



Rachel Adénékàn

PhD Candidate

Mobile & Wearable Health Tech.

I work at the interface of engineering and medicine to develop novel technologies that enable and encourage humans to live healthier lives.

Contact



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Education

2024

Stanford University
PhD in Mechanical Engineering
(biomedical focus)

2019

Stanford University
M.S. in Mechanical Engineering

2017

MIT
S.B. in Mechanical Engineering
Minor: Music

Skills

Mobile Health Technologies
Research Design, Execution, and
Analysis

Sensor data processing and analysis
(esp. related to health sensing, mobile
devices, and wearables)

Data Visualization

Building and leading collaborations
between engineers and clinicians

Technical writing and presenting

Honors

National Science Foundation Graduate
Research Fellow

Stanford Enhancing Diversity in
Graduate Education Fellow

Stanford Graduate Fellow (Medtronic
Foundations Fellow)

MIT Lincoln Labs Undergraduate
Research and Innovations Scholar

Selected Experiences

Stanford University

Jan 2022 - Present

Collaborative Haptics and Robotics in Medicine Laboratory

PhD Candidate with Prof. Allison Okamura
Co-advisors: Prof. Cara Nunez (Cornell University), Prof. Scott Delp

Developing and deploying a high-resolution, reproducible, and accessible (to clinicians and patients) screening method for Diabetic Peripheral Neuropathy (DPN) using a smartphone which can identify individuals at risk for DPN prior to overt clinical manifestation and at a potentially reversible stage.

- Characterized smartphone vibrations and tuned their governing parameters to measure clinically relevant sensory response in humans
- Evaluated the reliability and resolution of the smartphone-based platform in measuring human vibration perception thresholds via one-day, in-lab and multi-day, at-home user studies with over 60 participants
- Built and led clinical collaborations with one endocrinologist and four neurologists at Stanford Hospital to evaluate the performance of the smartphone-based platform in classifying over 100 patients with varying levels of risk of developing diabetic peripheral neuropathy
- Contributed significantly to grants to support the project (awarded): Stanford Center for Digital Health (\$50k, wrote grant and submitted independently), Stanford Precision Health and Integrated Diagnostics (\$200k, contributed figures and text), Stanford Diabetes Research Center (\$50k, contributed figures and text)
- Presented project findings at various conferences, seminars, and journals: EuroHaptics Conference 2022, BioRob Conference 2022, Stanford Wearable Electronics (EWear) Symposium 2023, IEEE Transactions on Haptics 2023 (paper under revision), IEEE Haptics Symposium 2023 (paper submitted)

Biomechatronics Laboratory

Jan 2018 - Nov 2021

Research Fellow with Prof. Steve Collins and Prof. Scott Delp

Developed methods of controlling wearable robotic devices (exoskeletons) to enhance balance ability in older adults.

- Developed real-time controllers for exoskeletons that output assistive torque based on the user's state
- Planned and executed human subject pilot experiments using biomechanics tools (EMG, Respirometry, Motion Capture, Force plates) and simulation platforms (OpenSim) to study human response to exoskeletons

Mechatronics Design Sequence

Sep 2017 - March 2018

ME218 Project Member

- Devised multiple user interactions using event driven programming, IR sensing and audio input to control system behaviors.
- Integrated visual, audio, and haptic feedback based on user input and system state.

Leadership Roles and Outreach

- New Creation Home Volunteer with At-Risk Young Moms in East Palo Alto (2018-Present)
- MIT Admissions Interviewer (2022 - Present)
- Stanford Vice Provost for Graduate Education (VPGE) Student Employee (2022 - Present)
- Stanford VPGE New Graduate Student Orientation Invited Speaker (2023)
- Stanford Summer Undergraduate Research Fellowship Mentor (2022 and 2023)
- Stanford Exposure to Research and Graduate Education (SERGE) Panelist (2022 and 2023)
- Stanford Enhancing Diversity in Graduate Education Mentor (2021-2023)
- Stanford Summer First Mentor (2022)
- Neuromuscular Biomechanics Lab Outreach Committee Member (2020-2022)
- Teaching Assistant for Stanford's Biomechanics of Movement (ME281) course (2021)
- Stanford School of Engineering Graduate Student Recruiter (2019-2020)
- Brains On, Kids Science Podcast, Guest Speaker (2020)
- Stanford SERGE Application Reviewer (2020)
- Stanford STEM Fellows Mentor (2019-2020)
- Bay Area Graduate Pathways to STEM Committee Member and Advisor (2018-2019), Mentor (2023)
- MIT Global Teaching Labs Instructor (2017)
- MIT's Design For America, Service and Outreach Team Co-Founder (2015-2016)