LARA A. THOMPSON

Professor of Mechanical Engineering, Founding Director of the Biomedical Engineering Program, Founding & Current Director of the Center for Biomechanical & Rehabilitation Engineering (CBRE)
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EDUCATION & INDUSTRIAL EXPERIENCE

Massachusetts Institute of Technology (MIT) Cambridge, MA
Harvard-MIT Division of Health Sciences and Technology (HST) Sept. 2007 – Aug. 2013
Ph. D., Biomedical Engineering; Thesis: A Study of the Effects of Sensory State on Rhesus Monkey Postural Control
Charles Stark Draper Laboratory Cambridge, MA
Mechanical Engineer May 2005 – Aug. 2007
Stanford University Palo Alto, CA
M.S., Aeronautical and Astronautical Engineering, Chancellor's List Sept. 2003 – March 2005
University of Massachusetts Lowell, MA
B.S., Mechanical Engineering, Summa Cum Laude Sept. 1999 – June 2003

AWARDS, ACADEMIC HONORS and FEATURES

- National Science Foundation (NSF) Convergence Accelerator, Track H, PI Meeting (one of three invited speakers to PI awardees). *Converging medicine and engineering: biomedical solutions.* (Jan. 2024)
- National Institutes of Health (NIH) National Institutes on Biomedical Imaging and Bioengineering (NIBIB) Advisory Board Invited Lecturer – Lopez Lecture (May 2023)
- Virtual Keynote Speaker - 2023 NAAS (National Association for Academy of Sciences)/AJAS (American Junior Academy of Sciences) Annual Meeting (March 2023)
- Plenary Speaker: American Association for Anatomy (AAA) Annual Meeting: Anatomy Connected 2023 (March 2023)
- *Blavatnik National Awards 2023 Nominee* (2023)
- *Alan T. Waterman Award Laureate 2022*: awarded the highest national honor for early-career scientists and engineers from the National Science Foundation; the award comes with $1 million grant (2022)
- Alan T. Waterman Laureate Public Lecture: *Falls and aging — the need for biomedical solutions to a global problem*, National Science Foundation (2022)
- $21.28M of awarded grants within the past few years: Principal Investigator (totaling over $10.72 million) and Co-Principal Investigator/Key Personnel (totaling over $10.56 million)
- Invited Panelist: National Science Foundation Directorate for Engineering Advisory Committee Meeting Fall 2022, presentation entitled: *Supporting Engineering Discovery Research at Primarily Undergraduate Settings: A faculty's perspective on building new research infrastructure* (2022)
- Initiator and founding Director: of over 100 Historically Black Colleges and Universities (HBCUs) nationwide, first and only ABET-accredited "Bachelor of Science in Biomedical Engineering" Program at an HBCU
- Featured alumni: Harvard-MIT Health Sciences and Technology (HST) webpage, *Lara A. Thompson is the first PI and faculty member of an HBCU to receive the NSF's Alan T. Waterman Award*
- Featured alumni: MIT Institute for Medical Engineering & Science (IMES) webpage, *Dr. Lara A. Thompson is the first principal investigator faculty member of an HBCU to receive the NSF's prestigious Alan T. Waterman Award*
- Featured in "Forbes": *NSF Recognizes Three University Scientists With The $1 Million Alan T. Waterman Award*

- Featured alumni: University of Massachusetts Lowell, *Engineering Alumna Awarded Nation's Highest Honor for Early-Career Scientists, Engineers* (2022)
- Featured alumni: Harvard University, Harvard Medical School, Speech and Hearing Biosciences and Technology (2021)
- Invited panelist: National Science Foundation distinguished panel discussion, *Black Scientists & Engineers at Our Nation's HBCUs: Making American History Now* (2021)
- Featured speaker: Presentation to Congress: National Science Foundation (NSF) Hill Event, entitled *Broadening Participation in STEM: Brought to you by NSF* sponsored by the United States House Committee on Science, Space and Technology (2020)
- Featured speaker: 2020 BEYA TechTalks: *Falls and aging: nexgen biomedical solutions* (2020)
- Featured alumni: Fall edition of Harvard Otolaryngology magazine: *Finding the right balance between research and medicine* (2019)
- 2019 BEYA STEM Innovator Award National Recognition (2019)
- Featured scientist: National Science Foundation Science Nation: *Research immerses HBCU undergrads in biomedical engineering* (2019)
- Appointed Grand Marshall for the University of the District of Columbia Commencement (2018)
- Featured scientist: HBCU Research Magazine article: *Next Generation Scientist: Making Great Strides* (2018)
- Diverse Issues in Higher Education Emerging Scholar 2017 National Award (2017)
- University of the District of Columbia Faculty Recognition Award for Outstanding University Service (2015 & 2017)
- University of the District of Columbia Faculty Recognition Award for Outstanding University Scholarship & Research (2016)
- Initiator and founding Director of the Center for Biomechanical & Rehabilitation Engineering Laboratory (2015)
- University of the District of Columbia Myrtilla Miner Faculty Fellow (2015)
- National Institutes of Health (NIH) Training Grant Fellowship (2007-2013)
- Ford Fellowship Honorable Mention (2009)
- Stanford University Chancellor's List (2005)
- Stanford College of Engineering Fellowship (2003)
- Ford Fellowship Honorable Mention (2003)
- Graduated Summa Cum Laude (2003)
- Dean's List all terms (1999-2003)
- National Athlete Student Day Award (2002)
- Inducted into Tau Beta Pi Honor Society (2001) & Member of Pi Tau Sigma (2001)

RESEARCH EXPERIENCE

University of the District of Columbia (UDC) Washington, DC
School of Engineering and Applied Sciences (SEAS)
Professor of Mechanical Engineering Oct. 2023–present
Associate Professor of Mechanical Engineering with Tenure Sept. 2017– Sept. 2023
Assistant Professor of Mechanical Engineering Sept. 2013 – Sept. 2017

- Applied for tenure & promotion to Associate Professor of Mechanical Engineering in Sept. 2016 (only 3 years post-Ph.D. and joining UDC as an Assistant Professor in Sept. 2013); granted tenure & promotion in Sept. 2017

Conceptualist & Principal Investigator: Specialized Technological Center for Assistive Rehabilitation Research (STAR) Sept. 2020 – present

- In Spring of 2018, conceptualized a new, multi-laboratory facility (STAR Center) focused on cutting-edge biomedical research to be housed at UDC, in our nation's capital
- The vision of the Center is for it to emerge as a regional and national hub for biomechanical and rehabilitation with research tied to the core areas of biomechanics (inclusive of bioimaging and 3D printing), assistive robotics, virtual reality rehabilitation, and gait & balance
- Sought out grant funds: as the sole-PI, wrote proposal for and was awarded $5,352,100 NIH C06 grant in Fall 2020
- Since 2020, have been working cohesively with a team of architects and engineers (R. McGhee and Associates) and Capital Construction towards the design of the new facility, with construction slated to be completed in 2025

Initiator & Director Center for Biomechanical & Rehabilitation Engineering (CBRE) Laboratory Aug. 2015 – present

- Principal Investigator of two National Institutes of Health (NIH) grants (totaling $7,242,100), three, National Science Foundation (NSF) grants (totaling $1,800,000), one National Aeronautics and Space Administration (NASA) Fellowship ($100,000), one Department on Aging & Community Living grant ($1,574,328, projected), and other small grants/projects
- Co-Principal Investigator/Key Personnel (totaling over $10.56 million)
- Spearheaded novel research within the renovated UDC CBRE lab (opened Summer 2015) aimed towards postural investigations and rehabilitation interventions for impaired (e.g., fall-prone elderly and stroke survivors) and un-impaired (e.g., athletes and non-athletes)
- Institutional Review Board (IRB) approved research protocols:
  - Investigating Human Mobility-related Attributes while Robed in an EVA Spacesuit (MARS) (ID: 1837316-1); Role: PI
  - Evaluating an Extension Assist Knee device to improve knee extension during walking (ID: 1833842-1); Role: Co-PI
  - Facilitating Aging individuals' Living and Learning preventative fall Strategies (FALLS) (ID: 1462878-1); Role: PI
  - Assistive Gait technologies for Elderly (AGE): Waging a new Enterprise on Living & Learning good balance (WELL) (ID: 1346920-1); Role: PI
  - Investigating a new Generation of Assistive Innovative Technologies (GAIT) for balance rehabilitation (ID: 979744-2); Role: PI
  - Nurturing Women's Innovativeness and Strength in Engineering through experiential learning in biomedical engineering (WISE) (ID: 974777-2); Role: PI
  - Studying the effects of athletic training on postural control (ID: 540869-1); Role: PI
- Created the UDC CBRE research lab environment by furnishing the 30 x 40 ft space with equipment (below) acquired from grants:
  - Two, *Tekscan Walkway Systems* to measure individual's ground reaction forces needed to assess standing balance and gait
  - *Vicon Motion Capture System* to measure subject's body movements
  - *Surface electromyography (or sEMG)* to measure muscle activity/response to determine postural strategies/muscle synergies
  - *NaviGAITor* system for multidirectional partial body-weight support and safety from falls
  - *Open Bionics* robotic prosthetic hand
  - *HTC Vive virtual reality system* for simulated environments
  - *Brain Vision EEG System* to measure brain activity (e.g., towards brain to machine interface)

Initiator & Founding Director of the Biomedical Engineering (BME) Program Jan. 2015 – Dec. 2023

- Wrote proposal for, was proactive in approval and initiation of the new Biomedical Engineering program: UDC full-board approval (Fall 2014), activities and courses created then initiated Fall 2015, Department of Education approval (Spring 2017), first-ever ABET accreditation visit (Fall 2020), "full" (or 6-year) ABET accreditation (Fall 2021)
- Of approximately 100 Historically Black Colleges and Universities (HBCUs) nationwide, UDC is the first HBCU to offer a specific, *ABET-accredited* Bachelor of Science in Biomedical Engineering degree program (2021)
- *Awarded $21.28M in grants:* Forged a new research laboratory from scratch (the CBRE) and, sought out and was awarded $10.72M as the PI in grants from NSF, NASA, NIH, DACL, and $10.56M as the Co-Principal Investigator/Key Personnel towards educational and research infrastructure-building in Biomedical Engineering
- Direct impact on *20 courses* within the School of Engineering and Applied Sciences: Conceived, forged and taught 8 brand new Biomedical Engineering courses as the lead instructor and facilitated the development of 7 other new courses for the program; aside from this, developed and taught 5 engineering courses (common engineering, Mechanical Engineering and Civil Engineering courses)
- Consistently interweaves teaching and mentoring with research and experiential learning

University of the District of Columbia (UDC) Washington, DC
Institutional Review Board (IRB) Chairperson, 2-year appointment Dec. 2017 – Dec. 2019
on leave end of Sept. 2019

- Spearheaded novel human subjects, biomedical research at UDC: was the first within the institution to conduct biomedical research tied to human postural control, balance and gait
- Provided guidance, advisement, and a direct interface to Principal Investigators (PIs) conducting human subject research at or associated with UDC
- Promptly responded to IRB-related questions & concerns, emails & phone calls
- Trained and informed new IRB members, as well as PIs, on human research best practices
- Orchestrated, led and conducted full-board IRB monthly meetings; this includes preliminary screening and review of all protocols, creating the monthly-meeting IRB agendas and delegating assignments to members towards IRB protocol review
- Assessed continuing review applications towards approval
- Knowledgeable of IRBNet; Created (wrote) and sent countless IRB response letters and communications to PIs
- Maintained trainings and certifications necessary for the IRB Chairperson role:
  - Participated in 2018 NIH Regional Seminar & Pre-Seminar Workshops: Human Research Reviews-Mastering the Process held in Washington, DC
  - Completed Certification for Protecting Human Research Participants from the NIH Office of Extramural Research and Completed Certification for CITI training

MedStar National Rehabilitation Hospital (NRH) Washington, DC
Department of Rehabilitation Medicine/Research Jan. 2018 – present
Rehabilitation Research Scientist & Associate staff member

- Spearheaded new research collaborations between the UDC Center for Biomechanical & Rehabilitation Engineering (CBRE) lab and the MedStar National Rehabilitation Hospital (NRH) tied to elderly and stroke survivors' balance and gait
- Research collaborator NIH Stroke Net: Stroke Central Atlantic Network for Research (SCANRR)

Harvard-MIT Health Sciences and Technology Cambridge, MA
Graduate Research Fellow June 2009 – Aug. 2013
Research Supervisor: Dr. Richard F. Lewis

- Motivation: Over 8-million American adults have chronic balance impairments due to damage in the peripheral vestibular system. While the brain may partially compensate for a relatively mild loss of peripheral vestibular function, many patients with severely impaired vestibular function will remain permanently debilitated, suffering from: oscillopsia (blurred vision), vertigo (dizziness), and imbalance leading to falls.
- Thesis Research: Investigated postural responses, for balancing tasks of increasing difficulty (i.e., quiet standing, head-turns, and balancing on a rotating platform), in two rhesus monkeys under four vestibular (equilibrium) states: normal, mild bilateral vestibular loss, severe bilateral vestibular loss and severe bilateral vestibular loss aided by a prototype invasive vestibular prosthesis; Analyzed and interpreted results using system identification techniques.

