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Abena Boadi-Agyemang

Robotics Institute, Carnegie Mellon University
5000 Forbes Ave
Pittsburgh, PA, 15213

aboadiag@andrew.cmu.edu
https://aboadiag.github.io

Research statement

As a researcher, I am passionate about creating technology that empowers people. My research interests are primarily within the space of *accessibility* and *human-machine interaction*. I focus on creating socially assistive agents to promote human mental wellbeing and assistive robots to support people with disabilities with their daily tasks. I leverage tools from across disciplines, including robotics, design research, HRI, HCI, and psychology. **I am currently looking for research intern positions focused on *human-robot* or *human-AI interaction*.**

Education

Ph.D. Robotics	Carnegie Mellon University, Expected 2026 Advisor: Aaron Steinfeld
M.S. Robotics	Carnegie Mellon University, 2025 Advisor: Aaron Steinfeld
B.S. Mechanical Engineering	Stanford University, 2021 Focus: Dynamic Systems and Controls

Research Experience

Graduate Research Assistant 2021 -	Robotics Institute, Carnegie Mellon University Designing robot-mediated tools and assistive robotics aids to support people with people with disabilities.
Undergraduate Research Assistant 2019 - 2021	Mechanical Engineering Department, Stanford University SHAPE Lab (PI: Sean Follmer) Designed assistive haptic devices for blind and low vision users and learners.
Undergraduate Research Assistant 2018 - 2019	Clayman Institute for Gender Research, Stanford University PI: Melisa Abad Examined language in corporate leadership statements to inform gender inclusivity interventions.
Undergraduate Research Assistant 2017 - 2018	Graduate School of Education, Stanford University PI: John Willinsky Examined and catalogued predatory journals (from "Beall's List") and prepared contact database for journal integrity intervention participation.

Academic Publications

(* denotes equal contribution. Google Scholar for full papers)

Book Chapters **(Peer Reviewed)**

[B1] Siu, A. F., Chase, E. D. Z., Kim, G. S. H., **Boadi-Agyemang, A**, Gonzalez, E. J., and Follmer, S. (2021). Haptic Guidance to Support Design Education and Collaboration for Blind and Visually Impaired People. In *Plattner H., Design Thinking Research. Understanding Innovation. Springer.*

Journal Articles **(Peer Reviewed)**

[J1] Carter, Lopez, Sun, Warrier, Wu, Ng, Wang, **Boadi-Agyemang**, Tomasic, Zimmerman, and Steinfeld. Designing Future Smartphone Apps for Navigation, Exploration, and Object Identification with Blind Users. *Under Review.*

[J2] Shih, K.*, **Boadi-Agyemang, A.***, Carter, E.J., Steinfeld, A. (2025). A Multi-Method Investigation of Guide Robot Characteristics for Blind and Low Vision Users. Forthcoming In *ACM Transactions on Human-Robot Interaction (THRI).*

Conference Papers **(Peer Reviewed)**

[C1] **Boadi-Agyemang, A**., Schaldenbrand, P., Misra, V., Carter, E.J., Oh, J., Steinfeld, A. (2025). If I Move, Do You Move? Investigating the Role of Interpersonal Synchrony in Human-Robot Joint Painting. Forthcoming In *The 34th IEEE International Conference on Robot and Human Interactive Communication (RO-MAN).*

[C2] Han, V. Y., **Boadi-Agyemang, A.**, Lin, Y., Lindlbauer, D., and Ion, A. (2023). Parametric Haptics: Versatile Geometry-based Tactile Feedback Devices. In *The 35th Annual ACM Symposium on User Interface Software and Technology (UIST).*

Short Papers **(Peer Reviewed)**

[S1] **Boadi-Agyemang, A.*** and Park, M.*. (2024). Designing Interactive Agents to Support Emotion Regulation in the Workplace through Guided Art-Making. In *Companion of the 2024 ACM/IEEE International Conference on Human-Robot Interaction (HRI).*

[S2] **Boadi-Agyemang**, **A**., Carter, E.J., Siu, A. F., Steinfeld, A., and Martinez, M.O. (2023). Understanding Experiences, Attitudes, and Perspectives towards Designing Interactive Creative Tools for Teachers of Visually Impaired Students. In *The 25th International ACM SIGACCESS Conference on Computers and Accessibility* (*ASSETS*).

[S3] Kim, L. H.*, **Boadi-Agyemang**, **A**.*, Siu, A. F., and Tang, J. (2020). When to Add Human Narration to Photo- Sharing Social Media. In *The 22nd International ACM SIGACCESS Conference on Computers and Accessibility* (*ASSETS*).

[S4] Chase, E. D. Z., Siu, A. F., **Boadi-Agyemang, A.**, Kim, G. S. H., Gonzalez, E. J., and Follmer, S. (2020). PantoGuide: A Haptic and Audio Guidance System to Support Tactile Graphics Exploration. In *The 22nd International ACM SIGACCESS Conference on Computers and Accessibility* (*ASSETS*).

Workshop **(Non-Archival, Lightly Reviewed)**

[W1] **Boadi-Agyemang, A.*,** Moharana, S.* (2025). The Case for Em(body)ed Approaches to Disability-Centered Interaction Design. In Workshop, *"Body Politics: Unpacking Tensions and Future Perspectives for Body-Centric Design Research in HCI" (ACM CHI 2025).*

[W2] **Boadi-Agyemang**, **A.***, Shih, K.* and Steinfeld, A. (2023). Discovering User Needs and Preferences for Guide Robots: Challenges and Preliminary Insights. In *Workshop "Assistive Robots for Citizens" at IEEE/RSJ Conference on Intelligent Robots and Systems (IROS 2023).*

Theses

[T1] **Boadi-Agyemang, A**. (2024). Simulated Encounters of the Third Kind: Scenario-Based Approach to Designing Guide Robots. Master's Thesis. Carnegie Mellon University.

