

# Mia E. Hoffman

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## Education

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<b>University of Washington</b> <b>PhD Candidate, Mechanical Engineering</b> Faculty Advisors: Drs. Kat Steele and Heather Feldner Thesis: Mobility and accessible play technologies for young children	Seattle, WA 2021 – 2026
<b>Graduate Certificate in Disability Studies</b>	2023 - Present
<b>MS, Mechanical Engineering</b>	2021 – 2023
<b>University of Notre Dame</b> <b>BS, Mechanical Engineering</b> Minor: Bioengineering Faculty Advisor: Dr. Maria Holland Undergraduate thesis: Computational study on the mechanics of growth and brain folding of non-human primate brains	Notre Dame, IN 2021

## Research Experience

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<b>University of Washington</b> , Neuromechanics & Mobility Lab   IMPACT Collaboratory Advisors: Katherine M. Steele & Heather A. Feldner Quantifying young children’s interactions with mobility aids, including modified ride-on cars, Permobil Explorer Mini, and an open-area partial bodyweight support system, in both laboratory and community settings Co-designed and evaluated a switch-accessible play kit for young children with complex medical needs in collaboration with local families and early intervention providers	2021 – Present
<b>University of Notre Dame</b> , CoMMaND Lab Advisor: Maria Holland   Undergraduate Research Assistant Applied computational mechanics techniques to investigate how cortical thickness influences brain folding in non-human primates	2018 – 2021
<b>University of Minnesota</b> , Auditory Perception & Cognition Lab Advisor: Andrew Oxenham   NSF Neuroimaging REU Intern Developed an experimental interface and assisted with fMRI data analysis to identify pitch sensitive regions of the brain in response to tonal stimuli	Summer 2019
<b>University of Rochester</b> , Carney Lab Advisor: Laurel H. Carney   NSF REU Intern, Advancing Human Health, From Nano to Network Designed and conducted a pilot study with human participants to examine the effect of precursor noise on the efferent auditory system	Summer 2018
<b>Nationwide Children’s Hospital</b> , Battelle Center for Mathematical Medicine Advisor: William C. Ray   Future Matters Program Intern Employed clustering algorithms to identify protein subsets from urine samples as potential diagnostic markers for preeclampsia	Summer 2016

## Service & Outreach

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<b>HuskyADAPT Student Executive Chair</b> , UW, Seattle, WA Led a student organization providing assistive technology and educational workshops to the local community, including switch-adapted toys, custom design projects, low-cost switches, and adapted books	2023-2025
<b>HuskyADAPT Design Chair</b> , UW, Seattle, WA Mentored 36 students on year-long accessibility-related design projects with local community organizations Facilitated weekly workshops on design thinking and technical skills	2022-2023
<b>NextProf Pathfinder Mentor</b> , UM, Ann Arbor, MI Served as a peer mentor for PhD students attending the NextProf Pathfinder workshop	2023
<b>Mechanical Engineering Graduate Student Association Social Chair</b> , UW, Seattle, WA	2022-2023

Organized social events (e.g., happy hours, non-alcohol based get-togethers, holiday celebrations, lunches focused on affinity groups) to foster community among graduate students, faculty, and administration

- GoBabyGo Volunteer**, UW, Seattle, WA 2021 – Present  
 Collaborated with families and clinicians to modify ride-on cars for children with disabilities  
 Secured funding to develop standardize toolkits to streamline the build process
- Enable ND President**, ND, Notre Dame, IN 2020 – 2021  
 Led a student club focused on designing and manufacturing open-source, 3D printable assistive technology  
 Secured funding and resources to support design initiatives and expand club's impact
- Enable ND Vice-President**, ND, Notre Dame, IN 2019 – 2020  
 Established Enable ND as an official club at Notre Dame and created connections with the larger disability community
- Enable ND Director of Research & Development**, ND, Notre Dame, IN 2018 – 2019  
 Mentored design teams developing assistive technology for the local community
- Society of Women Engineers Director of Diversity**, ND, Notre Dame, IN 2019 – 2020  
 Planned events focused on affinity groups and organized DEI-focused programming for members
- Society of Women Engineers Director of Outreach** 2018 - 2019  
 Organized STEM outreach events (e.g., Girl Scout Day, Women in Engineering basketball game) to engage local girls in engineering