Charles Stark Draper Laboratory Cambridge, MA
Mechanical Engineer May 2005 – Aug. 2007
Supervisor: Philip Hipol

- Created MATLAB and Simulink models for various applications
- Participated in MEMS thermal accelerometer gyro concept preliminary research
- Performed modal and harmonic analysis using ANSYS and ANSYS Workbench 10.0
- Designed vibrational test fixture using ProEngineer
- Conducted ANSYS thermal modeling and stress analysis

Stanford University Palo Alto, CA
Graduate Research Assistant Jan. 2005 – March 2005
Supervisor: Robert MacCormack

- Researched magneto-fluid dynamics for aero applications for a short-term, one-semester project
- Wrote computer code to display regions of acceleration and deceleration of compressible flows under a magnetic field through a 1-D channel

University of Massachusetts Lowell, MA
Capstone Design Engineer Sept. 2002 – June 2003
Supervisor: John Duffy

- Capstone project included design and implementation (on-site build) of water delivery and purification system for the remote town of Huayash, Peru
- Constructed and tested prototype locally to validate effectiveness of slow-sand filtration and participated in on-site installation of full-scale filters in Peru
- Worked within a multidisciplinary team to determine project cost and time estimates, meet design constraints, as well as maintain project/task schedule (Gantt chart); Wrote and compiled a comprehensive over technical report (over 100-pages including appendices)

Mentis Sciences Manchester, NH
Junior Engineer May 2001 – Aug. 2003
Supervisor: John J. Dignam

- Utilized various layout procedures to fabricate composite plates & radomes from Kevlar & quartz
- Performed tensile and flexural experiments and tests on composite samples and established a data-base

PENDING or AWARDED GRANT PROPOSALS, FUNDING, and AGREEMENTS

Chen J, Xu J, **Thompson LA (Co-PI) ($299,827)**. *Development of OpenSim based workflow for estimation of joint load and muscle activations in reduced gravity for evaluation of exercise and medical aids*. Research Opportunities in Space and Earth Science (ROSES): Science Mission Directorate Bridge

Program. NASA Notice of Funding Opportunity: NNH23ZDA001N-BPSF (Favorable review, **Pending official award letter**)

Zhang L, Lum P, Ryan A, **Thompson LA (UDC PI) ($3,900,000)** *Impairment-focused Sensory-Motor Assessment and Rehabilitation Technologies (iSMART)*. RFA-HD-25-001: Medical Rehabilitation Research Resource (P50 Clinical Trial Optional) Department of Health and Human Services (HHS) National Institutes of Health (NIH) (July 2024, **Pending**).

Zane Networks, LLC (Lead), Central State University (CSU), Howard University (HU), Tougaloo College (Tougaloo), the University of the District of Columbia (Collaborating Institution: Shetty D, Hamilton M, **Thompson LA**, Peebles A, Chen J), University of the Virgin Islands (UVI), Google, LLC, and OmniSystems. **($50,000,000)** *Acquisition Support for NIH HBCU Path to Excellence and Innovation (NIH HBCU PEI) IDIQ*; RFP No. 75N98023R00002. Department of Health and Human Services (HHS), National Institutes of Health (NIH) (July 2023, **Pending**).

Thompson LA (sole-PI). Educational Partnership Agreement (EPA) between the UDC Biomedical Engineering program & Center for Biomechanical Rehabilitation Engineering and the Walter Reed National Military Medical Center (WRNMMC), 3D Medical Applications Center (November 2022)

Thompson LA (sole-PI) ($1,000,000). *Alan T. Waterman Awardee 2022.* Highest early career honor for early-career scientists and engineers, National Science Foundation (August 2022, **Awarded**).

Thompson LA (PI), Chen J, Denis M **($35,000)**. *Cultivating educational and research growth within the new UDC Biomedical Engineering program*. UDC HEERF Funds (July 2022, **Awarded**)

Davison J (PI, Catholic University of America), et al., **Thompson LA (Consultant)**, **($750,000)**. *Research and Innovative STEM Education (RAISE): To lift or move to a higher position or level*. FY21 Funding Opportunity Announcement (FOA) for the Office of Naval Research (ONR) Science, Technology, Engineering and Mathematics (STEM) Program (April 2022, **Awarded**).

Xu J (PI), Tyagi T, Klein K, Shaeri R, Wang L, Chen J, **Thompson LA (Co-PI)**, et al., **(~$2,000,000)**. NASA CAM STAR project extension (**Awarded**)

Thompson LA (sole-PI), Romero R (graduate candidate) **($50,000/year for 2 years)**. *Investigating Human Mobility and Activity while Robed in an EVA Spacesuit (MARS)*. NASA Fellowship Activity. Notice of Funding Opportunity: NNH21ZHA001N. (August 2021- September 2023, **Awarded**)

Thompson LA (sole-PI), Timothy Millner (Key Personnel) **($5,352,100)**. *Creating a Specialized Technological center for Assistive Rehabilitation Research (STAR) at the University of the District of Columbia.* PAR-20-086, C06 Research Facilities Grant, National Institutes of Health (Sept. 2020 – May 2025, **Awarded**).

Thompson LA (PI), Nian Zhang, Max Denis, Ji Chen (Key Personnel) **($1,890,000)**. *NIA MSTEM: Advancing Diversity in Aging Research through Undergraduate Education at the University of the District of Columbia.* PAR-17-290 NIA MSTEM: Advancing Diversity in Aging Research through Undergraduate Education (R25), National Institutes of Health (Sept. 2020 – 2025, **Awarded**).

Thompson LA (sole-PI) ($1,574,328 direct costs projected for Oct. 2019 – Sept. 2024, subject to yearly renewal and can extend beyond 5-year period). *Facilitating Aging individuals' Living and Learning preventative fall Strategies (FALLS).* Department on Aging and Community Living (**Awarded**).

Zhang N, **Thompson LA (Co-PI) ($551,889)**. *An Intelligent Optimization, Clustering, and Classification Framework for Large Scale Photo-Thermal Infrared Imaging Spectroscopy (PT-IRIS) Big Data.* Research and Educational Program for Historically Black Colleges and Universities & Minority Serving Institutions, Department of Defense (Oct. 2018 – Sept. 2021, **Awarded**)

Klein K, Shetty D, Behera P, Xu J, Tyagi P, **Thompson LA**, Dang H, Ossosanya E, Haghani S, Shaharinia A, Wellman B, Mahmoud W, Higgs B, Wang L **($6,761,811)**. *University of the District of Columbia (UDC) – National Institute of Standards and Technology (NIST) Professional Research Experience Program (PREP)*. National Institute of Standards and Technology. (Oct. 2018 – May 2023, **Awarded**)

Thompson LA (sole-PI) ($299,996). *Research Initiation Award (RIA): Investigating a new Generation of Assistive, Innovative Technologies (GAIT) for balance rehabilitation.* Historically Black Colleges and Universities Undergraduate Program (HBCU-UP), National Science Foundation (March 2017 - 2023, **Awarded**)

Thompson LA (PI), Zhang N **($99,997)**. *EAGER: Nurturing Women's Innovativeness and Strength in Engineering through experiential learning in biomedical engineering (WISE).* Division of Undergraduate Education (DUE), National Science Foundation (March 2017 - 2023, **Awarded**)

Xu J (PI), Tyagi P, **Thompson LA (Co-PI)**, Klein K, Shetty D **($496,442)**. *Acquisition of a Laser Rapid Manufacturing System, BEAM: Broadening Education through Advanced Manufacturing at UDC.* HBCU/MI Instrumentation Grant Application, Department of Defense (June 2016, **Awarded**)

Thompson LA (sole-PI) ($7,500). *Investigating Forceplate-based Measures in Non-Athlete and Athlete Populations.* University of the District of Columbia Faculty Incentive Research Grant (June 2016, **Awarded**)

Thompson LA (PI), Haghani S, Zhang N **($399,991)**. *Targeted Infusion Project: Integration, Cultivation, and Exposure to Biomedical Engineering at the University of the District of Columbia.* Historically Black Colleges and Universities Undergraduate Program (HBCU-UP), National Science Foundation (July 2015- Sept. 2020, **Awarded**)

Thompson LA ($1,500). University of the District of Columbia Myrtilla Miner Faculty Fellow Recipient. (May 2015, **Awarded**)

Thompson LA ($1,850). Annual Biomedical Research Conference for Minority Students (ABRCMS). (Oct. 2014, **Awarded**)

SUBMITTED GRANT PROPOSALS

Thompson LA (PI) ($3,000,000) *TRAILBLAZER Engineering Impact Award – VICTOR-E Virtual reality Investigation and Cultivation: Trailblazing new and Original Research in Engineering*, Division of Emerging Frontiers and Multidisciplinary Activities (EFMA) under the Directorate for Engineering (ENG) National Science Foundation. (February 2024)

Chandra K (PI, University of Massachusetts Lowell), et al., **Thompson LA (Co-PI) ($3,000,000)** *NRT-FW-HTF: Graduate Research and Interdisciplinary Traineeship (GRIT): Alliance for Resilient and Inclusive Systems Engineering (ARISE).* National Science Foundation Research Traineeship (NRT) Program, National Science Foundation (Sept. 2023).

Snelling A (PI, American University), et al., **Thompson LA (Consultant) ($650,000)**. Administration for Community Living, Administration on Aging, 2022 *Empowering Communities to Deliver and Sustain Evidence-Based Falls Prevention Programs* HHS-2022-ACL-AOA-FPSG-0031 (January 2022).

Zhang N, **Thompson LA (PI) ($300,000)**. *Collaborative Research: IRES Track I: U.S.-China Collaborative Research in Advanced Optimization, Clustering and Classification Methods for High Dimensional Class-Imbalanced Data.* International Research Experiences for Students (IRES), National Science Foundation (Sept. 2019).

Thompson LA (sole PI) ($4,094,444 in direct costs). *Creating a Specialized Technological center for Assistive Rehabilitation Research (STAR): the Center for Biomechanical & Rehabilitation Engineering at the University of the District of Columbia.* PAR-19-128 Biomedical Research Facilities, National Institutes of Health (Submitted March 2019, Peer-review overall impact score in "Excellent" / "Very Good" range (July 2019); (NIH Council of Councils reviewed Sept. 2019).

Thompson LA (PI), Schrack J, Zhang N **($2,265,232**). *Assistive Gait technologies for Elderly (AGE): Waging a new Enterprise on Living & Learning good balance (WELL).* Research on the Mechanisms and/or Behavioral Outcomes of Multisensory Processing (R01), National Institutes of Health. (Oct. 2018).

Thompson LA (PI), Wendt J, Mizelle-Johnson N, Zhang N **($4,321,212)**. Establishing a Rehabilitation Research and Training Center (RRTC) of National Excellence at the University of the District of Columbia (UDC), National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR) (April 2018).

Kumar N (PI), Kataria C, Bhardwaj A, **Thompson LA**, Shetty D **($236,598)**. *Wearable Device for Assessment and Rehabilitation of Ligament Injuries using Virtual Rehabilitation,* United States – India Technology Endowment Fund (July 2017).

Thompson LA (PI), Petty R, Adebayo A **($200,000)**. 2017 Distinguished Professor Endowed Chair (DPEC), Delta Sigma Theta Sorority (April 2017).

Zhang N, **Thompson LA (Co-PI) ($244,856)**. *Deep Supervised and Unsupervised Learning to Explore Feature Selection and Classification in Mobile Health Data,* National Science Foundation/National Institutes of Health (Sept. 2016).

Thompson LA (PI) ($299,998). *HBCU: EAGER: Investigating a Frontier Aid using Light touch Leading to Stability (FALLS)***.** Historically Black Colleges and Universities Undergraduate Program (NSF 16-1), National Science Foundation (June 2016).

Fleming L (PI, Howard University), *5-Institute Wide Grant,* **Thompson LA** (Project Knowledge Transfer and Outreach Lead). *Broadening Participation Research Centers (BPRC)* **($9,000,000)**. Historically Black Colleges and Universities Undergraduate Program (HBCU-UP), National Science Foundation (Jan. 2016).

Thompson LA (PI) ($499,994). *CAREER: FALLS- Investigating a Frontier Aid using Light touch Leading to Stability.* Faculty Early Career Development Program (NSF 15-555), National Science Foundation (July 22, 2015).

Thompson LA (PI), Haghani S, Xu J **($60,000)**. *"Devices-to-Aid-Mobility" Engineering.* University of the District of Columbia Land Grant RFP. (March 2015).

Thompson LA (PI) ($10,000). *The Development and Research of a Low-cost, Lower Limb Exoskeleton.* Ralph E. Powe Junior Faculty Enhancement Award: Engineering and Applied Science. Oak Ridge Associated Universities (ORAU). (Jan. 2015).

Thompson LA (PI), Haghani S., Xu J **($125,000)**. *"Devices-to-Aid-Mobility" Engineering (DAME): Capstone Designs to Aid Balance-Impaired Individuals.* General & Age-Related Disabilities Engineering (GARDE). National Science Foundation (Nov. 2014).

Thompson LA (PI) ($200,000). *Research Initiation – Compact Rehabilitation Aids for Balance (CRAB): Research of portable aids for balance- impaired individuals.* Historically Black Colleges and Universities Undergraduate Program (HBCU-UP), National Science Foundation (Oct. 2014).

Chandra K, Thompson C, Levasseur K, Weinstein Y, **Thompson LA (Co-PI) ($550,506)**. *Collaborative Research: BPEC Computing in Action: A Vibes and Waves Partnership for STEM Education.* CNS - Computing Ed for 21st Century (NSF 14-523), National Science Foundation (March 2014).

Zhang N, **Thompson LA (Co-PI)**, Ososanya E, Mahmoud WH, Wellman BL, Robinson-Richards D **($350,000)**. *Integration of Women and Minority Undergraduate Students in STEM via Research, Co-Design, and Build of Novel Lead Body Surface Mapping System (LBSMS)*. Historically Black Colleges and Universities Undergraduate Program (HBCU-UP), National Science Foundation (Feb. 2014).

Kumar N, Haghani S, **Thompson LA (Co-PI)**, Shetty D. *Affordable Exoskeleton device for Gait Rehabilitation of Gait Disorders of Children.* Indo-US Collaboration, National Science Foundation (Jan. 2014).

Thompson LA (PI), Shetty D, Haghani S, Nichols D, Lewis,R (**$399,210**). *The Development of a Home-Based Rehabilitative Device to Aid Fall-Prone Elderly and Balance-Impaired Patients.* Department of Education, National Institute on Disability and Rehabilitation Research (Jan. 2014).

