DONALD RUSSELL PETERSON

Professor, Department of Mechanical Engineering
Former Dean
College of Engineering and Engineering Technology, Northern Illinois University, DeKalb, IL
drpeterson@niu.edu

Affiliated Faculty, Department of Biomedical Engineering
College of Engineering, Texas A&M University, College Station, TX
drpeterson@tamu.edu

Visiting Professor, Institute of Sound and Vibration Research University
of Southampton, Highfield, England, UK dp1u23@soton.ac.uk

Guest Researcher, Physical Effects Research Branch
Health Effects Laboratory Division, National Institute for Occupational Safety and Health
Centers for Disease Control and Prevention, Morgantown, West Virginia

EDUCATION

1996-1999 Ph.D., *Biomedical Engineering*, **University of Connecticut** (UCONN), Storrs, CT

Dissertation Title: A Method for Quantifying the Biodynamics of Abnormal Distal Upper Extremity Function: Application to Computer Keyboard Typing – Developed a methodology to provide a basis for the quantification of fatigue and abnormal motion as a correlation with axonal, or neuromuscular, abnormalities with initial applications focused on repetitive strain injuries in, office workers, musicians, astronauts, and tool users.

1992-1995 M.S., *Mechanical Engineering*, **University of Connecticut** (UCONN), Storrs, CT

Thesis Title: Development of a Parallel Plate Flow Chamber to Study the Fluid Shear Effects on Living Cells – Designed, developed, and constructed a parallel plate flow chamber, which has been in use for the past 25 years, to study the genetic and/or metabolic responses of cells exposed to controlled fluid shear stresses.

1988-1992 B.S., *Mechanical Engineering* with Distinction (Honors), Double Major in *Aerospace Engineering* and *Biomedical Engineering*, Minor in *Dramatic Arts*, **Worcester Polytechnic Institute** (WPI), Worcester, MA

WPI Major Qualifying Project (MQP; Senior Thesis), Arterial Stenosis Models – Analyzed and modeled the fluid mechanics of atherosclerosis through animal studies, scaled-up flow visualization models of aortas, and computational fluid dynamics models. (*This work served as a combined project to satisfy the requirements for both the Aerospace and Biomedical Engineering double major.*)

WPI Interactive Qualifying Project (IQP; Junior Thesis), Lunar Commercialization: Application of Life Support – Applications and implementations of lunar base waste management technology on earth with space exploration technologies for use in earth-based waste management systems in this thesis

that examined the impact of science and technology on society. (*This work served as a combined project to satisfy the requirements for both the Aerospace and Biomedical Engineering double major.*)

WPI Sufficiency Project (SUFFICIENCY; Minor Thesis), Production Clockwork – Investigated methods to increase the efficiency and cost reduction of theatrical productions in this thesis that was the culmination of a humanities minor.

First Generation College Student with extramural activities in:
- Collegiate Athletics – Football, Golf, Track and Field
- Fraternity – Sigma Phi Epsilon

ACADEMIC LEADERSHIP POSITIONS

2017-2023 Dean (*July 2017 to June 2023*), College of Engineering and Engineering Technology, Northern Illinois University (NIU)
2020-2023 Acting Director, Biomedical Engineering Program, College of Engineering and Engineering Technology, NIU
2014-2017 Director, Texas A&M University - Texarkana (TAMU-T) Regional Division, Texas Engineering Experiment Station (TEES), Texas A&M University System
2014-2016 Dean (*Aug. 2014 to Dec. 2016*), College of Science, Technology, Engineering, Mathematics, and Nursing, TAMU-T
2014 Founding Co-Director, Innovation Studio for the Connecticut Institute for Clinical and Translational Science (CICATS), Univ. of Connecticut Health Center (now UCONN Health)
2013-2014 Interim Head, new Dept. of Biomedical Engineering, Schools of Medicine and Dental Medicine, UCONN Health Center
2010-2014 Director, Undergraduate Biomedical Engineering Program, School of Engineering, University of Connecticut (UCONN)
2010-2012 Chair and Program Director, Biomedical Engineering, School of Engineering, UCONN
2008-2012 Director, Biomedical Engineering Graduate Program, School of Engineering, UCONN
1999-2014 Director and Founder, Biodynamics Laboratory, Dept. of Medicine, Div. of Occupational and Environmental Medicine, School of Medicine, UCONN Health Center