## Teaching

- Teaching Assistant**, University of Washington, Seattle, WA Fall 2024 & Fall 2025  
 Course: Introduction to Design Process (2024: 150 students, 2025: 220 students)  
 Duties:  
 Develop material and lead design studio sections  
 Provide feedback on designs and design processes both in person and through graded coursework  
 Collaborated with lead instructor to integrate inclusive design and an equity lens analysis into coursework
- Course Co-Instructor**, University of Washington, Seattle, WA Sp 2023  
 Course: Human Engineering Graduate Seminar  
 Duties:  
 Co-developed course structure and weekly content  
 Coordinated student-led discussions on journal articles and assistive technology topics  
 Facilitated engagement and critical analysis of current research in human engineering
- Mechanical Engineering Capstone Team Advisor**, University of Washington, Seattle, WA Wi & Sp 2023  
 Served as a primary mentor for two 2-semester-long senior capstone teams  
 Weekly advising meetings with teams to provide feedback and guidance
- Bioengineering & Mechanical Engineering Capstone Team Advisor**, University of Washington, Seattle, WA Wi & Sp 2022  
 Served as a mentor for a 2-semester-long, interdisciplinary senior capstone team  
 Weekly advising meetings with teams to provide feedback and guidance  
 Direct communications with family and early intervention clinic clients
- Teaching Assistant**, University of Notre Dame, Notre Dame, IN Spring 2021  
 Course: Intro to Electrical Engineering and Embedded Systems (120 students)  
 Duties:  
 Lead experimental physical computing lab sessions  
 Grade all assignments and exams
- Guest Lectures**
- Universal Design Principles, ME 493, University of Washington, Seattle, WA Nov 2025  
 Frameworks for Accessible Design, ME 493, University of Washington, Seattle, WA Nov 2024  
 Intro to Accessible Design, BIOEN 215, University of Washington, Seattle, WA Nov 2023  
 Accessible Technology for Play, University Seminar, Oregon Health and Science University, Virtual. Oct 2022

## Mentoring

<b>Doctoral Students</b>	<b>Elisa Koolman</b> (3rd year Ph.D. Student, UT Austin) Disability studies scholarship in engineering education
	<b>Ally Clarke</b> (2nd year Ph.D. Student, Mechanical Engineering) Development of FrankenCap – an open-source toolkit for upper-body tracking
	<b>Shariphine Agoalikum</b> (2nd year Ph.D. Student, Rehabilitation Medicine) Relation between Gross Motor Function and exploration for young children with developmental delay and disabilities
<b>DPT Students</b>	<b>Aislinn Knight</b> (2024 – 2026) Caregivers perspectives on the use of mobility aids by non-ambulatory children with Down syndrome
	<b>Tiffany Li</b> (2023 – 2025) Caregiver and clinicians perspectives during the co-design of the Switch Kit
<b>Undergraduates</b>	<b>Spencer Hensley</b> (2025 – Present) Changes in muscle activation patterns during young children’s use of mobility aids
	<b>Katie Leija</b> (2025 – Present) Using motion capture to track young children’s use of mobility aids
	<b>Neha Arunkumar</b> (2024 – Present) Accessible design leader and student chair in HuskyADAPT Mary Gates Leadership Scholarship
	<b>Alisha Bose</b> (2024 – Present) Development and evaluation of the Switch Kit Mary Gates Research Fellowship
	<b>Riley Bernas</b> (Summer 2024) Development of a method to track Switch Kit use in Scratch 2024 UW Center for Neurotechnology Research Experience for Undergraduates
	<b>Kate Bokowy</b> (2023 – 2025, Department of Mechanical Engineering Outstanding Research Award) Development and evaluation of the Switch Kit Researching how posture can be identified from a wearable sensor

## Honors & Awards

<b>Dennis Lang Award in Disability Studies</b> , University of Washington	May 2025
Awarded annually by UW’s Disability Studies Program to undergraduate and graduate students who demonstrate academic excellence in disability studies and a commitment to disability-related social justice issues	
<b>RESNA Student Scientific Paper Competition Winner</b> , 1 <sup>st</sup> Place	May 2025
<b>RESNA Student Scientific Paper Competition Winner</b>	May 2023
<b>NWBS Honorable Mention for Best Poster</b>	May 2023
<b>Ron and Wanda Fellowship in Mechanical Engineering</b> , University of Washington	2021 – 2022
<b>Bioengineering Outstanding Undergraduate Researcher Award</b> , University of Notre Dame	April 2021
<b>Sorin Fellow</b> , University of Notre Dame	2018 – 2021
<b>Dean’s Citation for Broadening Participation in Research</b> , University of Rochester	August 2018
<b>Glenna R. Joyce Scholarship</b> , University of Notre Dame	2017 – 2021
Four-year merit scholarship for full tuition and boarding at the University of Notre Dame awarded to three students annually	