PUBLICATIONS

1. Bachoro M, **Thompson LA**. *A comparison of post-training balance performance metrics of older healthy adults and survivors of stroke to younger individuals.* (In preparation)
2. Romero R, **Thompson LA**. *Investigating anchoring strategies used by subjects donning a simulated xEMU spacesuit.* (Journal submission, revision requested)
3. Arnold N, Wilson O, **Thompson LA**. Virtual reality training effects center of pressure (COP)-based balance parameters in older individuals. *Appl. Sci.* 2024, 14(16), 7182; https://doi.org/10.3390/app14167182

4. Newby A, **Thompson LA**. *Gaps in methodologies for treating Childhood Apraxia of Speech: exploring engineering techniques utilizing sensory substitution and social robots*. 2024 BMES Annual Meeting, Baltimore, MD.
5. Wilson O, El Hakour Y, Newby A, Douglas B, Butler J, Romero Melendez R, Borris F, Thorpe B, Arnold N, **Thompson LA**. *Exploring Virtual Reality Training for Elderly Individuals*. 2024 BMES Annual Meeting, Baltimore, MD.
6. Melendez RAR, **Thompson LA**. *Investigating Simulated Exploration Extravehicular Mobility Unit (xEMU) Effects on Standing Balance.* 2024 BMES Annual Meeting, Baltimore, MD.
7. Okhouya O, Tobias M, Ancel J, **Thompson LA**, Chen J. *Evaluation of a prosthetic arm for transradial Amputation in Bimanual Activities.* 2024 BMES Annual Meeting, Baltimore, MD
8. Bennett MK, Arnold N, **Thompson LA**, Peebles A. *The Impact of Dog Leash Tension on Lumbar and Knee Mechanic*s. American Society of Biomechanics (ASB) 2024, Madison, WI.
9. Morrison S, Ramirez-Reyes J, Arnold N, **Thompson LA**, Peebles A. *Design and Validation of a Device to Measure the Impact of Dog Walking on Gait Stability*. American Society of Biomechanics (ASB) 2024, Madison, WI.
10. Arnold ND, Wilson O, El Hakour Y, Newby A, Douglas B, Butler J, Romero Melendez R, Borris F, Thorpe B, Peebles A, **Thompson LA**. *Investigating the Impact of Virtual-Reality Balance Training in Older Adults.* American Society of Biomechanics (ASB) 2024, Madison, WI.
11. Wilson O, Borris F, Thorpe B, Azikiwe C, El Hakour Y, Newby A, Butler J, Romero R, **Thompson LA**. *Virtual Reality-based Training: Balance ability versus balance confidence in older adults*. IEEE EMBC 2024, Orlando, FL.
12. Wilson O, Arnold N, **Thompson LA**. Investigating the Effects of Virtual Reality-Based Training on Balance Ability and Balance Confidence in Older Individuals. *Applied Sciences, The Use of Virtual Reality (VR) in Medical Rehabilitation: Assessment Tools, Application Methods, VR Technology and Clinical Applications*. 2024; 14(11):4581. https://doi.org/10.3390/app14114581
13. **Thompson LA**, Romero R, Chen J. Postural Control in Aging Adults: Gait Strategies and Balance in Healthy Older Adults and Survivors of Stroke. *Biomechanics*. 2024; 4(1):153-164. https://doi.org/10.3390/biomechanics4010010
14. Melendez RAR, **Thompson LA**. Investigating the Effects of Center of Gravity (CoG) Shift Due to a Simulated Exploration Extravehicular Mobility Unit (xEMU) Suit on Balance. *Applied Sciences*. 2024; 14(10):4032. https://doi.org/10.3390/app14104032
15. Butler J, Romero R, Zhang N, Mahmoud W, **Thompson LA**. *Deep U-Net Neural Network for Brain Tumor Image Segmentation and Detection*. Southeast Decision Sciences Institute (SEDSI) 2024, Charleston, SC.
16. Azikiwe C, Wilson O, El Hakour Y, Newby A, Butler J, Romero R, **Thompson LA**. *Virtual Reality-Based Balance Training: an Approach to Improve Balance in Elderly Individuals.* ABRCMS Annual Conference 2023, Phoenix, AZ. *Awarded Poster Presentation.*
17. Wilson O, Azikiwe C, El Hakour Y, Newby A, Butler J, Romero R, **Thompson LA**. *Virtual Reality (VR) Based Training Towards Improving Balance Confidence and Reducing Falls Risk in Older Adults.* ABRCMS Annual Conference 2023, Phoenix, AZ.
18. Romero R, Thorpe B, El Hakour Y, Butler J, Wilson O, Newby A, Okhouya O, **Thompson LA**. *Investigating Simulated Exploration Extravehicular Mobility Unit (xEMU) Effects on Standing Balance.* ABRCMS Annual Conference 2023, Phoenix, AZ.
19. Shetty D, Campana C, **Thompson LA**, Sanchez Guerrero P. *Improving the Control of Fall Prevention Rehabilitation Device by Algorithmic Modification Through Testing*. ASME IMECE 2023, New Orleans, LA.
20. Chen J, Romero R, **Thompson LA**. *Motion Analysis of Balance Pre and Post Sensorimotor Exercises to Enhance Elderly Mobility: A Case Study*, Applied Sciences, vol. 13, no. 2, p. 889, 2023. [Online]. Available: https://www.mdpi.com/2076-3417/13/2/889.
21. Butler J, Thorpe B, Romero R, **Thompson LA**, Chen J. *Biomechanical Analysis of Aging Balance: Pre and Post Sensorimotor Exercises*, Annual Biomedical Research Conference for Minoritized

Scientists (ABRCMS) 2022, Anaheim, CA.

22. Romero R, Chen J, **Thompson LA**. *Exploring Postural Control Strategies: Relative Motion of Body Segments in Older Survivors of Stroke*, BMES Annual Meeting 2022, San Antonio, TX.
23. Walker T, Zhang N, **Thompson LA**, Shetty D. *Diversity, Equity, and Inclusion in Engineering Education.* 2022 ASEE Mid-Atlantic meeting, April 2022.
24. Martin G, Ancel J, Zhang N, **Thompson LA**, Shetty D. *K-12 Engineering Education Program Goals based on Interests, Challenges and Childhood Development Stages*. 2022 ASEE Mid-Atlantic meeting, April 2022.
25. **Thompson LA**, Badache M, Brusamolin JAR, Savadkoohi M, Guise J, Paiva GV, Suh P, Sanchez Guerrero P, Shetty D (2021). *Investigating the relationship between balance confidence and balance ability in older adults*. Journal of Aging Research, vol. 2021, Article ID 3214366. https://doi.org/10.1155/2021/3214366
26. **Thompson LA**, Badache M, Brusamolin JAR, Savadkoohi M, Guise J, Paiva GV, Suh P, Sanchez Guerrero P, Shetty D (2021). *Multidirectional overground robotic training leads to improvements in balance in older adults*. Robotics, 10(3): 101 https://doi.org/10.3390/robotics10030101
27. Romero Melendez RA, Abdus Shakur T, Badache M, Brusamolin JAR, Savadkoohi M, Guise J, Paiva GV, Suh P, Sanchez Guerrero P, Chen J, Shetty D, **Thompson LA**. *Investigating Overground Robotic Training Effects on Standing Balance in Older Adults*. BMES Annual Conference 2021, Orlando, FL.
28. **Thompson LA**, Martin G, Dixon Y, Savadkoohi M, Abdus Shakur T, Romero Melendez RA, Chen J, Newland L (2021). *Examining the Effects of In-Home Adaptations on Balance Perception.* BMES Annual Conference 2021, Orlando, FL.
29. Chen J, Romero Melendez RA, **Thompson LA**. *Analyzing Knee Angle profile of Two Multi-element Walking Conditions in a Square-shaped Path*. BMES Annual Conference 2021, Orlando, FL.
30. Shetty D, **Thompson LA**, Sanchez P, Campana C. *Improving the performance of Ambulatory Gait Training System for Rehabilitation by Mechatronics and Design Simulation*. ASME IMECE 2021, Paper No: IMECE2021-71487
31. Ramirez Rochac JF, Zhang N, **Thompson LA**. *A Robust Context-based Deep Learning Approach for Highly-imbalance Hyperspectral Classification*. Computational Intelligence and Neuroscience, vol. 2021, Article ID 9923491, 17 pgs. https://doi.org/10.1155/2021/9923491
32. Alvarado O, Bachoro M, Chen J, Shetty D, **Thompson LA**. Design of a tremor simulator device. (*Award-Winning* Student Paper) for Rehabilitation Engineering and Assistive Technology Society (RESNA) of North America Conference July 2021.
33. Savadkoohi M, Oladunni T, **Thompson LA**. *Deep Neural Networks for Human's Fall-risk Prediction using Force-Plate Time Series Signal,* Expert Systems with Applications. 182(15), 2021. https://doi.org/10.1016/j.eswa.2021.115220
34. Shetty D, **Thompson LA.** *Experimental Investigation, Modeling and Simulation for Industry 4.0 Case Studies in Rehabilitation, Predictive Maintenance and Rain Water Harvesting System.* Poster Presentation. ASME IMECE (2020).
35. Savadkoohi M, Oladunni T, **Thompson LA**. *A machine learning approach to epileptic seizure prediction using Electroencephalogram (EEG) Signal*, Biocybernetics and Biomedical Engineering. 40(3):1382-1341, 2020. doi: https://doi.org/10.1016/j.bbe.2020.07.004
36. **Thompson LA**, Savadkoohi M, Velluto de Paiva G, Brusamolin JAR, Guise J, Sanchez Guerrero P (2020). *Sensory-training improves balance in aging healthy and stroke individuals*. 2020 42nd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), Montreal, QC, Canada, pp. 3811-3814, doi: 10.1109/EMBC44109.2020.9175715.
37. **Thompson LA**, Zhang N (2020). *Young Women Exposed Actively to the Value of Biomedical Engineering*. 2020 42nd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), Montreal, QC, Canada, pp. 6013-6017, doi: 10.1109/EMBC44109.2020.9176290.

38. **Thompson LA** (2019). *Moderate sensory training exercises lead to improved balance in* elderly. Phys Ther Rehabil.; 6:12. http://dx.doi.org/10.7243/2055-2386-6-12
39. Savadkoohi M, Paiva GV, Suh P, Guise J, Stanford I, Hernandez G, Manzano M, **Thompson LA**. *Investigating Accessible Training Methodologies for Chronic Stroke Survivors.* BMES Annual Conference 2019, Philadelphia, PA.
40. **Thompson LA**, Stanford I, Savadkoohi M, Zhang N. *Exposing Young Women to Actively to the Value of Engineering (WEAVE) via Biomedical Engineering.* BMES Annual Conference 2019, Philadelphia, PA.
41. Rochac RJ, Zhang N, **Thompson LA**, Oladunni, T (2019). *A Data Augmentation-Assisted Deep Learning Model for High Dimensional and Highly Imbalanced Hyperspectral Imaging Data*. 2019 9th International Conference on Information Science and Technology (ICIST), 362-367. doi: 10.1109/ICIST.2019.8836913.
42. **Thompson LA**. *Age-related Control of Posture & Gait: Exploring Assistive Methodologies towards Improving Elderly Balance.* International Posture Symposium. Smolenice, Slovakia (Sept. 2018).
43. **Thompson LA**. *Sensorimotor Integration in Primates with Vestibular Dysfunction & Applicability to Human Postural Control.* International Posture Symposium. Smolenice, Slovakia (Sept. 2018).
44. **Thompson LA**, Badache M, Brusamolin JAR, Guise J, Behera L, Estrada SC, Savadkoohi M, Guerrero PS, Shetty D. *Exploring Assistive Technologies towards the Improvement of Elderly Balance and Balance Confidence*. Proceedings of the ASME 2018 International Mechanical Engineering Congress and Exposition. Volume 3: Biomedical and Biotechnology Engineering. Pittsburgh, Pennsylvania, USA. November 9–15, 2018. V003T04A038. ASME. https://doi.org/10.1115/IMECE2018-86815
45. **Thompson LA**, Xu J, Shetty D. *Devices to Aid Mobility: Biomedical Engineering-focused Undergraduate Senior Capstone Design Projects*. Proceedings of the ASME 2018 International Mechanical Engineering Congress and Exposition. Volume 5: Engineering Education. Pittsburgh, Pennsylvania, USA. November 9–15, 2018. V005T07A048. ASME. https://doi.org/10.1115/IMECE2018-86826
46. Tyagi P, Xu J, **Thompson LA**, Thomas M, Moore C, Haghani S, et al., *Experience of Multiple Instructors About Student Presentation Based Teaching (SPET) Approach*, Proc. ASME. IMECE2018, Volume 5: Engineering Education, V005T07A034, November 9–15, 2018, Paper No: IMECE2018-88410
47. **Thompson LA**, Haburcakova C, Lewis RF. *A distinctive platform-system to study the effects of a vestibular prosthesis on non-human primate postural control.* J Medical Diagnostics 1(2), 021004, 2018. doi: 10.1115/1.4039140
48. **Thompson LA**, Haburcakova C, Goodworth AD, Lewis RF. *An Engineering Model to Test for Sensory Reweighting: Nonhuman Primates Serve as a Model for Human Postural Control and Vestibular Dysfunction.* J Biomech Eng, 140(1), 2018. doi: 10.1115/1.4038157
49. **Thompson LA**, Badache M, Cale S, Behera L, Zhang N. *Balance performance as observed by center-of-pressure parameter characteristics in male soccer athletes and non-athletes*. Sports, *5*(4):86, 2017. doi:10.3390/sports5040086
50. Behera L, **Thompson LA**. *Exploring Force-Exertion of a Robotic, Prosthetic Hand for Common Hand Gestures.* NSF Emerging Researchers National Conference (ERN) in STEM (March 2017).
51. Zhang NA, Xiong J, Zhong J, **Thompson LA**, Ying H**.** *An Enhanced K-Nearest Neighbor Classification Method Based on Maximal Coherence and Validity Ratings*. Advances in Neural Networks ISNN 2017, F. Cong et al. (Eds.): ISSN 2017, Part I, LNCS 10261, pp.206-204, 2017.
52. Haburcakova C, Merfeld D, Gong W, Guinand N, Perez Fornos A, **Thompson LA**, Guyot JP, Lewis RF. *Sensory prosthetics - clinical and scientific utility of a vestibular implant.* Neurology, 88 (16), Supplement S26.002, 2017.
53. Baker C, Brent D, Wilson C, Xu J, **Thompson LA**. *Additive Manufacturing for Economical, User-accessible Upper-limb Prosthetics.* Pro Ort Open J 1:8, 2017.

