Curriculum Vitae

Ameer Helmi, Ph.D.

Ph.D. in Robotics
Oregon State University

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U.S. Citizen

SUMMARY

Skilled Ph.D in Robotics with 5+ years of experience in building, testing, and integrating robots and an additional 5+ years of experience in project management and customer success. Expert in managing and tracking multiple priorities while collaborating across multiple teams and improving system reliability and efficiency. Seeking challenging roles in robotics and technology spheres.

EDUCATION

Oregon State University Corvallis, OR
Doctor of Philosophy, Robotics 08/2019 - 06/2024
GPA: 3.8/4.0
Advisor: Dr. Naomi T. Fitter
Dissertation: Mediating Child Physical Activity with Assistive Robots

University of Illinois at Chicago Chicago, IL
Bachelor of Science in Biomedical Engineering 08/2009 - 06/2013
GPA: 3.7/4.0

SKILLS AND CERTIFICATIONS

Programming: Robot Operating System (ROS), Python, MATLAB, Linux, Arduino, Git, ROS2, C++,
Hardware: 3D Printing, OnShape CAD
Technical Skills: Machine Learning, Human-Robot Interaction, Mixed-Method Data Collection, Statistical Analysis, Assistive Technology, Clinical Studies
Certifications: University of Washington Professional & Continuing Education C# and ASP.Net

RESEARCH & WORK EXPERIENCE

Oregon State University, Corvallis OR 09/2019 – 08/2024
Graduate Research Assistant

- Conducted 5 multi-month child-robot interaction studies in collaboration with physical therapists, finding evidence that an assistive robot can improve children's levels of physical activity.
- Led human-centered design process for development and rapid prototyping of 5 assistive robot systems for improving children's level of physical activity, incorporating a TurtleBot2 base, CAD, Python, LIDAR, ROS, and 3D-printed multi-sensory hardware.

- Trained machine learning models of affective computing with a thermal camera for automatically detecting affect changes in children with disabilities.

Oregon State University, Corvallis OR 09/2019 – 06/2020
Teaching Assistant

- Partnered with teacher to develop ROS2 assignments for graduate Introduction to Robotics course with 20 students.
- Demonstrated consistent and professional correspondence with students for undergraduate Intermediate Dynamics course with 100 students.
- Adapted course material for virtual teaching and provided consistent feedback for undergraduate Introduction to Python course with 80 students.

Epic, Seattle, WA 08/2015 – 12/2018
Technical Consultant

- Spearheaded quality control application build for Virtua Health.
- Directed a cross-functional team of 8 as application manager in implementing workflows at Yale New Haven Health.
- Managed a team of 5 application coordinators to develop unique hybrid Cytogenetics and Molecular Diagnostics workflows at the University of California, Los Angeles.

Epic, Verona, WI 06/2013 – 08/2015
Technical Solutions Engineer

- Delivered robust and creative solutions for over 200 system issue logs as technical engineer of Baptist Memorial Health Care and Cambridge University Hospital (CUH).
- Improved CUH laboratory result turnaround times by 20% through development of novel integrated Cytogenetics/Molecular workflow system.
- Developed multiple software enhancements and fixed 22 system bugs in M Cache system code.

Hospira, Lake Forest, IL 01/2012 - 05/2012
Engineering Intern

- Conducted rigorous impact testing and risk analysis on Symbiq infusion pumps, contributing to improved product reliability and patient safety.
- Designed and tested a new shroud cover for Symbiq infusion pumps, utilizing SolidWorks and 3D printing to enhance product durability and performance.
- Collaborated with quality and manufacturing teams to implement corrective designs, ensuring compliance with industry standards and regulatory requirements.

University of Illinois at Chicago, Chicago, IL 08/2009 – 06/2013
Undergraduate Research Assistant

- Created novel design of a fully automated glaucoma diagnosis device with MATLAB and Arduino.
- Implemented and tested a real-time weather data collection system with MATLAB and Arduino for land-mine detection.
- Developed integrated LabVIEW GUI for Capnograph instrument used in a cancer detection study.
- Led 50 team members as president of the Chicago Engineering Design Team robotics club.

PUBLICATIONS

Unpublished Manuscripts (In Preparation and Under Review)

Helmi, A., Mayoral, R. M., Wang, T. H., Logan, S. W., & Fitter, N. T. (2024). Go Go Gadget GoBot: Leaning into the Novelty Effect for Reengagement with Modular Robotic Hardware. In *review to the International Journal of Social Robotics (SORO)*.

Helmi, A., Wang, T. H., Logan, S. W., & Fitter, N. T. (2024) Look at Them Go! Evidence of Motor Skill Benefits from Robot-Mediated use of a Novel Pediatric Mobility Aid. In *review to the Robotics and Automation Letters (RA-L)*.

Helmi, A., Scheide, E., Wang, T. H., Logan, S. W., Hollinger, G. A., & Fitter, N. T. (2024). GoBot: An Autonomous Assistive Robot using Behavior Trees to Encourage Child Mobility. In *review to the Transactions in Human-Robot Interaction Journal (THRI)*.