## Grants & Funding

<b>National Institute of Health INCLUDE TL1 Fellow</b>	2024 – 2027
Provides three years of financial support for a graduate research assistantship and research expenses Supports investigation into young children with Down syndrome’s initial interactions with mobility aids	
<b>CREATE Translation Grant</b>	January 2024
Awarded \$10,000 to advance the development and evaluation of the Switch Kit, an accessible play kit for young children receiving early intervention	

**CREATE Student Minigrant**

February 2023

Awarded \$250 for the development of a modular datalogger for use with modified ride-on cars

**National Science Foundation Graduate Research Fellow** [Link](#)

2021 – 2024

Five-year fellowship awarded to top graduate student applicants in NSF-supported STEM fields

Includes three years of financial support through a stipend and tuition waiver

## Publications

**Journal papers under review**

- P11. **Hoffman, ME.**, K Bokowy, A Bose, T Li, HA Feldner, KM Steele. “Low-cost accessible Switch Kit for age-appropriate play in early intervention: A technical report.” *Under review*.
- P10. **Hoffman, ME.**, R Abuatiq, K Bokowy, AL Fiss, J Looper, KM Steele, HA Feldner. “Up and Down: Analysing physical activity and posture with wearable sensors during partial bodyweight supported play for young children with Down syndrome.” *Under review*.
- P9. **Hoffman, ME.**, E. Koolman, HA Feldner. “A systematic review of disability representation in engineering design education.” *Under review*.

**Peer-reviewed Journal Papers**

- P8. Gijbels L, KA Ingraham, NL Zaino, **ME Hoffman**, J Mizrahi, AN Sinclair, BY Woo, A Fragomeni, AN Meltzoff, KM Steele, HA Feldner, P Kuhl. “Promoting agency and communication through powered mobility: A single-group, repeated measures intervention using the Explorer Mini in toddlers with motor disabilities.” *Frontiers in Rehabilitation Sciences, section Rehabilitation in Children and Youth*. 2025. *Accepted*.
- P7. Sloane BM & **Hoffman, ME**, SW Logan, LK Kenyon, HA Feldner. “Comparison of three tracking methods to assess usage of two pediatric powered mobility devices for young children with cerebral palsy.” *Assistive Technology*, 2025. [10.1080/10400435.2025.2577390](https://doi.org/10.1080/10400435.2025.2577390) (co-first authors)
- P6. Ingraham, KA, NL Zaino, C Feddema, **ME Hoffman**, L Gijbels, A Sinclair, AN Meltzoff, PK Kuhl, HA Feldner, KM Steele. “Quantifying joystick interactions and movement patterns of toddlers with disabilities using powered mobility with an instrumented Explorer Mini.” *IEEE Transactions on Neural Systems and Rehabilitation Engineering*. 2025. [10.1109/TNSRE.2025.3528454](https://doi.org/10.1109/TNSRE.2025.3528454)
- P5. Zaino, NL, K Ingraham, **ME Hoffman**, HA Feldner, KM Steele. “Quantifying toddler exploration in seated and standing postures with powered mobility.” *Assistive Technology*. 2024. [10.1080/10400435.2024.2400463](https://doi.org/10.1080/10400435.2024.2400463)
- P4. Abuatiq, RA, **ME Hoffman**, AL Fiss, J Looper, HA Feldner. “Exploring the efficacy of a dynamic harness system on gross motor development and motivation for infants With Down syndrome: A pilot study.” *Pediatric Physical Therapy*. 2024. [10.1097/PEP.0000000000001130](https://doi.org/10.1097/PEP.0000000000001130)
- P3. **Hoffman, Mia E.**, KM Steele, JE Froehlich, KN Winfree, and HA Feldner. “Off to the park: A geospatial investigation of ride-on car usage.” *Disability & Rehabilitation: Assistive Technology*. 2024. [10.1080/17483107.2023.2248218](https://doi.org/10.1080/17483107.2023.2248218)
- P2. (undergraduate research) Demirci, N, **ME Hoffman**, and MA Holland. “Systematic cortical thickness patterns and curvature patterns in primates.” *Neuroimage*. 2023. [10.1080/17483107.2023.2248218](https://doi.org/10.1080/17483107.2023.2248218)
- P1. (undergraduate research) Darayi, M, **ME Hoffman**, J Sayut, S Wang, N Demirci, Jack Consolini, and MA Holland. 2021. “Computational models of cortical folding: A review of common approaches.” *Journal of Biomechanics*. 2021. [10.1016/j.jbiomech.2021.110851](https://doi.org/10.1016/j.jbiomech.2021.110851).