54. **Thompson LA**, Haburcakova C, Lewis R. *Postural compensation strategy depends on the severity of vestibular damage.* Heliyon, 3(3), e00270, 2017. doi: 10.1016/j.heliyon.2017.e00270
55. **Thompson LA**, Haburcakova C, Lewis RF. *A novel platform-system to study the effects of a vestibular prosthesis on non-human primate postural control.* IMECE2017- 70724, ASME IMECE 2017. doi:10.1115/IMECE2017-70724
56. Badache M, Behera L, Zhang N, **Thompson LA**. *Investigating female athletes' balance using center-of-pressure (COP) derived displacement and velocity parameters.* IMECE2017- 70730, ASME IMECE 2017. doi:10.1115/IMECE2017-70730
57. **Thompson LA**, Haburcakova C, Lewis RF. *Vestibular ablation and a semicircular canal prosthesis affect postural stability during head turns*. Exp Brain Res, 234(11): 3245-3257, 2016. doi: 10.1007/s00221-016-4722-5
58. Zhang N, **Thompson LA**. *An Intelligent Clustering Algorithm for High Dimensional and Highly Overlapped Photo-Thermal Infrared Imaging Data*, Proc. of 2016 Mid- Atlantic ASEE Conference, Hempstead, NY Oct. 21st – 22nd, 2016.
59. **Thompson LA**, Badache M. *Investigating Center-of-Pressure Parameters to Quantify Athlete and Non-Athlete Balance*. IMECE 2016-65642, ASME IMECE 2016. doi:10.1115/IMECE2016-65642
60. **Thompson LA**, Adebayo AS, Zhang N, Haghani S, Dowell K, Shetty D. *Building a More Diverse Biomedical Engineering Workforce: Biomedical Engineering at the University of the District of Columbia, a Historically Black College & University*. Conf Proc IEEE Eng Med Biol Soc, 4325-4328, 2016. doi: 10.1109/EMBC.2016.7591684
61. Johnson P, **Thompson LA**. *An Investigation on the Control of a Robotic, Prosthetic Hand.* Annual Biomedical Research Conference for Minority Students (ABRCMS), Tampa, FL (Accepted 2016).
62. Cale S, Jacques B, Lockerman S, Wilson C, **Thompson LA**. *Studying the effects of athletic training on postural control.* NSF Emerging Researchers National Conference (ERN) in STEM. (Feb. 2016).
63. Haburcakova C, **Thompson LA**, Wall C, Lewis RF. *Postural control strategy in normal and vestibular-ablated states studied in an animal model.* International Posture Symposium. Smolenice, Slovakia (Sept. 2015).
64. Jacques B, **Thompson LA**. *Differences between mechanical and non-mechanically supportive balance aids.* 2015 Annual Biomedical Research Conference for Minority Students (ABRCMS), Seattle, WA (Accepted 2015).
65. Adebayo A, Ososanya E, Mahmoud W, **Thompson LA**, Haghani S, et. al, *The Design of Lower Limb Exoskeleton Device as an Accessory to Portable Harness Ambulatory System for Assisted Mobility*, Proc. of 2015 Mideastern ASEE Conference, Boston, MA, April 30-May 2, 2015, pp. 1-10.
66. Jacques B, **Thompson LA**. *The Development of a Home-based Postural Rehabilitative Device: the Analysis of Gait Using Portable Harness Ambulatory System (PHAS) Prototype.* Annual Biomedical Research Conference for Minority Students (ABRCMS), San Antonio, TX. (Nov. 2014).
67. **Thompson LA**, Haburcakova C, Lewis RF. *Postural sway evoked by head-turns in a severely vestibular-impaired and prosthesis-assisted rhesus monkey*. The International Society of Gait and Posture Research (ISPGR) Conference. Vancouver, Canada (July 2014).
68. **Thompson LA**, Haburcakova C, Goodworth AD, Lewis RF. *Sensorimotor integration used for rhesus monkey postural control*. The International Society of Gait and Posture Research (ISPGR) Conference. Vancouver, Canada (July 2014).
69. **Thompson LA**. *A Study of the Effects of Sensory State on Rhesus Monkey Postural Control*. Massachusetts Institute of Technology (2013). URI: http://hdl.handle.net/1721.1/84412
70. **Thompson LA**, Haburcakova C, Gong W, Lee D, Merfeld D, Lewis R. *Responses evoked by a vestibular implant providing chronic stimulation*. J Vestib Res, 22(1):11-5, 2012. doi: 10.3233/VES-2012-0442.
71. Lewis R, Haburcakova C, Gong W, Lee D, Wall C, **Thompson LA**, Merfeld D. *Vestibular*

Prosthesis Tested in Rhesus Monkeys. Conf Proc IEEE Eng Med Biol Soc, 2277-9, 2011. doi: 10.1109/IEMBS.2011.6090573

72. **Thompson LA**, Balkwill D, Wall C, Lewis R. *A Quiet Stance Study of Rhesus Posture.* Harvard University and MIT, Health Sciences and Technology Forum (April 2011).
73. **Thompson LA**, Balkwill D, Wall C, Lewis R. *A Quiet Stance Study of Rhesus Posture.* Harvard University, Longwood Medical Center, New England Science Symposium (April 2011).
74. **Thompson LA**, Balkwill D, Wall C, Lewis R. *A Quiet Stance Study of Rhesus Posture*. Association for Research in Otolaryngology (ARO) Midwinter Meeting (Feb. 2011).
75. **Thompson LA**, Balkwill D, Lewis R, Wall C. *A Simple Inverted Pendulum Feedback Control Model for Human Posture*. Association for Research in Otolaryngology (ARO) Midwinter Meeting (Feb. 2010).
76. **Thompson LA**. *Study of Posture in Vestibulopathic Rhesus Monkeys aided by an Invasive Vestibular Prosthesis.* Harvard Medical School, Massachusetts Eye and Ear Infirmary (MEEI) (May 2009).
77. **Thompson LA**. *A Simple Inverted Pendulum Feedback Control Model for Human Posture.* Harvard Medical School, Massachusetts Eye and Ear Infirmary (MEEI), (Dec. 2009).
78. **Thompson LA**, Balkwill D, Weinberg M, Wall C. *Implementation of Extended Kalman Filter for Non-Invasive Balance Prostheses.* Harvard University and MIT, Health Sciences and Technology Forum (April 2009)
79. **Thompson LA**, Balkwill D, Weinberg M, Wall C. *Implementation of Extended Kalman Filter for Non-Invasive Balance Prostheses.* Association for Research in Otolaryngology Midwinter Meeting (Feb. 2009).

MENTEE THESES, UNPUBLISHED PRESENTATIONS & REPORTS

(published student authored/co-authored papers are above in "Publications')

1. Wilson O (May 2024). Graduate Thesis: *Investigating Virtual Reality (VR) Training's Effects on Balance Performance and Balance Confidence in Older Adults*. Master of Science in Mechanical Engineering, Biomedical Engineering focus.
2. Bachoro M (Dec. 2023). Graduate Project: *A comparison of post-training balance performance metrics of older healthy adults and survivors of stroke to younger individuals*. Master of Science in Mechanical Engineering, Biomedical Engineering focus.
3. Romero R (May 2023). Graduate Thesis: *Probing the Effects of a Simulated Exploration Extravehicular Mobility Unit (xEMU) Spacesuit on Balance and Gait*. Master of Science in Mechanical Engineering, Biomedical Engineering focus.
4. Butler J, Abdus-Shakur T, Hernandez G, Thompson L (co-Advisor), Chen J (lead advisor). Design of a UDC Intrepid Dynamic Exoskeletal Orthosis (IDEO) Brace. UDC Biomedical Engineering Program (May 2023): This project was tied to an Educational Partnership Agreement (EPA) between UDC's Biomedical Engineering program, the Center for Biomechanical & Rehabilitation Engineering and Walter Reed's 3D Medical Application Center.
5. Collado S, Coombs T, Romero R, Soh H; Advisors: Denis M, Thompson LA. *Redesign of Ostomy Bag Wafer System*. UDC SEAS Senior Capstone Design Project Report, May 2020.
6. Manzano M; Advisor: Thompson LA. *Investigating a New Generation of Assistive, Innovative, Technologies (GAIT) for Balance Rehabilitation*. Lockheed Fellowship Final Report, May 2019.
7. Hernandez G; Advisor: Thompson LA. *Investigating the Effects of Balance Training in Aging Individuals* Lockheed Fellowship Final Report, May 2019.
8. Alhejazi A, Albluwi A, Khan A, Abdallah M, Saleh M, Suh P; Advisor: Thompson LA. *Constructing an Affordable and Reliable lower-limb Exoskeleton (CARE)*. UDC SEAS Senior Capstone Design Project Report, May 2019.
9. Albluwi A, Aldraiwiesh S, Almahmoud F; Advisor: Thompson LA. *Upper-limb Prosthetic Design Incorporating a Robotic Hand*. UDC SEAS Senior Capstone Design Project Report, May 2018.

10. Abdulaziz A, Almatar A, Alshammari N, Alsubaie R, Aldhafeeri B; Advisor: Thompson LA. *Design and Analysis of a Chairless Chair*. UDC SEAS Senior Capstone Design Project Report, May 2018.
11. Al Saihati M, Badache M, Behera L; Advisor: Thompson LA. *Design of a Passive Ankle-Foot Orthosis using Casted Silicone Rubber.* UDC SEAS Mechanical Engineering Senior Capstone Design Project Report, May 2018.
12. Baker C, Brent D, Wilson C; Advisor: Thompson LA. *Design of a 3D printed upper limb prosthetic*. UDC SEAS Mechanical Engineering Senior Capstone Design Project Report, May 2016.
13. Badache M; Advisor: Thompson LA. *Investigating Student Athlete Balance*. Xerox Fellowship Final Report, May 2016.
14. Wilson C; Advisor: Thompson LA. *Exploring State-of-the-Art: from Brain-Machine Interface (BMI) to Motion Capture*. Xerox Fellowship Final Report, May 2016.
15. Jacques B; Advisor: Thompson LA. *Protocol Development for the Portable Harness Ambulatory System (PHAS)* Xerox Fellowship Final Report, May 2015
16. Rojas L; Advisor: Thompson LA. *The development of a light touch prototype device.* Xerox Fellowship Final Report, May 2015
17. Khanal N, Jacques B, Aguinaga L, Baker C, Kinnard M, Poudel N; Advisor: Thompson LA. *Gait rehabilitation for fall-prone elderly and stroke survivors via use of home-based devices*. Xerox Fellowship Final Report, May 2014.
18. Khanal N, Jacques B, Aguinaga L, Baker C, Kinnard M, Poudel N, Thompson LA. *Gait rehabilitation for fall-prone elderly and stroke survivors via use of home-based devices*. Massachusetts Eye and Ear Infirmary (MEEI), Jenks Vestibular Physiology Laboratory, April 2014.
19. Khanal N, Jacques B, Aguinaga L, Baker C, Kinnard M, Poudel N, Thompson LA. *Gait rehabilitation for fall-prone elderly and stroke survivors via use of home-based devices*. University of Massachusetts Lowell, Centers for Advanced Computation and Telecommunication, April 2014.
20. Khanal N (presenting author), Aguinaga L, Jacques B, Baker C, Kinnard M, Thompson LA. *The Analysis of gait using a portable ambulatory harness system (PHAS) propotype.* University of the District of Columbia Undergraduate Research Day, April 2014.
21. Khanal N, Jacques B, Aguinaga L, Baker C, Kinnard M, Poudel N, Thompson LA. *The Development of a Home-Based Postural Rehabilitative Device.* University of the District of Columbia Innovation Day, Feb. 2014.

