NICK WALKER

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github.com/nickswalker
nickwalker.us

EDUCATION

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

EXPERIENCE

Graduate Research Assistant — *University of Washington* — 2018–present
- Developed robot systems, designed and executed user studies resulting in 7+ published articles

Research Intern — *NVIDIA* — 2022
- Designed and evaluated teleoperation assistance for robot manipulation in clutter

SKILLS

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

PROJECTS

Assistive Teleoperation for Cluttered Environments
- Designed a pointing-based interface to assist teleoperators picking and placing objects
- Engineered CUDA-accelerated system to rank thousands of assistance candidates at 30hz
- Confirmed reduction of operator workload in a 20 person study with custom Isaac Sim environment

Localization-Free System for In-the-Wild Mobile Robot Deployments — *wandering.nickwalker.us*
- Developed C++ navigation system, deployed on low-power robot in a building for day-long sessions
- Deobfuscated, reverse engineered robot and shared findings with 5 other university teams
- Wrote about, photographed the deployment for a story in IEEE Spectrum

Influencing Attributions to Robot Behaviors During Task Execution — *attributions.nickwalker.us*
- Collected responses to robot behaviors, learned mixture of Gaussian models of motion perception
- Designed, executed user study with 50+ participants using models to guide robot motion planning

RoboCup@Home with UT Austin Villa@Home — *open-world.nickwalker.us*
- Developed Answer Set Programming-based planning system for ambiguous language instructions
- Developed, released C++ package for knowledge representation into ROS 1 ecosystem using Bloom
- Three-time member of a team that deployed and competed internationally, placing 3rd globally

Picking Unseen Objects from Densely Packed Shelves — *robotic-manipulation.sciencehub.uw.edu*
- Led development from parts to first pick with a UR16e warehouse picking workcell in 3 weeks
- Developed SMACH state machines and interfaces to evaluate the system used for 1000s of picks

Learning Robot Backchanneling Behaviors from Human-Human Conversations
- Collected dataset of human-human video conversations and learned model of nodding behavior
- Validated that users preferred the learned behavior in a user study and deployed models onto a robot

Using 3D Mice to Control Robot Manipulators
- Developed visualizations, signal processing for 6DOF robot control with commodity input device
- Mentored a student to develop, release package, and to write an award-winning conference paper

Undergraduate Mobile Robotics (CSE478) Course Materials
- Developed unit tests and CI-based autograder used for 5+ offerings with over 200 students