SOOMIN SHIN

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Google Scholar ⋄ Github

Ph.D. candidate specializing in **Human-Robot Interaction (HRI), user-centered robot system design and AI-driven robotics** with expertise in developing socially assistive robotic systems for therapy and education. Experienced in designing AI-driven human-centered systems and conducting user studies. Passionate about applying LLMs to provide tailored therapy solutions for individual therapists and therapy needs.

EDUCATION

University of Waterloo *Present - 09/2027 Expected*
PhD. in Electrical and Computer Engineering
Supervisor: Prof. Kerstin Dautenhahn

Korea University
MSc. in Brain and Cognitive Engineering
Supervisor: Prof. Christian Wallraven

Seoul Women's University
B.A. in Child Studies
B.E. in Multimedia

PROFESSIONAL EXPERIENCE

Graduate Researcher Social and Intelligent Robotics Research Lab, University of Waterloo

· **Research Focus**: Developing AI-driven robots for therapy tailored to individual therapists' needs.
· **LLM-driven Therapy System (In Progress)**: Developing an AI-embedded robot system that allows therapists to provide prompts to modify the system according to their needs.
· **User-Centered Research**: Conducted co-design sessions for 2 years with therapists to refine and validate therapy-integrated robot games.
· **Prototype Development**: Integrated therapist preferences into assistive robot software for real-world deployment [1].

Research Intern Artificial Intelligence and Robotics Institute, Korea Institute of Science and Technology

· **Research Focus**: Investigated human-robot interaction, trust dynamics, and multi-agent robotics in healthcare environments.
· **Heterogeneous Robot Services**: Developed and evaluated a robot-assisted system for isolation wards, incorporating telemedicine, emergency alerts, and delivery robots [2].
· **Trust in Robot Hierarchy**: Analyzed how perceived hierarchy in a robot team impacts user trust and service evaluations [3].
· **User-Control vs. Autonomy**: Studied user preferences in delegating control to robots, showing that users favor explicit verbal commands over autonomous decision-making [4].

Graduate Researcher   Cognitive Systems Lab, Korea University

· **Research Focus**: Explored how contextual information in static images influences human and neural network model on emotion recognition.
· **Human-Model Comparison Study**: Designed and conducted experiments to compare discrepancies between human perception and model predictions on contextual emotion.
· **Contextual Emotion Model Evaluation**: Assessed the performance of a pre-trained CNN-based model on the collected dataset to analyze its effectiveness in recognizing contextual emotions.
· **Key Findings**: Demonstrated that contextual information significantly alters emotion perception in humans and AI systems.
· **Publication**: Presented at *ACM ICMI 2022* [5].

PUBLICATIONS

[1] N. Azizi et al., "Development of robot-assisted speech-language therapy: Co-design with speech-language pathologists," in *Proceedings of the 16th International Conference on Social Robotics (ICSR 2024)*, Springer, 2024.
[2] Y. Kwon et al., "Heterogeneous robot-assisted services in isolation wards: A system development and usability study," in *2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, IEEE, 2023, pp. 8069–8076.
[3] S. Shin and S. S. Kwak, "Do hierarchies in a robot team impact the service evaluation by users?" In *2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, IEEE, 2023, pp. 3983–3990.
[4] S. Shin, D. Kang, and S. S. Kwak, "Is a robot trustworthy enough to delegate your control?" In *2023 32nd IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)*, IEEE, 2023, pp. 2415–2420.
[5] S. Shin, D. Kim, and C. Wallraven, "Contextual modulation of affect: Comparing humans and deep neural networks," in *Companion Publication of the 2022 International Conference on Multimodal Interaction*, 2022, pp. 127–133.

TECHNICAL SKILLS

Programming Languages: Python, JavaScript, C, C++

Web Development: Flask, HTML, CSS

Robotics and AI:

Frameworks: Robot Operating System (ROS), NVIDIA Riva, PyTorch

Robots: QT robot, Vector

Technologies: Retrieval-Augmented Generation (RAG), Large Language Models (LLMs)

LANGUAGES PROFICIENCY

English (Fluent), Korean (Native)

ACHIEVEMENTS

Graduate Research Studentship *Present*
University of Waterloo
International Doctoral Student Award *Sep 2023*
University of Waterloo
Provost's Doctoral Entrance Award for Women *Sep 2023*
University of Waterloo

VOLUNTEERING

Pyunghwa welfare center *2015*
Assisted a teacher for adolescents with Autism and Down syndrome

TEACHING & MENTORING EXPERIENCE

Robotics Programming Mentoring *University of Waterloo, Fall 2024 - Present*
Teaching Assistant, University of Waterloo

Programming for Performance (ECE459) (Winter 2025)

Digital Computation (BME121) (Fall 2024)

Algorithm Design and Analysis (ECE406) (Winter 2024)