

Ahmed Elsharkawy**Postdoctoral Fellow**

Gwangju, Republic of Korea

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Objective

To contribute to impactful teaching, research, and R&D initiatives by applying my expertise in human-centered design, AI-driven interaction systems, and human-robot interaction. I seek a dynamic academic environment where I can educate and mentor students, drive practical research solutions, collaborate with interdisciplinary teams, and scale technologies for global impact.

Experience**InnoCORE Postdoctoral Fellow / GIST & DGIST****Nov 2025 – Present**

Gwangju Institute of Science and Technology (GIST) (Co-affiliated with Daegu Gyeongbuk Institute of Science and Technology (DGIST), InnoCORE Research Group for Bio-Embodied Physical AI), Republic of Korea

- Research Projects
 - Lead Researcher / Human-in-the-Loop Physical AI for XR-Based Digital Therapeutics
 - Research Assistant / Physical AI in Action: Tackling HCI Challenges with XR-Enhanced Robotics for Interpretable, Inclusive, and Immersive Interaction “GIST-MIT Physical AI Research Center”
- Funding
 - InnoCORE program of the Ministry of Science and ICT
 - The National Research Foundation of Korea (NRF) grant funded by the Korean government (MSIT)

Research Assistant Professor / GIST**Oct 2024 – Oct 2025**

GIST, College of Information and Computing, Department of AI Convergence, Human-Centered Intelligent Systems (HCIS) Lab, Republic of Korea

- Research Projects
 - Co-PI / Bridging the gap between reality and virtuality: actuated XR systems powered by sensory intelligence and soft robotics
 - Co-PI / Development of dynamic real-virtual haptic feedback systems using personal robots
- Funding
 - The Basic Science Research Program through the National Research Foundation of Korea (NRF), funded by the Ministry of Education
 - The NRF grant funded by the Korea government (MSIT)

Postdoctoral Fellow / GIST**May 2023 – Sep 2024**

GIST, College of Information and Computing, Department of AI Convergence, Human-Centered Intelligent Systems (HCIS) Lab, Republic of Korea

- Research Projects
 - Project leader / AI-powered intelligent surfaces for adaptive XR environments in vehicles
 - Project leader / Human-AI Collaboration for XR Digitization of Physical Experience
 - Research Assistant / HCI + AI for Human-Centered Physical System Design
- Funding
 - AI-based GIST Research Scientist Project, GIST Institute for Artificial Intelligence (GIAI)
 - GIST-MIT Research Collaboration grant funded by the GIST

Additional Responsibilities across GIST and DGIST Appointments**May 2023 – Present**

- Leading and contributing to multiple studies for SCI(E) journals and top-tier conferences
- Mentoring junior researchers and interns, guiding team integration and idea development
- Supporting teaching for graduate-level Human-Computer Interaction courses

Teaching Assistant / Menoufia University**March 2014 – Aug 2015**

Faculty of Electronic Engineering, Department of Industrial Electronics & Control Engineering, Egypt

- Assisted in teaching undergraduate courses and practical laboratory sessions within the Industrial Electronics & Control Engineering curriculum

- “Appointed as Teaching Assistant in March 2014, granted a graduate study leave to pursue M.Sc. and Ph.D. abroad, promoted to Assistant Lecturer upon completion of the M.Sc. in September 2017, and subsequently promoted to Assistant Professor (Lecturer) in February 2023 following completion of the Ph.D., before commencing an unpaid leave in May 2023.”

GST /ADVANTECH | Automation Engineer (internship)

Jul 2012 – Dec 2012

Grand Solution for Technology (GST) acted as the local representative of ADVANTECH (Taiwan) in Egypt

- I trained in data acquisition systems and contributed to developing engineering solutions for civil and industrial applications
- Gained experience in system integration and automation

Education

Ph.D. in Integrated Technology (Intelligent Robotics Program) / GIST

Sep 2017 – Feb 2023

Gwangju Institute of Science and Technology (GIST), Gwangju, Republic of Korea

- Ph.D. Dissertation - Robots for Constructing Multitype Real-World Datasets and Augmenting Indoor Spaces: Using RGB-D Camera and Ultra-Wideband Communication for Intuitive Human–Robot Interaction
 - Research Projects
 - Research Assistant / Robots for Cognitive Improvement in Dementia
 - Research Assistant / Lighter-than-air Aerial Robot for Indoor Performances
 - Research Assistant / Multi-dimensional Filming for Immersive Performances
 - Research Assistant / AI-based Interactive Media for Cultural Heritage
 - Funding agencies
 - The Ministry of Trade, Industry & Energy (MOTIE) of Korea; Asia Culture Institute, Asia Culture Center (ACC); Ministry of Culture, Sports and Tourism (MCST) and Korea; Korea Creative Content Agency (KOCCA); National Research Foundation (NRF) of Korea funded by the Korea government (MSIT); and Open AI Dataset Project (AI-Hub, Korea)