INVITED TALKS

1. National Science Foundation (NSF) Convergence Accelerator, Track H, PI Meeting (one of three invited speakers to PI awardees). *Converging medicine and engineering: biomedical solutions*. (Jan. 2024)
2. National Institutes of Health (NIH) National Institutes on Biomedical Imaging and Bioengineering (NIBIB) Advisory Board Invited Lecturer – Lopez Lecture (May 2023)
3. Virtual Keynote Speaker - 2023 NAAS (National Association for Academy of Sciences)/AJAS (American Junior Academy of Sciences) Annual Meeting (March 2023)
4. Plenary Speaker: American Association for Anatomy (AAA) Annual Meeting: Anatomy Connected 2023 (March 2023)
5. Invited speaker: *Biomedical Engineering Initiatives tied to balance and postural control*, School of Engineering, George Washington University, Washington, DC (Oct. 2022)
6. Invited panelist: *Supporting Engineering Discovery Research at Primarily Undergraduate Settings: A faculty's perspective on building new research infrastructure*, Directorate for Engineering (ENG) Advisory Committee Fall 2022 Meeting, National Science Foundation (Oct. 2022)

7. Alan T. Waterman Laureate Lecture: *Falls and aging — the need for biomedical solutions to a global problem*, National Science Foundation (Sept. 2022)
8. Invited panelist, distinguished panel discussion: *Black Scientists & Engineers at Our Nation's HBCUs: Making American History Now*, National Science Foundation (Feb. 2021)
9. 3rd Annual ADAR (Advancing Diversity in Aging Research) Summit, Nov. 3 – 4, 2020.
10. Featured speaker, Presentation to Congress: National Science Foundation (NSF) Hill Event, entitled *Broadening Participation in STEM: Brought to you by NSF* sponsored by the United States House Committee on Science, Space and Technology (March 2020)
11. Featured speaker: 2020 BEYA TechTalks: *Falls and aging: nexgen biomedical solutions* (Feb. 2020)
12. Plasticity Seminar: *Biomedical Engineering Initiatives focused on Improving Balance & Postural Control*, MedStar National Rehabilitation Hospital (NRH), Washington, DC (April 2019)
13. UDC STEM Luncheon featuring Dr. Lara Thompson (March 2019)
14. *Fall Prevention & Balance Training*, Montgomery Stroke Association Meeting, Upper County Meeting, Rockville, MD (Feb. 2019)
15. Biomedical Engineering Seminar: *Biomedical Engineering Initiatives at the University of the District of Columbia*, The Catholic University of America, Washington, DC (Oct. 2018).
16. *A Brief Introduction: the Institutional Review Board. Faculty Professional Development: Being a Productive Scholar - Getting Published in Peer-Reviewed Journals*, University of the District of Columbia, Washington, DC (Oct. 2018).
17. One of two featured event speakers, HBCU-UP National Science Foundation Outreach Day: *Biomedical Engineering Initiatives at the University of the District of Columbia*. National Science Foundation, Virginia Union University, Richmond, VA (Sept. 2018).
18. *Fall Prevention Month Awareness*, Montgomery Stroke Association Meeting, Leisure World, Silver Spring, MD (Sept. 2018)
19. *Nurturing Women's Innovativeness and Strength in Engineering (WISE) through Experiential Learning in Biomedical Engineering*. GirlsLEAD Summit, Washington, DC (March 2018).
20. *UDC CBRE Lab: Investigating Balance and Posture*, UDC Institute of Gerontology, Washington, DC (Dec. 2017).
21. *Biomechanical & Rehabilitation Engineering Initiatives*, Department of Defense (DOD) Research Forum, Arlington, VA (Dec. 2017).
22. *Biomedical Engineering at the University of the District of Columbia*, George Mason University, Department of Bioengineering, Fairfax, VA (Sept. 2016).
23. Biomedical Outreach Seminar: *Biomedical Engineering at the University of the District of Columbia*, United States Food and Drug Administration (US FDA), White Oak, MD (Sept. 2016).
24. Rehabilitation And Plasticity (RAP) Seminar Speaker: *Postural Control and Rehabilitation Strategies*, MedStar National Rehabilitation Hospital (NRH). Washington, DC (Sept. 2014).
25. Symposium Speaker- Implants and wearable aids for balance and gait dysfunction: *Responses Evoked by a Vestibular Implant*, The International Society of Gait and Posture Research (ISPGR) Conference, Vancouver, Canada (July 2014).
26. Oral Presenter- Vestibular Function & Disorders: *The severity of vestibular dysfunction effects postural compensation*, The International Society of Gait and Posture Research (ISPGR) Conference, Vancouver, Canada (July 2014).
27. *The Effects of Sensory State on Rhesus Monkey Postural Control*, The Johns Hopkins Hospital – Laboratory of Vestibular Neurophysiology, Baltimore, MD (Nov. 2013).
28. *A Study of the Effects of Sensory State on Rhesus Monkey Postural Control*, National Institutes of Health (NIH), Clinical Movement Analysis (CMA) Laboratory, Bethesda, MD (Sept. 2013).
29. *A Study of the Effects of Sensory State on Rhesus Monkey Postural Control*, Massachusetts Eye and Ear Infirmary (MEEI) (May 2013).
30. *Intellectual Property and Patents*, Washington State University, Department of Mechanical Engineering (June 2013).

31. *Physiological Systems Analysis and the Study of the Effects of Sensory State on Rhesus Monkey Postural Control*, University of the District of Columbia, School of Engineering and Applied Sciences (April 2013).
32. *A Study of the Effects of Sensory State on Rhesus Monkey Posture*, Worcester Polytechnic University (WPI), Department of Biomedical Engineering (Jan. 2013).
33. *A Study of the Effects of Sensory State on Rhesus Monkey Posture*, Oklahoma State University, Department of Mechanical and Aeronautical Engineering (June 2012).
34. *An Introduction to Physiological Systems Analysis*, Columbia University, Fu Foundation School of Engineering and Applied Sciences, Department of Mechanical Engineering (May 2012).
35. *Normal and Vestibular Loss Rhesus Monkey Posture*, University of Hartford, Department of Physical Therapy (Feb. 2012).
36. *Normal and Vestibular Loss Rhesus Monkey Posture*, IEEE Engineering in Medicine and Biology Society (Feb. 2012).
37. *A Parallel Study of Humans and Rhesus Monkeys Under Different Sensory States*, Stanford University, Department of Mechanical Engineering, BioMotion Laboratory (Feb. 2010).

TEACHING EXPERIENCE

University of the District of Columbia (UDC) Washington, DC
School of Engineering and Applied Sciences (SEAS)
Professor of Mechanical Engineering Oct. 2023 – present
Associate Professor of Mechanical Engineering with Tenure Sept. 2017– Sept. 2023
Assistant Professor of Mechanical Engineering Sept. 2013 – Sept. 2017
Initiator & Director of the Biomedical Engineering Program Jan. 2015 – present

* = new course, never before offered at UDC

**Advisor/ Course Instructor: Senior Capstone Design II: Biomedical Engineering-related Senior Capstone Design Project* (3 – 6 students/group)

- UDC IDEO Brace (Co-Advisor)
- Redesign of Ostomy Bag Wafer System
- Constructing an Affordable and Reliable lower-limb Exoskeleton (CARE)
- Design of a 3D printed robotic hand upper arm attachment with surface EMG interface
- Design of an ankle foot orthosis
- Design of a Chairless chair system
- Design of a 3D printed upper limb prosthetic

**Course Instructor: Graduate Special Topics in Biomedical Engineering*
Conceived and initiated a new graduate level course to train students to become skilled biomedical researchers via: 1) developing their understanding of professional and ethical responsibility, e.g., towards the preparation of an IRB research protocol, 2) training them how to formulate research ideas and develop a research plan towards a draft of a 'mock' thesis proposal, and 3) facilitating a semester long research project involving a targeted issue in human health and medicine. There are also guest speakers throughout the course.

**Course Instructor: Professional Issues in Biomedical Engineering*
The purpose of the junior-level seminar course is to expose students to an array of topics related to BME (e.g., via guest speaker lectures, case studies, paper-readings, and interactive group discussions). Topics covered included medical ethics, research conduct (such as the importance of informed consent, Institutional Review Board (IRB) and Institutional Animal Use and Care Committee (IACUC) processes),

written and oral technical communication, and other BME-related topics and issues. Knowledgeable faculty and professionals in the field of BME from (e.g., from National Institutes of Health (NIH), MedStar National Rehabilitation Hospital (NRH), Walter Reed Medical Hospital) and other institutes had been invited to present interactive and informative sessions to expose and engage the students and faculty are also welcomed to attend these sessions. Further, students are asked to provide presentations of technical and journal papers of topics in BME. Theme papers (in the form of written technical papers with an IEEE paper format) and 1-hr oral presentations are prepared and submitted by the students for each topic. The above hones students as professionals, as well as exposes them to various researchers and contemporary topics in BME.

**Course Instructor: Clinical and Research Experience in Biomedical Engineering*
Conceived and initiated a new course (never before taught at UDC). This course develops students' experiences in a primary care facility, in a research lab, and/or service-learning with a community agency or public health project. The purpose of the course is to expose students to settings wherein they may appreciate the human and social context of biomedical-related research, to merge concepts learned in other courses, and lastly to observe the impact medical research on patients.

**Course Instructor: Engineering Software and Applications*
Conceived and initiated a new course (never before taught at UDC) towards exposing sophomore-level undergraduate students to various engineering software (MATLAB, Excel, LabView, ANSYS) and their applications.

**Course Instructor: Survey of Biomedical Engineering*
Conceived and initiated a new course (never before taught at UDC) towards exposing freshman undergraduate students to various topics within Biomedical Engineering

**Course Instructor: Bioinstrumentation*
Conceived and initiated a new course (never before taught at UDC) on biomedical instrumentation as part of the newly-minted Biomedical Engineering Program

**Course Instructor: Biomedical Engineering Seminar*
- Devised and established a new course (never before taught at UDC), as part of the new Biomedical Engineering Program; this course covers medical ethics, exposure to various topics in biomedical engineering (e.g., rehabilitation engineering, additive manufacturing)
- Invited guest speakers (professionals working within various areas of Biomedical Engineering)
- Honed students' professional development, as well as oral and technical communication, through journal paper readings, student theme papers, and in-class presentations

As Course Coordinator, seven other new courses I steered and added to the Biomedical Engineering curriculum were*:*
**BMEG 402 (Bioimaging)*
**BMEG 304 (Biomechanics)*
**BMEG 495 (Special Topics in BME - machine learning in medical diagnoses)*
**BMEG 495 (Special Topics in BME - biomedical imaging)*
**BMEG 371 (Analysis of Physiological Systems)*
**BMEG 373 (Analysis of Physiological Systems Laboratory)*
**BMEG 300 (Bioinstrumentation Laboratory)*

Course Instructor: Engineering Mechanics I

- Taught undergraduate engineering students (class sizes ranged from 20 – 40 students/term) in technical problem-solving methodology
- Prepared lecture notes and encouraged student involvement during interactive class sessions
- Designed problem sets, practice exams, to expand on the in-class learned concepts
- Held open-door office hours and advised, as well as mentored, students
- Created practice exams, wrote detailed solutions, and held interactive exam review sessions
- Wrote exam problems to challenge students' application of learned concepts and then graded, as well as provided detailed feedback on, exam problems

Course Instructor: Engineering Mechanics II
- Taught undergraduate engineering students (class sizes ranged from 15 – 25 students/term) in technical problem-solving methodology
- Prepared lecture notes and encouraged student involvement during interactive class sessions
- Designed problem sets, practice exams, to expand on the in-class learned concepts
- Held open-door office hours and advised, as well as mentored, students
- Created practice exams, wrote detailed solutions, and held exam review sessions
- Wrote exam problems to challenge students' application of learned concepts and then graded, as well as provided detailed feedback on, exam problems

Course Instructor: Applied Numerical Methods for Engineers
- Taught undergraduate engineering students (class sizes ranged from 10 – 20 students) in technical problem-solving methodology
- Created labs and tutorials to teach students engineering problem-solving using computer software, such as MATLAB
- Designed problem sets, practice exams, to expand on the in-class learned concepts
- Held open-door office hours and advised, as well as mentored, students
- Wrote exam problems to challenge students' application of learned concepts

Course Developer and Instructor: Introduction to Engineering
- Taught 20 undergraduate engineering students
- Assigned thought projects (e.g., egg-drop design) in which students worked in small groups to design devices given specific deliverables and constraints
- Taught and advised students on technical writing skills
- Organized Introduction to Engineering Guest Lecture Series, to expose the incoming engineering students to experienced engineers in industrial and academic professions, as well as engineering clubs and organizations

Harvard University, Department of Engineering and Applied Sciences Cambridge, MA
Teaching Fellow: *Introduction to Physiological Systems Analysis* Sept. 2010 – Jan. 2011
- Taught 30 undergraduate/graduate students in problem-solving
- Prepared recitation lectures, and lecture notes, to expand on the in-class, learned concepts
- Provided interactive recitation sessions for students
- Prepared and gave course lecture on postural control
- Held office hours and counseled students
- Wrote exam problems to challenge students' application of learned concepts and then graded, as well as provided detailed feedback on, exam problems

Massachusetts Institute of Technology, Department of Electrical Engineering Cambridge, MA
Grader: *Acoustics of Speech and Hearing* Sept. 2009 – Jan. 2010

- Solved problem sets and wrote up step-by-step solution sets for students to learn technical methodology in problem-solving
- Corrected and gave technical feedback on problem sets for a class of 20 graduate students

Stanford University, Department of Mechanical Engineering, Palo Alto, CA
Teaching Fellow: *Thermodynamics* Sept. 2004 – Jan. 2005

- Taught methods of technical problem-solving as well as provided mentoring to class of over 50 undergraduate students
- Wrote recitation lecture notes to integrate, as well as to expand on, course concepts and organized interactive problem-solving sessions for students
- Held office hours in which students could inquire clarification on course material and concepts
- Wrote, administered, graded, and provided technical feedback on midterm exams

University of Massachusetts, Centers for Learning, Lowell, MA
Tutor*: Calculus I, Physics, and Statics* May 2000 – May 2001

- Explained methods for technical problem-solving to numerous students of various backgrounds (~ 10 hrs/week)

SCHOLARLY ACTIVITIES

University of the District of Columbia (UDC) Washington, DC
School of Engineering and Applied Sciences (SEAS) Sept. 2013 - present

Initiator/Coordinator: UDC Biomedical Engineering Guest Lecture Series

- *Innovative Solutions to Reduce the Risk of Falling*. Dr. Dario Martelli (Senior Research Scientist, Department of Orthopedics and Sports Medicine, Medstar Health Research Institute), April 2024.
- *Ankle-Stability Metrics Gait Recovery*. Dr. Julia Grace Polich (Ph.D. in Biomedical Engineering, Virginia Tech), Feb. 2024.
- *Medical Imaging Meets AI: Prospects and Perils.* Dr. Murray Loew (Professor of Biomedical Engineering, George Washington University), Nov. 2023.
- *Presentation and Meeting: Opportunities for Human Performance and Biomechanics Research.* Kyle Ott (Group Supervisor – Human Performance and Biomechanics Group) and Nadeau Hahne (Investigator – Human Performance and Biomechanics Group) Johns Hopkins Applied Physics Laboratory, Oct. 2023.
- *OSEL Regulatory Science Research Programs: Human-Device Interaction*. Dr. Kimberly Kontson (Biomedical Engineer, Human-Device Interaction Program, Division of Biomedical Physics, Office of Science and Engineering Laboratories, Center for Devices and Radiological Health, U.S. Food and Drug Administration), Sept. 2023.
- *Leveraging biomaterials to direct the immune response during wound healing.* Dr. Erika Moore (Assistant Professor of Bioengineering and Director of the Moore Lab, University of Maryland), Sept. 2023
- *Balance and Balance Disorders: An Engineering Perspective*. Dr. Jay Barton (Research Mechanical Engineer, Baltimore Veterans Administration Hospital, faculty at the University of Maryland School of Medicine), Sept. 2023.