Peer-Reviewed Conference Papers

Helmi, A., Sloane, B. M., Logan, S. W., & Fitter, N. T. (2024). Clinician Perspectives on Autonomy and Trust in Robots for Pediatric Interventions. Accepted to the *International Conference on Social Robotics (ICSR)*. Springer.

Mayoral, R. M., **Helmi, A.**, Warren, S. T., Logan, S. W., & Fitter, N. T. (2023, October). Robottheory Fitness: GoBot's Engagement Edge for Spurring Physical Activity in Young Children. In *International Conference on Intelligent Robots and Systems (IROS)* (pp. 7939-7944). IEEE.

Helmi, A., Wang, T. H., Logan, S. W., & Fitter, N. T. (2023, September). Harnessing the Power of Movement: A Body-Weight Support System & Assistive Robot Case Study. In *International Conference on Rehabilitation Robotics (ICORR)* (pp. 1-6). IEEE.

Helmi, A., Koenig, K. M., & Fitter, N. T. (2022, December). A Model Child? Behavior Models for Simulated Infant-Robot Interaction. In *International Conference on Social Robotics* (pp. 3-12). Springer.

Helmi, A., Noregaard, S., Giulietti, N., Logan, S. W., & Fitter, N. T. (2022, May). Let Them Have Bubbles! Filling Gaps in Toy-Like Behaviors for Child-Robot Interaction. In *International Conference on Robotics and Automation (ICRA)* (pp. 7417-7422). IEEE.

Vinoo, A., Case, L., Zott, G. R., Vora, J. R., **Helmi, A.**, Logan, S. W., & Fitter, N. T. (2021, August). Design of an Assistive Robot for Infant Mobility Interventions. In *International Conference on Robot & Human Interactive Communication (RO-MAN)* (pp. 604-611). IEEE.

Zhang, B. J., Quick, R., **Helmi, A.**, & Fitter, N. T. (2020, October). Socially Assistive Robots at Work: Making Break-Taking Interventions more Pleasant, Enjoyable, and Engaging. In *International Conference on Intelligent Robots and Systems (IROS)* (pp. 11292-11299). IEEE.

Journal Articles

Mayoral, R. M., **Helmi, A.**, Logan, S. W., & Fitter, N. T. (2024). GoBot Go! Using a Custom Assistive Robot to Promote Physical Activity in Children. In *Journal of Translational Engineering in Health and Medicine, 12*, 613-621. IEEE.

Raja Vora, J., **Helmi, A.**, Zhan, C., Olivares, E., Vu, T., Wilkey, M., Noregaard, S., Fitter, N. T., & Logan, S. W. (2021). Influence of a Socially Assistive Robot on Physical Activity, Social Play Behavior, and Toy-Use Behaviors of Children in a Free Play Environment: A within-subjects Study. In *Frontiers in Robotics and AI*, *8*, 768642.

Short Peer-Reviewed Conference Workshop Papers

Helmi, A., Phillips, C., Castillo, F., Logan, S. W., & Fitter, N. T. (2023) OverTrack: Overhead Camera Tracking Tool for Child-Robot Interaction. In *Workshop on Social Robot Navigation: Advances and Evaluation, International Conference on Intelligent Robots and Systems (IROS).* IEEE.

Helmi, A., Dassonville, L., Zhan, C., & Fitter, N. T. (2022) GoBot Dance: An Air Dancer-Inspired Robot for Child-Robot Interaction. In *from modelling to understanding children's behavior in the context of robotics and social artificial intelligence Workshop, International Conference on Social Robotics (ICSR)*. Springer.

Helmi, A., Wang, T. H., Zhan, C., Nys, K., Sankari, P., Logan, S. W., Fitter, & N. T. (2022). GoBot Throw: A Toy-Inspired Ball-Launching Robot for Child-Robot Interaction. In *from modelling to understanding children's behavior in the context of robotics and social artificial intelligence Workshop, International Conference on Social Robotics (ICSR)*. Springer.

Helmi, A., & Fitter, N. T. (2021). Lights, Camera, Action! Evaluating Robot Reward Behaviors in Free Play with Children. In *Interdisciplinary Research Methods for Child-Robot Relationship Formation Workshop, International Conference on Human-Robot Interaction (HRI)*. IEEE.

Helmi, A., & Fitter, N. T. (2020). Using Motion Expert Feedback to Design Models for Infant-Robot Interaction. In *Workshop on Child-Robot Interaction, International Conference on Social Robotics (ICSR)*. Springer.

PRESENTATIONS

Conference Presentations

Helmi, A. (2022). A Model Child? Behavior Models for Simulated Infant-Robot Interaction. Presented at the *International Conference on Social Robotics (ICSR)*, Florence, Italy.

Helmi, A. (2022). GoBot Throw and GoBot Dance: Assistive Robot for Child-Robot Interaction. Presented at the *Modelling to Understanding Children's Behavior in the Context of Robotics and Social Artificial Intelligence Workshop, International Conference on Social Robotics (ICSR)*, Florence, Italy.