**Peer-reviewed Conference Papers**

- CP5. Patten, E., S Maleej, **ME Hoffman**, M Shabani, S Abdullah. “Work in Progress: Increasing motivation in large design courses through a unique project structure using collaborative competitions.” *ASEE 2026, Charlotte, 2026*. *Accepted*.
- CP4. **Student Scientific Paper Competition Winner: Hoffman, ME.** R Bernas, A Bose, K Bokowy, HA Feldner, KM Steele. “Measuring Early Intervention Provider’s Use of a Novel Switch-accessible Play Kit.” *Rehabilitation Engineering Society of North America (RESNA), May 12, 2025, Chicago, IL*.
- CP3. Koolman, E, **ME Hoffman**, A Schauer, “Review of terminology used in course-based engineering design for disability research.” *ASEE 2025, Montreal, 2025*. <https://peer.asee.org/57143>
- CP2. **Student Scientific Paper Competition Winner: Hoffman, ME.** Sloane B, Fragomeni A, Steele KM, Feldner HA. “Exploring the World on Wheels: A Geospatial Comparison of Two Pediatric Mobility Devices”. *Rehabilitation Engineering Society of North America (RESNA), July 24- 26, 2023, New Orleans, LA*. [\[link\]](#)

- CP1. **Hoffman, ME.**, KM Steele, KN Winfree, and HA. Feldner. "The Impact of the Built Environment on Early Power Mobility Access." UrbanAccess'22 Workshop at ASSETS. <https://accessiblecities.github.io/UrbanAccess2022/#accepted-papers>

## Presentations

### Conference Symposium Presentations

3. **ME Hoffman** and BM Sloane. "Reimagining Mobility Aids: Collaborative Innovations Between Engineering and Physical Therapy." APTA Pediatrics Annual Conference, October 31-November 2, 2025.
2. **ME Hoffman** and S Westlake. "Switch It Up: From Adapted Toys to Therapeutic Gaming." Rehabilitation Engineering Society of North America (RESNA), May 12, 2025.
1. **Hoffman, ME.** HA Feldner, T Li. "Co-Designing a Switch Accessible Digital Play Environment for Children in Partnership with Clinicians and Families." 2025 APTA Combined Sections Meeting (CSM), February 2025, Houston, TX.