(On leave, Spring term 2023)

- *AI-based Sensing for Gait Analysis in Healthcare Applications*. Dr. Xin Lui (Professor, IEEE Fellow Computer Science Department, University of California, Davis), Nov. 2022.

- *Stability, Efficiency, and Their Trade-off in Bipedal Walking of Robots and Humans.* Dr. Joo Kim (Associate Professor of Mechanical and Aerospace Engineering and Director of the Applied Dynamics and Optimization Laboratory, New York University), Nov. 2022.
- *An Introduction and Opportunities tied to Clinical Engineering.* Dr. Jeffrey Hooper (Director, Department of Biomedical Engineering at Children's National Hospital), Nov. 2022.
- *Low-Reynolds number locomotion for nanoscale biomedical robotics.* Dr. Jamel Ali (Assistant Professor of Chemical and Biomedical Engineering at FAMU-FSU College of Engineering), Nov. 2022.
- *Understanding the utility of haptic feedback in telerobotic devices.* Dr. Jeremy Brown (Assistant Professor of Mechanical Engineering, Whiting School of Engineering, Johns Hopkins University), Oct. 2022.
- *Opportunities for Vestibular Research and Virtual Environments at Walter Reed*. Dr. Doug Brungart (Chief Scientist, Audiology and Speech Center, Walter Reed National Military Medical Center (WRNMMC)) and colleagues (Stefanie Kuchinsky, Jacob Lefler, Daniel Talian), Oct. 2022.
- *Incorporating patient-focused design to engineer the next generation of rehabilitation robotic for upper extremity rehabilitation post stroke.* Dr. Quentin Sanders (Assistant Professor of Bioengineering and Mechanical Engineering, George Mason University), Oct. 2022.
- *Engineering Careers at the FDA.* Dr. Ariel Ash-Shakoor (Biomedical Engineer and Diversity and Inclusion Manager, US FDA), April 2022.
- *Johns Hopkins Applied Physics Laboratory (APL)- virtual session to discuss student opportunities.* Visitors from the APL Human Performance & Biomechanics and Neuroscience sectors, March 2022.
- *Overview of an Aging-Related Health-Equity Centered Research Agenda*. Dr. Kellee White (Associate Professor, Department of Health and Policy Management, University of Maryland School of Public Health), Feb. 2022.
- *Restoring Motor Function in Amputees with Smart Prosthesis.* Dr. Helen Huang (Jackson Family Distinguished Professor, North Carolina State University and University of North Carolina Chapel Hill, Director of Closed-Loop Engineering and Advanced Rehabilitation (CLEAR) core), Feb. 2022.
- *Caregiving for Older Adults with Altered Cognitive Status.* Mengyao Hu (Ph.D Candidate, Rory Meyers School of Nursing, New York University (NYU)), Jan. 2022.
- *High-Performance Soft Wearable Robots for Human Augmentation and Rehabilitation: A New Paradigm of Design and Control for Translational Medicine.* Dr. Hao Su (Associate Professor in the Department of Mechanical and Aerospace Engineering, Director of the Biomechatronics and Intelligent Robotics (BIRO) Laboratory, North Carolina State University), Nov. 2021.
- *Engineering Implantable Renal Replacement Therapy.* Dr. Shuvo Roy (Professor in the Department of Bioengineering & Therapeutic Sciences; Director of the Biodesign Laboratory; Technical Director of the Kidney Project; Faculty Director of the Master of Translational Medicine Graduate Program, University of California San Francisco), Oct. 2021.
- UDC BMES & NSBE Student Chapters host: *Breast Cancer Ultrasound Diagnostic Research from Tissue Elasticity Imaging to Deep Learning Segmentation.* Dr. Max Denis (Assistant Professor, Department of Mechanical Engineering, Biomedical Engineering Program, University of the District of Columbia), Oct. 2021.
- UDC BMES & NSBE Student Chapters host: *Diagnosing Breast Cancer – The Role of Imaging: the present and the future.* Dr. Azra Aliza (Professor of Radiology, Professor of Biomedical Engineering, Mayo Clinic College of Medicine), Oct. 2021.
- UDC BMES & NSBE Student Chapters host: *Breast Cancer Awareness.* Danielle Reynolds (Associate Director, Head of Upstream Manufacturing), Oct. 2021.
- *Bioelectromagnetics.* Howard Bassen (Former Senior Research Engineer and Lead of the Electromagnetics and Wireless Laboratory, US FDA), Oct. 2021.

- *Bone Adaptation Modulated by Mechanotransduction.* Dr. Yi-Xian Qin (SUNY Distinguished Professor and Chair Department of Biomedical Engineering, Stony Brook University), Sept. 2021.
- *Daily Activity Monitoring in Aging Adults.* Dr. Jacek Urbanek (Assistant Professor in the Division of Geriatric Medicine and Gerontology, Johns Hopkins School of Medicine, Core faculty in the Center on Aging and Health), Sept. 2021.
- *Granata Biomechanics Laboratory at Virginia Tech. Department of Biomedical Engineering and Mechanics.* Robin Queen (Associate Professor of Biomedical Engineering, PI of Granata Lab, Virginia Tech), April 2021.
- *Implementation and Evolution of Mitigation Measures, Testing, and Contact Tracing in the National Football League*. Mehdi Badache (KINEXON, UDC SEAS 2018 Alumni), Feb. 2021.
- *Improvements in Dynamic Motor Control following Neurorehabilitation of Traumatic Brain Injury*. Samuel Acuna (Ph.D. from University of Madison Wisconsin), Jan. 2021.
- *Medical Robotics and Exoskeletons.* Tianyao Chen (Humotech), Nov. 2020
- Fall 2020 Biomedical Engineering Guest Speakers: MedStar National Rehabilitation Hospital & Catholic University RERC, Oct. 2020.
- *3D Printing in Military Medicine: Transforming the Care of Our Service Members.* Peter Liacouras (3D Medical Applications Center at Walter Reed National Military Medical Center), Oct. 2020
- *US FDA Seminar: OSEL Regulatory Science* (March 2020)
  - Introductions and CDRH and OSEL Primer (Dan Hammer)
  - Medical Extended Reality (MXR) Research Program (Ellenor Brown)
  - Medical imaging research at DIDSR/OSEL: Focus on Digital Pathology (Marios Gavrielides)
  - Division of Applied Mechanics Overview (Genevieve McRae)
  - A Regulatory Science Approach to Assess the Safety of Medical Devices Incorporating Nanotechnology (Peter Goering)
- *From blindness to handlessness: lessons on plasticity and brain organization*. Dr. Ella Striem-Amit (Assistant Professor of Neuroscience, Georgetown University), Feb. 2020.
- *From Therapeutic Robots for Children to Tele-medical Robotic Assistance*. Dr. Chung Hyuk Park (Assistant Professor of Biomedical Engineering, George Washington University), Feb. 2020.
- *Neuromechanics of functional impairment following neurological disorders.* Dr. Sang Wook Lee (Associate Professor of Biomedical Engineering, Catholic University of America), Jan. 2020.
- *Design a Wearable Pediatric Knee Exoskeleton for Overground Gait Rehabilitation*. Dr. Ji Chen (Visiting Assistant Professor, Biomedical Engineering Program, Department of Mechanical Engineering, University of the District of Columbia), Jan. 2020.
- Dr. Sezin Palmer (Johns Hopkins University Applied Physics Laboratory, Mission Area Executive for National Health) April 2019.
- *Aging Effects on Working Memory*, Dr. Joseph Keller (cognitive neuroscientist, nonprofit consultant, and science advocate, American Association for the Advancement of Science (AAAS) Science & Technology Policy Fellow National Science Foundation (NSF)) April 2019
- *Neural Representations of Natural Self-Motion: Implications for Perception & Action.* Dr. Kathleen Cullen (Johns Hopkins University, Professor of Biomedical Engineering & Director of the Cullen Laboratory) March 2019.
- *Innovative Evaluation and Device-Based Treatment of Gait Pathology in Children with Cerebral Palsy*. Dr. Thomas Bulea (National Institutes of Health, Staff Scientist in the Functional & Applied Biomechanics Section of the Rehabilitation Medicine Department), Feb. 2019
- *Mitigating Order Dependence in Agglomerative Clustering.* Dr. Donald Wunsch II (Distinguished Professor & Director of the Applied Computational Intelligence Laboratory, Missouri University of Science & Technology (Missouri S&T) University), Jan. 2019.
- *Objective quantification of human activity in large health studies using wearable accelerometers*. Dr. Jacek K. Urbanek, Ph.D. (Johns Hopkins University, Assistant Professor of Medicine, Centers on Aging and Health (COAH)), Nov. 2018.

- *Human Spatial Orientation in Dynamic Motion Environments.* Dr. James Lackner, Ph.D. (Professor of Physiology; Director of the Ashton Graybiel Spatial Orientation Laboratory, Brandeis University), Oct. 2018.
- *Optical Coherence Tomographic assessment of the Aqueous Humor Outflow Pathway*. Dr. Larry Kagemann, Ph.D. (United States Food and Drug Administration (US FDA), Lead Reviewer/Biomedical Engineer/Senior Staff Fellow: Diagnostic and Surgical Devices Branch, Division of Ophthalmic and Ear, Nose and Throat Devices, Center for Devices and Radiological Health), Oct. 2018.
- *Age-related Control of Posture & Gait: Exploring Assistive Methodologies towards Improving Elderly Balance.* Dr. Lara Thompson, Ph.D. (Associate Professor of Mechanical Engineering; Director of Biomedical Engineering program & CBRE laboratory, University of the District of Columbia), Aug. 2018.
- *Sensorimotor Integration in Primates with Vestibular Dysfunction & Applicability to Human Postural Control.* Dr. Lara Thompson, Ph.D. (Associate Professor of Mechanical Engineering; Director of Biomedical Engineering program & CBRE laboratory, University of the District of Columbia), Aug. 2018.
- Dr. Kimberly Brown Smith, M.D., Ph.D. (Clinical team leader in US FDA's Center for Devices and Radiological Health (CDRH), Office of Compliance), April 2018.
- *Synthesis of non-uniformly spaced circular antenna arrays using a data-driven probabilistic model*: Dr. Nicholas Paul Misiunas, Ph.D. (Research Associate, University of Massachusetts Lowell), April 2018.
- *Alignment Nulling as an Assay of Otolith Function: Astronauts, Soldiers, and Patient*s: Dr. Michael Schubert, Ph.D., P.T. (Associate Professor at Johns Hopkins School of Medicine, Laboratory of Vestibular Neuroadaptation), Feb. 2018.
- *Upperlimb Robotic Rehabilitation for Stroke Survivors:* Peter Lum (Associate Dean, Professor and Chair of Biomedical Engineering at Catholic University), Jan. 2018.
- *Anticipatory Postural Control: Translating Theory to Practice:* Susan Ryerson, PT, DSc (Research Scientist at MedStar National Rehabilitation Hospital (NRH); NRH and Neurologic Residency Program; Director, Making Progress - Neurologic Physical Therapy), Oct. 2017.
- *Stroke for Engineers - Studying human brain recovery in DC:* Alexander Dromerick, MD (Vice President for Research at MedStar National Rehabilitation Hospital; Professor of Rehabilitation Medicine and Neurology & Chairman of Rehabilitation Medicine, Georgetown University Medical Center; Research Scientist at the Washington DC Veterans Affairs Medical Center), Oct. 2017.
- *Latest trends in Biotechnology:* Dr. Bushra Ahmad Saeed, Ph.D. (Acting Division Director of the Nursing, Allied Health, Life and Physical Sciences Division, University of the District of Columbia Community College), Sept. 2017.
- Dr. Brian Schulz, Ph.D. (Scientific Program Manager, Rehabilitation Engineering and Prosthetics/Orthotics Program U.S. Department of Veteran Affairs), Sept. 2017.
- *Stand-off Detection of Illicit Materials by Active Infrared Imaging Spectroscopy:* Dr. Chris Kendziora (Research Physicist & Co-inventor of Photo-thermal Infrared Imaging Spectroscopy) from the Naval Research Laboratory (NRL), Sept. 2017.
- *U.S. Food and Drug Administration (FDA) Guest Speaker Seminar* (Jan. 2017):
  - Marsha Henderson (Assistant Commissioner for Women's Health, US FDA);
  - Kathryn O'Callaghan (Center for Devices and Radiological Health (CDRH) Assistant Director for Strategic Programs US FDA);
  - Nooshin Kiarashi (Lead Scientific Director of Mammography, Ultrasound, and Imaging Software Branch of CDRH, US FDA)
- *Eye movements and sensorimotor integration research.* Dr. Wilsaan Joiner, Ph.D. (Department of Bioengineering, George Mason University), Nov. 2016.
- *Medical Imaging Research at the FDA* (Nov. 2016):
  - Dr. Daniel X. Hammer, Ph.D., (Division of Biomedical Physics Deputy Director)

- Dr. Nicholas A. Petrick, Ph.D., (Division of Imaging Diagnosis and Software Reliability Director).

