


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)