### Podium Presentations

10. **Hoffman, ME.** R Bernas, A Bose, K Bokowy, HA Feldner, KM Steele. "Measuring Early Intervention Provider's Use of a Novel Switch-accessible Play Kit." Rehabilitation Engineering Society of North America (RESNA), May 12, 2025, Chicago, IL.
9. **Hoffman, ME.** "Co-designing Switch Accessible Play for Young Children Receiving Early Intervention." Justys F. Lehmann Symposium, June 10, 2024, Seattle, WA.
8. **Hoffman, ME.**, Sloane B, Fragomeni A, Steele KM, Kenyon LK, Logan SW, Feldner HA. "A Comparison of Methods for Assessing Young Children's Mobility Device Use in Real-world Settings." Northwest Biomechanics Symposium, May 17-18, 2024, Eugene, OR.
7. Looper JE, Fiss, A, Abuatiq, R., **Hoffman, ME.**, Feldner, H.A. "Dynamic Supported Play Environments to Encourage Mobility and Exploration in Toddlers with Down Syndrome". 2024 APTA Combined Sections Meeting (CSM), February, 2024, Boston, MA.
6. Abuatiq, R., **Hoffman, ME.**, Fiss, A., Looper, J., Feldner, H.A. "Exploring the Benefits of a Dynamic Harness System Using Partial Body Weight Support on Gross Motor Development for Infants with Down Syndrome". Academy of Pediatric Physical Therapy Annual Conference, October 28, 2023, Omaha, NE.
5. **Hoffman, ME.**, Abuatiq R., Fiss AL., Looper J., Steele KM., Feldner HA. "Quantifying the Activity Levels of Toddlers with Down Syndrome Playing in a Partial Body Weight Support System". American Academy for Cerebral Palsy and Developmental Medicine (AAPDM), September 10-13, 2023, Chicago, IL.
4. **Hoffman, ME.**, Sloane B., Fragomeni A., Steele KM., Feldner HA. "Exploring the World on Wheels: A Geospatial Comparison of Two Pediatric Mobility Devices". Rehabilitation Engineering Society of North America (RESNA), July 24-26, 2023, New Orleans, LA.
3. **Hoffman, ME.**, Steele KM., Winfree KN., Feldner HA. "Why Can't I go to the Park?" A Geospatial Analysis of How the Built Environment Impacts Adapted Ride-on Car Use". International Seating Symposium, April 13-15, 2023, Pittsburgh, PA.
2. **Hoffman, ME.**, Steele KM., Winfree KN., Feldner HA. "A Geospatial Investigation of Adapted Ride-on Car Usage and the Lived Environment". Justys F. Lehmann Symposium, June 2, 2022, Seattle, WA.
1. **Hoffman, ME.**, Holland, MA. "Analyzing the Cortical Thickness of the Primate Brain using Magnetic Resonance Imaging". WE20, November 2-13, 2020, Virtual Meeting.

### Invited Presentations

- 10 **Hoffman, ME.** Wheels, Walking, and In Between: An engineer's approach to examining mobility outcomes for young children with disabilities. Waypoint Pediatric Therapies, November 2025, Bellevue, WA.
- 9 **Hoffman, ME.** Wheels, Walking, and In Between: An engineer's approach to examining mobility outcomes for young children with disabilities. Ohio State University, October 2025, Virtual.
- 8 **Hoffman, ME.** Mobility Aids for Young Children with Down Syndrome. Kinderling Redmond, July 2025, Redmond, WA.
- 7 **Hoffman, ME.** Mobility Aids for Young Children with Down Syndrome. Holly Ridge Center, April 2025, Bremerton, WA.

- 6 **Hoffman, ME.** Mobility Aids for Young Children with Down Syndrome. Waypoint Pediatric Therapies, April 2025, Issaquah, WA.
- 5 **Hoffman, ME.** Mobility Aids for Young Children with Down Syndrome. First Steps Pediatric Therapy, April 2025, Kirkland, WA.
- 4 **Hoffman, ME.** Using the Switch Kit in Early Intervention. Kindering Redmond, May 2024, Redmond, WA.
- 3 **Hoffman, ME.** Using the Switch Kit in Early Intervention. Boyer Children’s Clinic, August 2024, Seattle, WA.
- 2 **Hoffman, ME.** Development of the Switch Kit. Kindering Bothell, August 2023, Bothell, WA.
- 1 **Hoffman, ME.** “Digital Play for Young Kids with Disabilities.” Meta Day, November 2022, University of Washington, Seattle, WA.

## Continued Education

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**Engineering Course Design and Pedagogy**, University of Washington Winter 2026

10 contact hours: Learned strategies for designing engineering courses and implementing inclusive teaching practices through a seminar series based on the Inclusive Excellence Faculty Fellowship Program.

**NextProf Nexus Workshop**, USC Santa Barbara September 2025

30 contact hours: Gained skills in establishing a research lab, mentoring students, and navigating the faculty application process during a four-day intensive workshop.

**ITHS TL1 Training Program**, University of Washington 2024 – 2025

40+ contact hours: developed translational science competencies through weekly seminars on topics including dissemination and implementation, mentoring approaches, and rigor and reproducibility in research.

**Undergraduate Research Mentor Workshops**, University of Washington 2024 – 2025

6 contact hours: Strengthened mentorship practices with training focused on equity in mentoring, fostering belonging and inclusion, and balancing advocacy with student empowerment.

**NextProf Pathfinder Workshop**, USC San Diego October 2022

20 contact hours: Built foundational knowledge for future faculty success, including career planning and professional development strategies, during a three-day workshop.