service is a key outcome of the Ministry of Culture, Sports and Tourism's research and development project (Project Name: Development of Personalized Exhibition Concierge Service Technology for the Visually Impaired, August 1, 2023 - December 31, 2025) being conducted by the GIST Korea Culture Technology Institute (CT Research Institute, Director Jung Won Yoon). The system combines personalized guidance with experiential interaction technology (tactile interaction) that enables the visually impaired to perceive and respond to exhibits through touch, to improve exhibition accessibility for the visually impaired.

GIST has been pursuing research and development in collaboration with its joint research institute, Twinny Inc., for the past three years, and successfully completed a pilot service at Gwangju Seogwang School in 2024.

This year, the final year of the research and development project, the team is working to perfect inclusive exhibition viewing technology that can be used by both visually impaired and non-disabled people. By

conducting demonstrations in actual exhibition environments, the team is verifying the applicability of these research findings.

The haptic device, a key component of the service, allows users to sense visual information with their hands. This device goes beyond mere visual assistance and enhances their understanding of the exhibition content.

The demonstration service allows visually impaired people to directly touch and experience key interactive exhibits at the Gwangju National Science Museum, such as "How are tornadoes made?", "Making waves?", "What happens if you don't wear a spacesuit in space?", and "What space technologies are in our daily lives?", while wearing haptic gloves.

▲ Demonstration of technology for a personalized exhibition concierge service for the visually impaired. A visually impaired person uses haptic gloves to feel and experience interactive exhibits at the science museum, including space, waves, air pressure, and tornadoes.

The exhibition content is based on a program that links the exhibition space and exhibit information, providing customized exhibition guidance and audio commentary tailored to the visitor's characteristics and preferences.

Furthermore, autonomous guide robots within the exhibition hall support the safe and free movement of visually impaired people, enabling a fully immersive exhibition experience.

▲ Guide robots for the visually impaired. It supports visually impaired people to move around safely and freely and experience exhibitions.

Professor Jung Won Yoon (principal investigator) of the Department of AI Convergence at GIST stated, "This service represents a technological step forward that substantially expands the right of visually impaired people to enjoy culture and arts." He added, "Through continued technological advancements, we will contribute to creating an inclusive environment where anyone can enjoy exhibition culture without limitations."

He added, "This program provides opportunities to increase cultural accessibility for the visually impaired, while also providing educational benefits for the general public, raising awareness of the social value of visual impairment and cutting-edge IT technology."

Meanwhile, the GIST Korea Culture Technology Institute, designated as a cultural technology research institution under the Ministry of Culture, Sports and Tourism under Article 17-5 of the Cultural Industry Promotion Act, focuses on core cultural technology research and development to drive the development of the national cultural industry. It is currently conducting numerous R&D projects, including cultural technology policy-designated projects.

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