MSc in Mechatronics Engineering / GIST

Sep 2015 – Aug 2017

GIST, Gwangju, Republic of Korea

- MSc Dissertation - Design, Control and Evaluation of a Torque-Haptic Feedback Device in an Encounter Type Haptic Display System
 - Research Project
 - Research Assistant / Virtual Plant Training System
 - Funding
 - Ministry of Land, Infrastructure and Transport (MOLIT) of Korea government and Korea Agency for Infrastructure Technology Advancement (KAIA)

BSc in Electronic Engineering / Menoufia University

Sep 2007 – Jul 2012

Faculty of Electronic Engineering, Department of Industrial Electronics & Control Engineering, Egypt

Selected Publications

* Equal contribution

- [c.14] **Elsharkawy, A.**, Gim, B., Ataya, A., Kim, S. (2026). *SelfBlending: Artificial Intelligence-driven Augmentation with Hand Interactions for Seamless Reality Blending in Virtual Environments*. in IEEE Transactions on Visualization and Computer Graphics (IEEE TVCG).
- [c.13] Gim, B., Kim, G., Yeo, D., Kang, Y., **Elsharkawy, A.**, & Kim, S. (2026). *From Disruption to Immersion: Reimagining Vehicle Motion as Environmental Feedback in In-Car VR*. In Proceedings of the Conference on Human Factors in Computing Systems (ACM CHI).
- [c.12] Ataya, A., **Elsharkawy, A.***, Lee, J., Hwang, S., Seong, M., & Kim, S. (2025). *ReD Shoes: Actuated Footwear for Multisensory Redirected Walking in Virtual Reality*. In Virtual Reality Springer.
- [c.11] Yeo, D., Kim, G., Oh, M., Park, J., Gim, B., Kang, S., **Elsharkawy, A.**, & Kim, S. (2025). *AttrCar: Multisensory In-Car VR with Thermal, Airflow, and Motion Feedback through Built-In Vehicle Systems*. In Proceedings of the 37th Annual ACM Symposium on User Interface Software and Technology (ACM UIST). 🏆👏
- [c.10] **Elsharkawy, A.**, Ataya, A., Yeo, D., An, E., Hwang, S., & Kim, S. (2024, May). *SYNC-VR: Synchronizing Your Senses to Conquer Motion Sickness for Enriching In-Vehicle Virtual Reality*. In Proceedings of the Conference on Human Factors in Computing Systems (ACM CHI). 🏆

- [c.9] Hwang, S., Oh, J., Kang, S., Seong, M., **Elsharkawy, A.**, & Kim, S. (2024, May). *Ergopulse: Electrifying your lower body with biomechanical simulation-based electrical muscle stimulation haptic system in virtual reality*. In Proceedings of the Conference on Human Factors in Computing Systems (ACM CHI). 🏆
- [c.8] Kang, S., Kim, G., Hwang, S., Park, J., **Elsharkawy, A.**, & Kim, S. (2024, October). *Flip-Pelt: Motor-Driven Peltier Elements for Rapid Thermal Stimulation and Congruent Pressure Feedback in Virtual Reality*. In Proceedings of the 37th Annual ACM Symposium on User Interface Software and Technology (ACM UIST).
- [c.7] **Elsharkawy, A.**, & Kim, M. S. (2022). *Human-Robot Labeling Framework to Construct Multitype Real-World Datasets*. IEEE Access, 10, 131166-131180.
- [c.6] Naheem, K., **Elsharkawy, A.***, Koo, D., Lee, Y., & Kim, M. (2022). *A UWB-based lighter-than-air indoor robot for user-centered interactive applications*. Sensors, 22(6), 2093.
- [c.5] **Elsharkawy, A.**, Naheem, K., Koo, D., & Kim, M. S. (2021). *A UWB-driven self-actuated projector platform for interactive augmented reality applications*. Applied Sciences, 11(6), 2871.
- [c.4] Jeon, S., **Elsharkawy, A.**, & Kim, M. S. (2021). *Lipreading architecture based on multiple convolutional neural networks for sentence-level visual speech recognition*. Sensors, 22(1), 72.
- [c.3] Ataya, A., Kim, W., **Elsharkawy, A.**, & Kim, S. (2021). *How to interact with a fully autonomous vehicle: naturalistic ways for drivers to intervene in the vehicle system while performing non-driving related tasks*. Sensors, 21(6), 2206.
- [c.2] Ataya, A., Kim, W., **Elsharkawy, A.**, & Kim, S. (2020). *Gaze-head input: Examining potential interaction with immediate experience sampling in an autonomous vehicle*. Applied Sciences, 10(24), 9011.
- [c.1] **Elsharkawy, A.**, Naheem, K., Lee, Y., Koo, D., & Kim, M. S. (2020, September). *LAIDR: A robotics research platform for entertainment applications*. In 2020 IEEE International Conference on Unmanned Aircraft Systems (ICUAS) (pp. 534-539).