[T2] Perez, G. A.*, **Boadi-Agyemang, A**.*, Mhatre, K.*, Wang, J.* (2021). Using a Vibrotactile Stimulation Device to Improve Knee Extension During Stance Phase in Children with Spastic Cerebral Palsy. Undergraduate Capstone, Stanford University. **[Nominated for Hoefer Prize for Writing in the Major]**

Teaching Experience

Teacher Assistant, Introduction to Human-Robot Interaction (16-467), Undergraduate Level Course — 2025
Course co-taught by Zackory Erickson, PhD, and Michelle Zhao at Carnegie Mellon University. Advised and mentored undergraduate research projects; held weekly office hours; graded weekly homework and final assignments

Teacher Assistant, Sensing and Sensors (16-722), Graduate Level Course — 2023
Course taught by Professor Cameron N. Riviere, PhD, Carnegie Mellon University. Taught lecture on Intro to Odometry & Kalman filtering; held demo lecture on using Arduino and various sensors. Held weekly office hours; graded weekly homework and lab assignments

Honors and Awards

Cadence Diversity in Technology Scholarship — 2023
Award ($5k) to a student who exemplifies leadership and demonstrates a passion for technology

Carnegie Mellon University's *Uber Presidential PhD Fellowship* — 2022 - 2023

University of Washington College of Engineering Dean's Fellowship *(declined)* — 2021
Graduate fellowship award for top incoming doctoral applicants ($10k/yr) (Nominated by HCDE)

University of Washington Top Scholar Fellowship *(declined)* — 2021
Award to attract outstanding students to the University of Washington ($2.5k)

Access_&Design Fellowship — 2021
Design fellowship for emerging BIPOC designers

Stanford Mechanical Engineering Summer Undergraduate Research Institute **(SURI)** — 2019, 2020
Research fellowship ($7.5k) to conduct and present ten-week, original research project

Academic Award of Excellence — 2018, 2019
Recipient for outstanding academic achievements, awarded by Stanford University Black Community Services Center

Botswana *Top Achievers Award and Scholarship* — 2017
Selective full university scholarship for stellar academic achievement, awarded by Botswana's Ministry of Education

American University Preparatory School Global Leadership Merit Scholarship — 2014 -2017
Three-year academic scholarship for a student with exemplary leadership qualities

Academic Service

Reviewer

IEEE International Conference on Robot and Human Interactive Communication	2025 -
ACM/IEEE International Conference on Human Robot Interaction	2023 -
ACM CHI Conference on Human Factors in Computing Systems	2023

Volunteer Service & Outreach

Gender Marginalized Lunch **Coordinator** — 2022 -
Organizing lunches to foster community between gender marginalized PhD students within the Robotics Institute: securing departmental funds during summer to continue lunches; assisted

with organizing the School of Computer Science wide PhD Women's lunch	
Lab Outreach Manager, Carnegie Mellon University Collaborated on efforts to create pathways to engineering for students from marginalized identities	2022 -2023
***Seeds of Change* Leader** Lead and mentor high school students to increase representation of girls and women in STEM fields	2020 -2021
***Rewriting the Code* Fellow** Fellowship for women in computing and STEM fields	2019 - 2021
***Phoenix Scholars* Mentor** Provide college application mentorship for minority students	2017 - 2018
***Educate A Generation Initiative* Founder** Lead hands on STEM workshops for students in low-resourced communities (in Pasadena, CA and Francistown, Botswana)	2015 - 2017

Research Supervised

Undergraduate Interns Janika Oh, Undergraduate, Mechanical Engineering + Music Tech, Carnegie Mellon University	2022
High School Summer Interns Sam Kuzmishin	2022

Coursework (graduate-level, CMU)

Intro to Robot Learning (16831)*; Kinematics, Dynamics, and Control (16711); Advanced Mechatronics Design (16878); Engineering Haptic Interfaces (16-880); Sensing & Sensors (16722); Math Fundamentals in Robotics (16811); Human Robot Interaction (16867)

Skills (* denotes moderate experience; ** denotes experience gained through graduate-level coursework at CMU)

Robotics:

1. **Robots:** Misty II (Furhat Robotics) – Python SDK, HTTP API; Pioneer 3-DX
2. **Frameworks & APIs:** PyTorch**, TensorFlow**, Gymnasium (OpenAI)**, ROS
3. **Physics simulators**:** MuJoCo

Research Methods:

1. **Quantitative:** experimental design
2. **Qualitative**: participatory design; ability-based design; UCD methods (interview, focus groups, survey; HCI methods (cognitive task analysis: contextual inquiry, think aloud; A/B testing; usability)
3. **Qualitative Analysis**: (reflexive) thematic analysis, affinity diagramming
4. **Statistical Analysis**: JMP, Matlab, R

Programming: Python, MATLAB, C, C++, Java; Markup* (HTML, Markdown)

Mechatronics: embedded systems, event-driven programming, circuit design

Design software:

1. **UX:** Adobe Xd, Figma
2. **CAD & CAE**: SolidWorks, Fusion 360
3. **Other**: Processing, Unity 3d, Adobe Illustrator, Miro

Fabrication: Laser Cutting, 3D Printing (FDM, SLA)

Manufacturing: Mill, Lathe, Form (sheet metal), Metal Joining (oxyacetylene weld), Waterjet Cutting, Woodworking, Sand Casting, Silicone Molding