- *Acoustic Radiation Force Techniques for Clinical Health Assessment: A "Push" in the Advancement of Medical Ultrasound Diagnostic.* Dr. Max Denis, Ph.D. (Mayo Clinic/Army Research Laboratory), Oct. 2016.
- *An Overview of the Division of Biomedical Physics at the US FDA.* Dr. Victor Krauthamer, Ph.D. (Division of Biomedical Physics), Sept. 2016.
- U.S. FDA, Division of Biomedical Physics Director and colleagues visited the UDC CBRE Lab on June 2016.
- *Cerebellar Processing of Vestibular Signals: evidence from aging & agenesis,* Dr. Richard F. Lewis, M.D. (Associate Professor Harvard Medical School, Director of the Jenks Vestibular Laboratory), April 2016.
- National Institutes of Health (NIH), National Institute of General Medical Sciences (NIGMS), 4 Program Directors' meeting with UDC SEAS faculty and visited UDC CBRE Lab, Feb. 2016.
- *Developing and Manufacturing Innovative Therapies for those suffering from Neurological, Autoimmune and Hematologic Disorders,* Danielle T. Reynolds (Biogenidec Corporation, Manufacturing Manager), Nov. 2015.
- *Researching a Pediatric Heart Pump,* Dr. Arielle Drummond, Ph.D. in Biomedical Engineering, Carnegie Mellon University (U.S. FDA, Division of Cardiovascular Devices), Oct. 2015
- *An Introduction to Nuclear Magnetic Resonance (NMR) Spectroscopy for Biological Applications*, Dr. Song (UDC, Chemistry), Sept. 2015.
- *Neurocom Systems used for Assessing Human Balance*, Patrick Olivo (Natus Medical Incorporated), Sept. 2015.

Creator, Initiator and Lead: UDC SEAS Alumni Guest Lecture Series

- *From UDC Engineering to a NASA Goddard Career* (Oct. 19, 2016):
  - Thomas Emmett (NASA Goddard Mechanism Engineer and UDC SEAS Alumni)
  - Dr. Joanne Hill, Ph.D. (X-ray Lab Associate Branch Chief, Sciences and Exploration Directorate at NASA Goddard Space Flight Center)
- *From UDC Engineering to Director of the Office of Defects Investigation at the Department of Transportation*, Frank Borris (Director of the Office of Defects Investigation, NHTSA, Department of Transportation, UDC SEAS Mechanical Engineering Alumni), Feb. 11, 2016.
- *From UDC Engineering to a Northrop Grumman Career,* Phillip Lovell (Northrop Grumman Corporation, Fellow Mechanical Engineer, Hardware Engineering Mechanical Technology, UDC SEAS Alumni), Nov. 10, 2015.
- *From UDC Engineering to a NASA Goddard Career* (Sept. 29, 2015):
  -Thomas Emmett (NASA Goddard Mechanism Engineer and UDC SEAS Alumni)
  -Dr. Evelina Félicité-Maurice (NASA Educator Professional Development and STEM Engagement Education Specialist

Initiator/Coordinator: UDC SEAS Black History Distinguished Lectures I/II

- *Distinguished Lecture II:* Professor James West (Professor of Electrical and Computer Engineering, Johns Hopkins University). Feb. 22, 2016.
- *Distinguished Lecture I:* Mozelle Thompson (CEO Thompson Strategic Consulting), Feb.10, 2016.

Initiator/Coordinator: UDC SEAS Women's History Month Events

- Dr. Arielle Drummond, Ph.D. (Lead Reviewer, US FDA Division of Cardiovascular Devices), March 21, 2017.
- Dr. Laleh Nazafizadeh, Ph.D. (Director of the Integrated Systems & NeuroImaging Laboratory at Rutgers University), March 28, 2017.

Initiator/Coordinator for UDC SEAS Women's History Month Events

- Lead Coordinator for *UDC SEAS International Women's Day Distinguished Speaker:* Dr. Mercedes Rubio (National Institutes of Health, NIGMS), March 8, 2016.
- Co-Coordinator for two *"Accomplished Women in STEM and Health (A WISH)" Panels* for UDC Flagship (March 24, 2016) and UDC Community College, March 22, 2016.

Invited Panel Speaker

- *Women's History Month STEM Forum:* An open forum to discuss careers in Science, Technology, Engineering, and Math (March 2015, 2016, and 2018)
- *TrailblazHERS* Panelist, Pepco-Edison Gallery, Washington DC (Oct. 2017)
- *Let's talk about graduate school:* aimed at encouraging undergraduate students to pursue graduate studies (November 2013)

Introduction to Engineering Guest Lecture Series: Organized seminar series to expose engineering students to experienced engineers in industrial and academic professions, as well as engineering clubs and organizations (Fall 2013)

Initiator/Creator: UDC SEAS Workforce Professional Development Series (Fall 2015 & 2016, Summer 2017, 2018, and 2019):

- *Session I: Developing & Promoting Qualifications - Internships, Cover Letters & Resumes*
- *Session II: Developing & Promoting Qualifications - Pursuing an Advanced Degree in STEM*

Creator, Initiator and Lead of the Biomedical Engineering Journal Club

- *Spatial Disorientation*, Mohammed Fallatah, Ammar Samman, Salman Alhuwayshil (UDC SEAS student presenters), April 2017
- *A Discussion on Euthanasia*, Moussa and Khalid Bingonyh (UDC SEAS student presenters), March 2017
- *Sensory Substitution Assistive Devices*, Takele Gemeda (UDC SEAS student presenter), March 2017
- *An Overview of Neuroprosthetics*, Abdullah A. (UDC SEAS student presenter), Feb. 2017
- *The applications of 3-D printing to tissue engineering*, Lonika Behera (UDC SEAS student presenter), Feb. 2017
- *Medical Applications for Advanced Manufacturing*, Mehdi Badache (UDC SEAS student presenter), Feb. 2017
- *Biomedical Engineering Research at the University of the District of Columbia,* Dr. Lara Thompson (UDC SEAS faculty) Nov. 10, 2016.
- *Overview & Applications of Brain-to-Machine Interface (BMI)*, Charles Wilson (UDC SEAS student presenter) Feb. 17, 2016.
- *Dance Intervention Enhances Postural, Sensorimotor, and Cognitive Performance in Elderly Subjects*, Steven Cale (UDC SEAS student presenter) Dec. 3, 2015
- *Bioimaging Using Quantum Dots*, Beachrhell Jacques (UDC SEAS student presenter) Nov. 18, 2015
- *Weighted Extreme Learning Machine for Imbalance Learning*, Tilaye Alemayehu (UDC SEAS student presenter), Nov. 3, 2015

Lead of NIH NIA MSTEM Summer Research Program (Summer 2024)

Biomedical engineering and aging-related summer research experience for undergraduates: This 8-week summer research program involved UDC faculty and UDC graduate student mentorship of undergraduate students from UDC, Florida State University, University of Massachusetts Lowell, and Sarah Lawrence College/ Columbia University. Funding for this activity is from the NIH NIA MSTEM grant and Alan T. Waterman Award.

DACL Virtual Summer Internship (Summer 2020):
For Summer 2020, I mentored two female students via my Department of Aging and Community Living (DACL) project, virtually (due to COVID-19). The students were taught about:

- The impact of falls in aging individuals; Washington DC population is over 30% of people over 50 years old
- Professional Development: resume critiques & revision;
- Directed work-study, journal paper readings, how to create a poster presentation

Creator, Initiator and Lead of the UDC Summer REACH Program (Summer 2019)

- This activity was funded in-part by a National Science Foundation (NSF) grant (Award Abstract #1654474) entitled: *Nurturing Women's Innovativeness and Strength in Engineering through experiential learning in biomedical engineering (WISE)* aimed at exposing female students to engineering/biomedical engineering
- The "Research in Engineering to Achieve a more Confident Her" program, led by Drs. Thompson and Zhang, involved the training of a select group of female students (from George Washington University, Oxon Hill High School, and the University of the District of Columbia) in research & exposure tied to biomedical engineering. The 1.5 week workshop included:
  - An overview of biomedical research conducted in the UDC CBRE Lab
  - "What is human subject research?" Training about ethics in medical research, the IRB & IACUC, and also training towards protecting human research participants
  - A field trip & tour of the National Institutes of Health
  - Professional Development: resume critiques & revisions
  - Exposure and training using MATLAB Software towards data analysis
  - "What is machine learning?" Training about what machine learning is and how it can be used
  - A field trip to the Johns Hopkins Applied Physics Lab's Intelligent Systems Center

Creator, Initiator and Lead of the UDC Summer WEAVE Program (Summer 2018)

- This activity was funded in-part by a National Science Foundation (NSF) grant (Award Abstract #1654474) entitled: *Nurturing Women's Innovativeness and Strength in Engineering through experiential learning in biomedical engineering (WISE)* aimed at exposing female students to engineering/biomedical engineering
- 27 female students and 3 male students, from high schools across the DC area, actively participated in this immersive 1-week workshop
- Activities included the following:
  - Design of a lower limb prosthetic & construction of a bionic robotic hand
  - Construction of solar powered robots
  - Build and test of snap circuit rovers
  - Exposure to the UDC Center for Biomechanical & Rehabilitation (CBRE) equipment
  - A field trip to the National Museum of Health and Medicine

Creator, Initiator and Lead of the UDC Summer Biomedical Engineering Workshop (Summer 2016 - 2018)

- This activity was funded in-part by a National Science Foundation (NSF) grant (Award Abstract #1533479) entitled: *Targeted Infusion Project: Integration, Cultivation, and Exposure to Biomedical Engineering at the University of the District of Columbia*.
- In Summer 2016: 25 workshop participants from UDC Community College, Howard Community College, Montgomery Community College, UDC (electrical engineering, biomedical/mechanical engineering, computer science, psychology, and biology), Clark Atlanta University participated in this 2-week workshop.
- Activities included:

- Training & Professional Development: a Bioimpedance and Circuits Lab, using MATLAB software to process sensor data, an interactive resume and cover letter session, and exposure to UDC Center for Biomechanical & Rehabilitation (CBRE) laboratory equipment
- Hands-on Exposure and Making: Robotics for Rehabilitation kits, hands-on dissections, and a field trip to the National Museum of Health and Medicine

- In Summer 2017: 25 workshop participants and 4 student workshop assistants were from Montgomery Community College, UDC Community College, UDC (electrical engineering and biomedical/mechanical engineering), North Carolina A&T, and Spellman College
- Activities were similar to that of 2016; new and enhanced modules included: a design of lower limb prosthetics, construction of upper limb robotic hands, and a professional development session on why to pursue an advanced degree
- In Summer 2018, the workshop was successfully offered for its 3rd time

MENTORING ACTIVITIES

University of the District of Columbia (UDC) Washington, DC
School of Engineering and Applied Sciences (SEAS) Sept. 2013 - present
Research and Project Mentoring Activities

- *Research Advisor & Mentor:* Advising & mentoring 4 M.S. graduate students, 2 Ph.D. students, 3 undergraduates, and 2 posdoctoral associates within the CBRE (Fall 2024)
- *Research Advisor & Mentor:* Advising & mentoring 5 graduate students, 3 undergraduates, and 2 research associates within the CBRE (Fall 2023 – Spring 2024)
- *Research Advisor & Mentor:* Advising & mentoring 3 graduate students; mentoring and training 5 undergraduate research assistants via NASA and NIH projects (Fall 2021- Fall 2022)
- *Project Advisor & Mentor* (4 students): Mentoring and advising Biomedical Engineering Senior Capstone Design Project: Redesign of an Ostomy Bag Wafer System (Spring 2020)
- *Project Advisor & Mentor* (6 students): Mentoring and advising Biomedical Engineering-related Senior Capstone Design Project: Constructing an Affordable and Reliable lower-limb Exoskeleton (CARE) (Fall 2018 – Spring 2019)
- *Research Advisor & Mentor:* Advising & mentoring 1 Ph.D. student; mentoring and training 2 undergraduate research assistants via the NSF GAIT project, 2 undergraduate research assistants vis the NSF EAGER project, and 2 Lockheed Fellows (Fall 2018 – Spring 2019)
- *Research Advisor & Mentor* (7 students): Mentored and trained 3 undergraduate UDC CBRE Lab research assistants via the NSF GAIT, 1 research assistant via the NASA DC Spacegrant Consortium, 2 undergraduate Xerox Research fellows, and 1 research assistant via the NSF EAGER (Fall 2017 – Spring 2018)
- *Project Advisor & Mentor* (12 students): Mentored and advised Senior Capstone Design Projects: Design of a 3D printed robotic hand upper arm attachment with surface EMG interface; Design of an ankle foot orthosis; Design of a Chairless chair system (Fall 2017 – Spring 2018)
- *Research Advisor & Mentor:* Mentored 2 undergraduate UDC CBRE Lab research assistants via the NASA DC Spacegrant Consortium and UDC Faculty Incentive Research Grant (Summer 2016)
- *Project Mentor:* Advising Senior Capstone Design Projects: Design of a 3D printed upper limb prosthetic (Fall 2015 – Spring 2016)
- *Research Advisor & Mentor:* Mentored 4 undergraduate, senior engineering student researchers within the new UDC CBRE lab (Fall 2015 – Spring 2016)
- *Louis Stokes Alliances for Minority Participation (LSAMP) Research Mentor:* Supervised two research projects with 4 undergraduate students (Summer 2015)
- *Xerox Fellowship Research Mentor:* Supervised research projects for 2 student awardees (2016 – 2017); Supervised research projects for 2 student awardees (2015-2016) Supervised research projects with 2 student awardees (2014 - 2015); Supervised research project with 3 student awardees and two

associates (2013 - 2014)

Mentee Awards

- White House Office of Science and Technology Policy (OSTP) Internship, Bridget Thorpe (2023)
- Annual Biomedical Research Conference for Minoritized Scientists (ABRCMS) 2023 Presentation Award, Chibudom Azikewe (2023)
- NASA Fellowship, Roni Romero (2021 – 2023)
- Mayo Clinic Summer Undergraduate Internship Program, Tasneem Abdus-Shakur (2022)
- Boston Scientific Internship Awardee, Tasneem Abdus-Shakur (2021)
- Boston Scientific Internship Awardee, Jelani Guise (2019)
- Columbia University, Graduate School, Mehdi Badache
- Temple University, Post-baccalaureate Program, Lonika Behera (Summer 2018 - 2019)
- United States Food and Drug Administration Oak Ridge Institute for Science and Education (US FDA ORISE) Fellow, Diego Pinto (2017)
- Boston Scientific Internship Awardee, Mehdi Badache (2016 & 2017)
- Boston Scientific Internship Awardee, Lonika Behera (2017)
- Boston Scientific Internship Awardee, Beachrhell Jacques (2015 & 2016)
- Mentee, Charles Wilson accepted to University of Maryland, Robotics Graduate Program and George Mason University Bioengineering Graduate Program (2016)
- Mentee, Steven Cale accepted to NASA Goddard Spaceflight Center Summer Internship (2016)
- Mentee, Steven Cale accepted to University of Maryland, Aeronautical Engineering Graduate Program (2016)
- Mentee, Beachrhell Jacques selected as the University of District of Columbia Advancing Minorities Interest in Engineering (AMIE) Ambassador (2016).
- Mentee, Beachrhell Jacques (out of + 450 applicants, was selected to serve as HBCU All-Star student ambassador to on the White House Initiative on HBCUs); 1 of 83 student ambassadors nationwide. Ambassador duties include tasks relevant to advance President Barack Obama's Executive Order 13532, *Promoting Excellence, Innovation, and Sustainability at Historically Black Colleges and Universities* (2015-2016).