Selected Manuscripts in Progress “Anonymized”

(Titles are anonymized and full author lists are withheld for peer-review; I am the first author on the following paper)

- [c.16] (2027). *AI-Mediated Context-Aware Interfaces for Room-Scale XR Environments*. In Proceedings of the Conference on Human Factors in Computing Systems (ACM CHI).
- [c.15] (2026). *User-configurable, LLM-mediated feedback for reflective posture improvement*. In the Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies.

Patents

- *Haptic Wearable Device for Tactile Experiences*, Republic of Korea registered patent, Registration No. 10-2946187, Application No. 10-2025-0041073, registered March 26, 2026, published March 31, 2026; assignee: Gwangju Institute of Science and Technology (GIST); inventors: SeungJun Kim, Seongjun Kang, Gwangbin Kim, Seokhyun Hwang, Jeongju Park, **and Ahmed Elsharkawy**.

Teaching courses and labs

- Research Methods in Human-Computer Interaction course [AI6317-01, RT5302-01] / GIST (Co-lecturer / Spring 2026 and Fall 2024; Teaching Assistant / Fall 2018)
- HCI+AI research trends and technical analysis course [RT6303-01] / GIST (Teaching Assistant (Course Assessment) / Fall 2025)
- Human-Computer Interaction course [RT5301-01] / GIST (Co-lecturer / Spring 2025)
- Labs for Power Electronics and Supervisory Control and Data Acquisition (SCADA) / Faculty of Electronic Engineering (Instructor / Spring 2015)
- Labs for Electrical Machines and Control Systems / Faculty of Electronic Engineering (Instructor / Fall 2014)
- Lab for Microcontrollers and Embedded Systems / Faculty of Electronic Engineering (Instructor / Spring 2014)

Programming Languages and Engineering Software

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|--|-------------------------|----------------|
| • Python | • C++, embedded systems | • C#, Unity 3D |
| • Robot Operating System (ROS) | • MATLAB & Simulink | • LabVIEW |
| • Ladder programming language, PLC (programmable logic controller) | | |
| • Electrical circuit design software (Eagle, Proteus, and Altium) | | |

Honors and Awards

InnoCORE Postdoctoral Fellowship

Nov 2025

Selected for the prestigious Global InnoCORE program (Supported by the Ministry of Science and ICT, Republic of Korea)

Demo Honorable Mention Award & People's Choice Best Demo Award

Sep 2025

ACM Symposium on User Interface Software and Technology (ACM UIST) [c.11]

Best Paper Honorable Mention

April 2024

ACM conference on human factors in computing systems (CHI) 2024 [c.10]

Best Paper Honorable Mention

April 2024

ACM conference on human factors in computing systems (CHI) 2024 [c.9]

Excellence award for the outstanding performance at the AI-based GIST Research Scientist Project

Dec 2023

Artificial Intelligent school at Gwangju Institute of Science and Technology

Fully funded scholarship for doctoral studies

Aug 2017

Republic of Korea (government/GIST) scholarship

Fully funded scholarship for master's studies

Aug 2015

Republic of Korea (government/GIST) scholarship

Academic Service

- International Journal of Human-Computer Interaction
- Reviewer, IEEE International Symposium on Mixed and Augmented Reality (ISMAR).
- Reviewer, Sensors journal, MDPI.

Professional Networking and Academic Profiles

- **Personal Website:** [Link](#)
- **LinkedIn:** [Link](#)
- **Google Scholar:** [Link](#)

Media and Press Interview

- SelfBlending VR Tech Integrates Real Objects, Preserves Immersion.
Press link: [Press Release](#)
- Full immersion in VR inside a moving car... GIST unveils new technology using vehicle motion.
Press link: [Press Release](#)
- Walking Without Real-World Spatial Constraint, GIST Develops 'Red Shoes' to Overcome VR Walking Limitations
Press link: [Press Release](#)
- Enjoying 4D VR in a Moving Car, GIST Develops Platform Enabling Immersive Experiences Using Only Built-in Vehicle Systems
Press link: [Press Release](#)
- dmc channel, 'Logarithm' TV show: An overview of my research journey and discussion about robotics development
Episode link: [YouTube](#)
- Two GIST doctoral researchers selected for the Ministry of Education's Academic Next Generation Support Project
Press link: [Press Release](#)
- Human-Centered XR Experiences Break the Boundary between Reality and Virtuality
Press link: [Press Release](#)
- GIST-MIT continues research results on 'human-centered' AI system created through close collaboration
Press link: [Press Release](#)