Helmi, A. (2022). Let Them Have Bubbles! Filling Gaps in Toy-Like Behaviors for Child-Robot Interaction. Presented at the *IEEE International Conference on Robotics and Automation (ICRA)*, Philadelphia, PA.

Helmi, A. (2021). Design of an Assistive Robot for Infant Mobility Interventions. Presented at the *IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)*, Vancouver, Canada.

Helmi, A. (2021). Lights, Camera, Action! Evaluating Robot Reward Behaviors in Free Play with Children. Presented at the *Interdisciplinary Research Methods for Child-Robot Relationship Formation Workshop, International Conference on Human-Robot Interaction (HRI)*, Boulder, CO.

Helmi, A. (2020). Using Motion Expert Feedback to Design Models for Infant-Robot Interaction. Presented at the *Child-Robot Interaction Workshop, International Conference on Social Robotics (ICSR)*, Golden, CO.

Poster Presentations

Helmi, A. (2024). Pilot Observations of an Autonomous Red Light, Green Light Robot for Interactions with Children with Disabilities. Poster presented at the *ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, Boulder, CO.

Helmi, A. (2023). OverTrack: Overhead Camera Tracking Tool for Child-Robot Interaction. Poster presented at the *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Detroit, MI.

Helmi, A. (2023). Harnessing the Power of Movement: A Body-Weight Support System & Assistive Robot Case Study. Poster presented at the *International Consortium on Rehabilitation Robotics (ICORR)*, Singapore.

Helmi, A. (2023). Illuminating Engagement: Real-Time Thermal Imaging of Child Affect During Child-Robot Interactions. Poster presented at the *International Consortium on Rehabilitation Robotics (ICORR)*, Singapore.

Helmi, A. (2022). Let Them Have Bubbles! Filling Gaps in Toy-Like Behaviors for Child-Robot Interaction. Poster presented at the *IEEE International Conference on Robotics and Automation (ICRA)*, Philadelphia, PA.

Invited Talks

Helmi. A. (2024). Go Go Gadget GoBot: Leaning into the Novelty Effect for Reengagement with Modular Robotic Hardware. Presented at the *Northwest Robotics Symposium (NWRS)*, Corvallis, OR.

Helmi, A. (2022). Design of an Assistive Robot for Infant Mobility Interventions. Presented at the *Northwest Robotics Symposium (NWRS)*, Seattle, WA.

MENTORSHIP

Graduate Researchers

- Susan Liu: Master's Student in Artificial Intelligence at Oregon State University (OSU), 2023-2024
- Rafael Morales Mayoral: Master's Student in Robotics at OSU, 2022-2024

Undergraduate Researchers

- Kevin Sabbe: Summer REU student at OSU, 2024, from OSU
- Lara Rupnawar: Summer REU Student at OSU, 2023, incoming OSU student
- April X. Murray: Undergraduate researcher at OSU, 2022-2024
- Sydney Fujimoto: Undergraduate researcher at OSU, 2023-2024
- Emily Shannon: Interdisciplinary Senior Capstone Team Member at OSU, 2022-2023
- Bethany Bibler: Interdisciplinary Senior Capstone Team Member at OSU, 2022-2023
- Susan Liu: Interdisciplinary Senior Capstone Team Member at OSU, 2022-2023
- Luke Dassonville: Summer REU Student at OSU, 2022, incoming OSU student
- Fernando Castillo: Summer REU Student at OSU, 2022, from Pomona College
- Rafael Morales Mayoral: Undergraduate researcher at OSU, 2021-22
- Christine Zhan: Mechanical Engineering Capstone Team Member at OSU, 2021-2022
- Pico Sankari: Mechanical Engineering Capstone Team Member at OSU, 2021-2022
- Kenneth Nys: Mechanical Engineering Capstone Team Member at OSU, 2021-2022
- Kristen Koenig: Summer REU Student at OSU, 2021, from Vassar College
- Shel-Twon Warren: Summer REU Student at OSU, 2021, from University of Arkansas
- William Kistler: Mechanical Engineering Capstone Team Member at OSU, 2020-2021
- Joshua Moore: Mechanical Engineering Capstone Team Member at OSU, 2020-2021
- Emily Ball: Mechanical Engineering Capstone Team Member at OSU, 2020-2021
- David Rosales: Mechanical Engineering Capstone Team Member at OSU, 2020-2021
- Brandon Einck: Mechanical Engineering Capstone Team Member at OSU, 2020-2021
- Misael Torres: STEM Leaders Researcher at OSU, 2020-21
- Connor Phillips: Summer REU Student at OSU, 2020, from Arizona State University
- Joshua Phelps: Summer Undergraduate Researcher at OSU, from Brown University

PROFESSIONAL AFFILIATIONS

- IEEE Member
- ACM Member
- International Consortium for Rehabilitation Robotics (ICORR) Member
- Oregon State Robotics Graduate Student Association (RGSA) Treasurer (2020-2022)