SOCIETAL MEMBERSHIPS

Biomedical Engineering Society (BMES); American Society of Mechanical Engineers (ASME); Institute of Electrical and Electronics Engineers (IEEE); Society of Women Engineers (SWE); National Society of Black Engineers (NSBE)

PROFESSIONAL SERVICE

University of Southern Maine: Reviewer of Application for tenure and promotion package (July 2024)
IEEE Transactions on Neural Systems & Rehabilitation Engineering: Peer Reviewer (June 2024)
National Institutes of Health: Grant Proposal Panel Reviewer (May 2024)
Frontiers in Bioengineering and Biotechnology: Peer Reviewer (May 2024)
International Journal of Environmental Research and Public Health: Peer Reviewer (Oct. 2022)
National Institutes of Health: Grant Proposal Panel Reviewer (March 2022)
PLOSONE (Journal): Peer Reviewer (December & October 2021)
Sensors (Journal): Peer Reviewer (August 2021)
National Institutes of Health: Grant Proposal Panel Reviewer (June 2021)
National Science Foundation: Ad Hoc Reviewer (Dec. 2020) and Grant Proposal Panel Reviewer (Dec.

2017)

Journal of Gait & Posture: Peer Reviewer (Oct. 2018; March & May 2016; July 2014 & Sept. 2014)

U.S. Department of Veteran Affairs: Grant Proposal Panel Reviewer (Oct., Aug. & April 2018; Oct. 2017)

International Posture Symposium: Session Co-Chair: *Parkinson's Disease and Ageing* (Sept. 2018)

ASME International Mechanical Engineering Congress & Exposition (IMECE) Conference, Pittsburgh, PA: Paper Reviewer (June 2018)

ASEE Mid-Atlantic Conference, Washington DC: Paper Reviewer (March 2018)

Promoting Translation - Webinar with ORD & National Science Foundation (NSF) Investigators & Scientific Program Staff: Participant & Attendee (Sept. 2017)

IEEE Computational Intelligence Conference: Travel Award Reviewer (Aug. 2017)

Journal of Mechanical Engineering Research: Peer Reviewer (Aug. 2017)

Journal of STEM Education: Peer Reviewer (Sept. 2016)

U.S. Department of Health and Human Services, Administration for Community Living, National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR): Grant Proposal Panel Reviewer (April 2016)

Session Chair: 2016 IEEE Computational Intelligence Society (CIS) Winter School on Big Data in Computational Intelligence: From Fundamental Principles to Complex Applications (Feb. 2016)

Annual Biomedical Research Conference for Minority Students (ABRCMS): Abstract Reviewer (Sept. 2015)

District of Columbia Council of Engineering and Architectural Societies (DCCEAS) Student Paper Competition: Peer Reviewer and Judge (Feb. 2015)

Journal of Neurophysiology: Peer Reviewer (Jan. 2015)

Annual Biomedical Research Conference for Minority Students (ABRCMS): Abstract Reviewer (Sept. 2014)

Annual Biomedical Research Conference for Minority Students (ABRCMS): Judge of Posters and Presentations (Nov. 2014)

DEPARTMENTAL, UNIVERSITY, AND COMMUNITY SERVICE

- **Perry Initiative Outreach** (Nov. 2023)
- **Biomedical/Mechanical Engineering Faculty Search Committee Chair** (Spring 2022)
- **Program director and lead in creating documents and materials for first-ever Biomedical Engineering ABET Accreditation visit and evaluation**
  - Of approximately 100 HBCUs nationwide, UDC is the only HBCU to offer a specific, ABET-accredited Bachelor of Science in Biomedical Engineering degree program (2021)
  - Wrote several hundred-page ABET Accreditation Self Study Report (June 2020) for first-ever BS in Biomedical Engineering ABET accreditation visit (Oct. 2020)
  - Taught and initiated multiple new courses for the program
  - Systematically collected, then compiled, several years of data tied to direct and indirect assessments
- **Biomedical Engineering Visiting Faculty Search Chair** (Fall 2019): Created a position for, then sought out visiting faculty for the Biomedical Engineering program
- **Biomedical/Mechanical Engineering Faculty Search Committee Member** (Spring/Summer 2018):
  - Spearheaded screening and developing a short-list of candidates from 140 applicants
  - Interviewed and evaluated the candidates on the short-list; Scheduled and coordinated all onsite interview visits; followed up with candidates
- **UDC Biomedical Engineering Advisory Board Initiator & Coordinator** (Nov. 2017- present, meetings twice per academic year)
- **Appointed to serve as the UDC Institutional Review Board (IRB) Chairperson** (two-year term, Dec. 2017 – Dec. 2019, on leave Sept. 2019)

- **Appointed to the UDC Institutional Review Board (IRB)** (Dec. 2016 – Dec. 2019)
- **Appointed by UDC President to the UDC Chief Academic Officer Search Committee** (Spring-Fall 2016)
- **UDC CAUSES Search Committee Member** for Project Specialist, Sustainability Innovation + Urban Resilience (Oct. 2016)
- **Chair of the Mechanical Engineering Departmental Evaluation Promotion Committee, DEPC** (Spring 2016)
- **Mechanical Engineering Curriculum Committee** (2013-present)
- **Biomedical Engineering Curriculum Committee** (2013-present)
- **Lead in creating documents and materials used for Mechanical Engineering ABET Accreditation visit and evaluation (2014)**
- **Civil Engineering Faculty Search Committee Member** (Spring/Summer 2014):
  - Worked alongside committee chair and members to develop a short-list of candidates from 100 applicants
  - Interviewed and evaluated the candidates on the short-list; Was involved with onsite interview visits (i.e., met with the 2 candidates that were brought in for an onsite visit)
- **Creator and Developer of the UDC BME Facebook Page and (new) Twitter page** (June 2016 - present)
- **Creator and Developer of the UDC ME Facebook Page** (Spring 2014 – Spring 2017)
  - Created and developed all postings/materials and announcements to publicize activities in UDC Mechanical Engineering & UDC Biomedical Engineering (e.g., to current & prospective students)
  - **UDC BMES Faculty Advisor** and initiator of brand-new student club (Jan. 2019 - present); Dr. Thompson and UDC BMES hosted, for example, the following:
    - UDC BMES & NSBE Student Chapters host: *Breast Cancer Ultrasound Diagnostic Research from Tissue Elasticity Imaging to Deep Learning Segmentatio*n. Dr. Max Denis (Assistant Professor, Department of Mechanical Engineering, Biomedical Engineering Program, University of the District of Columbia), October 2021.
    - UDC BMES & NSBE Student Chapters host: *Diagnosing Breast Cancer – The Role of Imaging: the present and the future*. Dr. Azra Aliza (Professor of Radiology, Professor of Biomedical Engineering, Mayo Clinic College of Medicine), October 2021.
    - UDC BMES & NSBE Student Chapters host: *Breast Cancer Awareness*. Danielle Reynolds (Associate Director, Head of Upstream Manufacturing), October 2021.
    - *Virtual Women in STEM Trivia (Jeopardy) Game* (March 2021)
    - *Heart Awareness Month Event* (Feb. 2020)
    - *Snack and Post event* for UDC SEAS students (April 2019)
    - *International Women's Day Event* for UDC SEAS students (March 2019 (March 2020 event cancelled due to coronavirus))
    - *Black History Month trivia* for UDC SEAS students (Feb. 2019 & 2020)
    - *Verizon Male Minority Maker Outreach* – Saturday CBRE lab evening tours for 70 DC middle school youths (Jan. 2019)
  - **High School Outreach to Washington, DC public high schools (Fall 2022)**
    - Cesar Chavez Public Charter School
    - Taste of College Night
    - Jackson Reed High School
    - McKinley Tech High School
    - Cardozo Education Campus
  - **Community College and High School Outreach (Fall 2021):**
    - McKinley Technical High School (October 2021): virtual presentation and discussion session for 3 class periods (half a day), ~ 120 sophomore and junior students in the Biotechnology academy

- McKinley Technical High School and planned on-site visit at UDC (November 2021): half-day visit for 25+ prospective UDC students
- Friendship Academy Charter School (November 2021): virtual presentation and discussion for 60 students
- NOVA Community College (October 2021)

- **UDC CollegeBound** CBRE lab evening tours for 40-70 DC high school youths (March 2016, 2017, 2018, and 2019)
- **Creator, Initiator and Lead of the UDC Summer WEAVE program**, exposing and nurturing female youths towards pursuing engineering (Summer 2018)
- **Creator, Initiator and Lead of the UDC Summer Biomedical Engineering Workshop** (Summer 2016, 2017, 2018, and 2019)
- **GirlsLEAD Summit** Presenter (March 2018)
- **TrailblazHERS**, Invited Panel Speaker to female high school students, undergraduates, and young professionals (Oct. 2017)
- **Discover Innovation Day**, one of two co-coordinators (Feb. 2017 & 2018)
- **National Maker Faire Exhibitor and Presenter**, Washington, DC (June 2016)
- **Participant of the "Solutions for STEM Diversity: Lessons from HBCUs and other Leaders in Diversifying the Pipeline"**, National Academies of Sciences, Engineering, and Medicine, Washington, DC (Feb. 2016)
- **Invited Guest Scientist for the AAAS "Breakfast with Scientists" Event**, American University (Feb. 2016)
- **Invited Guest to the "International Celebration of Martin Luther King Day" Event**, Washington, DC (Feb. 2016)
- **Advisory board member for McKinley Technical High School 3D printed prosthetic design projec**t, Washington, DC (Spring 2016)
- **Appointed by UDC President to serve in the DC STEM Network** (Fall 2015)
- **Other Community College and High School Outreach:**
  - UDC Taste of College Night (Dec. 2016)
  - Advisory board member for McKinley Technical High School design team project for 3D printed prosthetic project (Fall 2015 – Spring 2016)
  - UDC College Bound Career Night (Spring 2015)
  - Montgomery Community College (Rockville Campus: Fall 2015)
  - Ballou High School (Fall 2015)
  - McKinley Technology Education Campus (Spring 2015)
  - Northern Virginia Community College (NOVA) Annandale Campus (2 visits in Spring 2015)
  - Northern Virginia Community College (NOVA) Loudoun Campus (Spring 2015)
  - Montgomery Community College (Silver Spring Campus: Spring 2015)
  - Montgomery Community College (Rockville Campus: Spring 2014)
  - National Association for College Admission Counseling (NACAC) Washington, DC (Fall 2014)

EXTRACURRICULAR ACCOMPLISHMENTS

- *10th out of 35 competitors from across the globe:* Head of the Charles Regatta, Women's Rowing Club 1x (2009)
- *2nd place* Textile Regatta, Women's Rowing Club 1x (2009)
- *7th out of 31 competitors from across the globe:* Head of the Charles Regatta, Women's Rowing Club 1x (2008)
- *1st place:* Textile Regatta, Women's Rowing Open 1x (2008)
- *2nd place:* Royal Canadian Henley Regatta, lightweight 4- Rowing (2007)
- *1st place:* US Club Nationals, Women's Senior lightweight 4+ (2007)

- Riverside Boatclub Women's Sweep Rowing Team Captain (2006)
- *3rd place:* Head of the Charles Regatta, Women's lightweight 8+ (2006)
- *2nd place:* Head of the Charles Regatta, Women's lightweight 8+ (2005)
- *1st place:* Textile Regatta, Women's Open 8+ Rowing (2005)
- *1st place:* US Rowing Club Nationals, Women's Intermediate lightweight 4+ (2005)
- *1st place*: US Rowing Club Nationals Regatta, Women's Senior lightweight 4+ (2005)
- *1st place:* Pacific Coast Rowing Champions: Stanford Women's Varsity lightweight 8+ (2004)
- Intercollegiate Rowing Association (IRA) Competitor: Stanford Women's Varsity lightweight 8+ (2004)
- *World Champions*, Division II Drum Corps (1997 &1998) and one- time silver medalist (1999): Spartans Drum and Bugle Corps