

Katie S. Hahm

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SUMMARY

Extensive experience at the intersection of robotics, mechanical design, and sensors. Develop creative machine learning techniques and computational methods to work within the restrictions of human-system interfaces. Proven strong collaborative skills to work in a team environment on multi-disciplinary projects. Looking for remote work or work in the greater Los Angeles area.

EDUCATION

Massachusetts Institute of Technology (MIT), Cambridge, MA Expected Fall 2022

Ph.D. Candidate, Department of Mechanical Engineering

- Thesis: Smart home floor sensing for gait monitoring

M.S. Department of Mechanical Engineering May 2019

- Thesis: Design of a fail-safe wearable robot with novel extendable arms for ergonomic accommodation
- GPA 4.8/5.0

Stanford University, Stanford, CA June 2017

B.S. Department of Mechanical Engineering

- GPA 3.84/4.0

EXPERIENCE

MIT Device Realization Laboratory, Cambridge, MA 09/2019 – present

Graduate Researcher with Dr. Brian Anthony

- Developed machine learning, statistical, and signal processing techniques to extract gait characteristics through vibrations in the floor for at-home, continuous health monitoring with minimal sensors
- Designed a novel localization algorithm; performed experiments with motion capture to compute accuracy of step time asymmetry and ground reaction force estimations

Amazon Robotics, North Reading, MA 06/2019 – 08/2019

Research Scientist Intern, R&D Hardware Development

- Designed sensors and algorithms for universal robotic picking for automation in fulfillment centers

MIT D'Arbeloff Laboratory, Cambridge, MA 09/2017 – 05/2019

Graduate Researcher with Prof. Harry Asada

- Designed a novel linkage mechanism that utilizes singularity configuration to its advantage
- Implemented 6 DoF active and passive support; performed kinematic and structural analysis for controllability; built a full-scale robot to demonstrate capabilities

Walt Disney Imagineering, Glendale, CA 06/2017 – 08/2017

Research Lab Associate Intern, R&D

- Implemented haptic effects with mechanical systems for multi-sensory augmented reality experiences
- Presented to head of Imagineering Research; chosen as one of top 10 technologies in the last 2 years in the company

Biomimetics and Dexterous Manipulation Lab, Stanford, CA 06/2015 – 08/2015

Undergraduate Research Assistant with Prof. Mark Cutkosky

- Manufactured 7 'μTugs', micro robots with gecko adhesives that pull up to 2000x their weight
- Designed and built experimental setups to demonstrate relative load sharing capabilities by pulling a car
- Featured in New York Times Technology

LEADERSHIP

Graduate Resident Advisor, MIT 04/2021 – present

- Live-in mentor for undergraduate students to foster a supportive, safe, and positive living environment
- Help manage stress, facilitate conflict, and encourage personal growth in the living community

Teaching Assistant 2.120: Introduction to Robotics, MIT 02/2019 – 05/2019

- Design and lead laboratory sessions for undergraduate and graduate students
- Design and manufacture laboratory materials specific to final project challenge

PUBLICATIONS

Hahm, K.S., Anthony, B.W. “In-home Health Monitoring using Floor-based Gait Tracking.” *Journal of Internet of Things* (2022) *In Review*

Das, M., **Hahm, K.S.**, LaRocca, A.A., Luna, C.A., ... & Roche, E. “A Low-Cost, Easily Deployable Vesicovaginal Fistula Occluding Device for Providing Interim Continence.” *Journal of Medical Devices* (2022)

Hahm, K.S., Chase, A.S., Dwyer, B., Anthony, B.W. “Indoor Human Localization and Gait Analysis using Machine Learning for In-home Health Monitoring.” 2021 43rd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)

Hahm, K.S., Asada, H.H. “Design of a Fail-safe Wearable Robot with Novel Extendable Arms for Ergonomic Accommodation during Floor Work.” 2019 IEEE/RSJ International Conference on Intelligence Robots and Systems (IROS)

Christensen, D.L., Suresh, S.A., **Hahm, K.S.**, Cutkosky, M.R. “Let’s all pull together: Principles for sharing large loads in microrobot teams.” *IEEE Robotics and Automation Letters* (2016)

SKILLS, PROJECTS, INTERESTS

- **Skills:** MATLAB, Python, SolidWorks, Arduino, Machining
- **Projects:** Designed, manufactured, and tested a vesicovaginal fistula occluding device (team of 4, mentor: Prof. Ellen Roche); Developed a robotic texting app for mental health (team of 3, mentor: Prof. Rosalind Picard); Designed and manufactured a collaborative and assistive robot for hemiplegic patients (team of 12, mentor: Prof. Harry Asada)
- **Interests:** Climbing, tennis, hiking, violin