

NICK WALKER

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nickwalker.us

EDUCATION

Ph.D. Computer Science	<i>University of Washington – Seattle, WA</i>	2018–present
M.S. Computer Science	<i>University of Washington – Seattle, WA</i>	2018–2020
B.S.A. Computer Science	<i>The University of Texas – Austin, TX</i>	2014–18

EXPERIENCE

Graduate Research Assistant	<i>University of Washington</i>	2018–present
• Human-Robot Interaction concentration, with user studies resulting in 7+ conference articles		
Research Intern	<i>NVIDIA</i>	2022
• Designed and evaluated teleoperation assistance for robot manipulation in clutter		

SKILLS

- Languages – *Python, C++, SQL, HTML, CSS, Javascript, Typescript, Answer Set Programming, Swift*
- Frameworks – *PyTorch, Numpy, Scipy, OpenCV, Pandas, ROS 1 & 2, Isaac Sim, D3.js, three.js, p5.js*
- Tools & Methods – *factor analysis, mixed methods, user research, Premiere, Illustrator*

PROJECTS

Assistive Teleoperation for Cluttered Environments

- Designed pointing-based interface to assist robot teleoperators picking and placing objects
- Confirmed reduction of operator workload in a 20 person study with custom Isaac Sim environment
- Modeled impacts on task performance metrics using generalized linear mixed models

Influencing Attributions to Robot Behaviors During Task Execution *attributions.nickwalker.us*

- Collected responses to robot behaviors, learned mixture of gaussian models of motion perception
- Invented novel constrained optimization formulation for expressive motion during task execution
- Designed, executed user study with 50+ participants to confirm model efficacy

Measuring Perceptions of a Curious Robot's Offtask Actions

- Created and validated questionnaire for the perception of curiosity using factor analysis
- Conducted online video-vignette studies with 100+ participants to understand user perceptions
- Identified positive impact of robot transparency on user acceptance of robots that learn

Human Factors of Using 3D Mice to Control Robot Manipulators

- Observed and interviewed 20 novice 3D mouse users to understand challenges
- Developed new three.js visualizations and signal processing for robot teleoperation
- Mentored graduate student to develop and release software package, write an award-winning paper

Narration of Robot Experience to Assist Bystander Failure Understanding

- Guided team studying LLM-based system for summarizing multi-minute robot trajectories
- Showed that generated narrations improve failure localization speed and accuracy

Human Help to Reduce the Cost of In-the-Wild Mobile Robot Deployments *wandering.nickwalker.us*

- Developed C++ navigation behavior, deployed on low-power robot in a building for day-long sessions
- Demonstrated that minutes of assistance can reduce cost of user studies with long term autonomy
- Wrote about and photographed the deployment for a story in *IEEE Spectrum*

Supervision and Monitoring Interfaces for Picking Workcell *robotic-manipulation.sciencehub.uw.edu*

- Observed 6 external system evaluations to understand challenges for system's human supervisors
- Developed methods and interfaces for rapid failure triage by remote humans