

Hee-Seung Moon

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CURRENT POSITION

Chung-Ang University, Republic of Korea
Assistant Professor

September 2024 – Present
School of Computer Science and Engineering

RESEARCH INTERESTS

My overarching research vision in Human-Computer Interaction (HCI) is to deepen our understanding and inference of individual users through **computational modeling of human behavior** and compose user-centric systems optimized for their needs. This focus emphasizes developing solutions that consider not only individual behavior patterns but also each person's underlying physical and cognitive features, and internal motivations. I leverage AI techniques, encompassing data-driven methods, RL-based human policy optimization, and amortized inference, to enhance our computational human modeling.

Keywords: Data-driven/RL-based user behavior simulation, simulation-based inference, biomechanical simulation

EDUCATION

Yonsei University, Republic of Korea
Ph.D., School of Integrated Technology, College of Engineering
· Thesis Title: Adaptation of Deep User Behavior Model for Personalized Interaction

August 2022
Advisor: Jiwon Seo & Byungjoo Lee

Yonsei University, Republic of Korea
B.S., School of Integrated Technology, College of Engineering

February 2015

EXPERIENCE

Aalto University, Finland
Postdoctoral Researcher

September 2022 – August 2024
Computational Behavior Lab (Advisor: Antti Oulasvirta)

· Building simulation model of users in interactive tasks and inferring a user's intention from observation.

ETH Zürich, Switzerland
Visiting Researcher

May – July 2024
Sensing, Interaction and Perception Lab (Advisor: Christian Holz)

· Inferring a user's grasping intentions in VR based on pre-grasp motions using simulations of human biomechanics.

Aalto University, Finland
Visiting Researcher

March – May 2022
User Interfaces Research Group (Advisor: Antti Oulasvirta)

· Investigated amortized inference techniques for user simulation models in HCI.

Naver AI Lab, Republic of Korea
Research Intern

April – October 2021
Mentor: Minsuk Chang

· Investigated multi-task RL techniques for simulating users under different cognitive-physical features.

Yonsei University, Republic of Korea
Doctoral Student Researcher

March 2015 – August 2022
Intelligent Unmanned Systems Lab (Advisor: Jiwon Seo)

· Investigated meta-learning techniques for adapting user behavior models to individuals.
· Developed human-model-based robotic guidance systems assisting human task performance.
· Investigated the use of haptic information during task interruption & recovery.

SELECTED PUBLICATIONS

Real-time 3D Target Inference via Biomechanical Simulation

H.-S. Moon, Y.-C. Liao, C. Li, B. Lee, and A. Oulasvirta

Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems (CHI 2024)

****Best Paper Honorable Mention (Top 5%)****

Amortized Inference with User Simulations

H.-S. Moon, A. Oulasvirta, and B. Lee

Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (CHI 2023)

Speeding up Inference with User Simulators through Policy Modulation

H.-S. Moon, S. Do, W. Kim, J. Seo, M. Chang, and B. Lee

Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems (CHI 2022)

Fast User Adaptation for Human Motion Prediction in Physical Human–Robot Interaction

H.-S. Moon and J. Seo

IEEE Robotics and Automation Letters (RA-L), vol. 7, no. 1, 2022

Sample-Efficient Training of Robotic Guide Using Human Path Prediction Network

H.-S. Moon and J. Seo

IEEE Access, vol. 10, 2022

Optimal Action-based or User Prediction-based Haptic Guidance: Can You Do Even Better?

H.-S. Moon and J. Seo

Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI 2021)

Prediction of Human Trajectory Following a Haptic Robotic Guide Using Recurrent Neural Networks

H.-S. Moon and J. Seo

2019 IEEE World Haptics Conference (WHC)

Effect of Redundant Haptic Information on Task Performance during Visuo-Tactile Task Interruption and Recovery

H.-S. Moon, J. Baek, and J. Seo

Frontiers in Psychology, vol. 7, art. 1924, 2016

AWARDS, GRANTS AND HONORS

CHI 2024 Best Paper Honorable Mention

2024

· Title: Real-time 3D Target Inference via Biomechanical Simulation

International Postdoc Fellowship

September 2023 - August 2024

National Research Foundation of Korea

· Proposal Title: Inferring User Input Intention in VR based on Biomechanical Simulation

Special Recognitions for Outstanding Reviews

CHI 2022 (1 paper), CHI 2023 (2 papers, 1 LBW), CHI 2024 (1 paper), UIST 2024 (1 paper)

Excellent Academic Paper Award

2022

Yonsei University, Republic of Korea

Graduate Fellowship

2015 – 2019

ICT Consilience Creative Program, Ministry of Science and ICT, Republic of Korea

Undergraduate Fellowship

2012 – 2015

ICT Consilience Creative Program, Ministry of Science and ICT, Republic of Korea

Minister Award

2014

Ministry of Science and ICT, Republic of Korea