ACADEMIC APPOINTMENTS

2023 - Guest Researcher, Physical Effects Research Branch (PERB), Health Effects Laboratory Division (HELD), National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC), Morgantown, West Virginia
2023 - Visiting Professor, Institute of Sound and Vibration Research, University of Southampton, Highfield, Southampton, UK
2017 - Professor, Dept. of Mechanical Engineering, College of Engineering and Engineering Technology, NIU
2014 - Affiliated Faculty, Dept. of Biomedical Engineering, College of Engineering, Texas A&M University - College Station (TAMU)
2014-2017 Professor of Engineering, College of Science, Technology, Engineering, and Mathematics, Texas A&M University - Texarkana (TAMU-T)

2014-2019	Affiliated Faculty, Biomedical Engineering Department, School of Engineering, University of Connecticut (UCONN)
2014-2017	Associate Professor (*adjunct*), Dept. of Medicine, School of Medicine, University of Connecticut Health Center (now UCONN Health)
2010-2014	Honors Academic Advisor, Biomedical Engineering Program, School of Engineering, UCONN
2009-2014	Associate Professor, Dept. of Medicine, Div. of Occupational and Environmental Medicine, School of Medicine, UCONN Health Center
2009-2011	Associate Professor (*adjunct*), Dept. of Craniofacial Sciences, School of Dental Medicine, UCONN Health Center
2008-2014	Graduate Faculty, Public Health and Occupational and Environmental Health Sciences, UCONN Department of Craniofacial Sciences, UCONN Health Center
2004-2009	Assistant Professor (*adjunct*), Dept. of Bio-Structure and Function, School of Dental Medicine, UCONN Health Center
1999-2014	Graduate Faculty, Biomedical Engineering, Graduate School, UCONN
1999-2009	Assistant Professor, Dept. of Medicine, Div. of Occupational and Environmental Medicine, School of Medicine, UCONN Health Center

OTHER LEADERSHIP APPOINTMENTS AND TITLES

2022 -	Chair, American National Standards Institute (ANSI) Technical Advisory Group (TAG) for ISO / TC 108 on *Mechanical Vibration, Shock, and Condition Monitoring*, American National Standards Institute (ANSI) and Acoustical Society of America (ASA), NYC and Melville, NY
2021 -	Chair, ANSI S2 Working Group (WG) 39 and S3 WG39 on *Human Exposure to Mechanical Vibration and Shock*, Acoustical Society of America (ASA), Melville, NY
2018-2019	Acting Editor-in-Chief, *Bioengineered*, Taylor and Francis, Oxfordshire, UK
2017-2023	Inaugural Chair, ASTM Committee F48 on *Exoskeletons and Exosuits*, ASTM International, West Conshohocken, PA
2015-2017	Chair, Healthcare Research Group, TEES, TAMU, College Station, TX
2015 -	Editor-in-Chief, *Biomedical Engineering Handbook*, (2024, 6 Vol., target), CRC Press, FL
2014-2017	Campus Director for TAMU-T, NASA Texas Space Grant Consortium, University of Texas at Austin (lead institution), Austin, TX
2014 -	Editor-in-Chief, Biomedical Engineering Textbook Series, CRC Press, FL
2013	Interim Program Coordinator (to develop new program in Biomedical Engineering Technology), Springfield Technical Community College, Springfield, MA
2012-2014	Chair, Industry Affairs Committee, Biomedical Engineering Society (BMES)
2011	Co-Chair, Biomedical Engineering Society Annual Meeting, Hartford, CT (~3,000 attendees)
2010-2014	Coordinator of ABET Accreditation, Biomedical Engineering, School of Engineering, UCONN
2014-2015	co-Editor-in-Chief, Biomedical Engineering Handbook (2015, 4 Vol.; 5,430 pp.), CRC Press, FL
2008-2014	Co-Executive Director, Biomedical Engineering Alliance and Consortium (BEACON), Hartford, CT
2009-2011	Campus Director for UCONN, NASA Connecticut Space Grant Consortium, University of Hartford (lead institution), West Harford, CT
2008-2012	Chair, Biomedical Engineering Graduate Program Committee, School of Engineering, UCONN
2006-2010	Director, Bioengineering Center, UCONN Health Center
2004-2010	Project Director, Center for Research, Education, and Technology Evaluation (CRETE), School of Dental Medicine, Farmington, CT
2002-2014	Campus Director for UCONN Health Center, NASA Connecticut Space Grant Consortium, University of Hartford (lead institution), West Harford, CT

1996-2014 Biomedical Engineering Coordinator, Ergonomics Technology Center of CT, Dept. of Medicine, Div. of Occupational and Environmental Medicine, School of Medicine, UCONN Health Center

LEADERSHIP EXPERIENCE (27 years)

Dean College of Engineering and Engineering Technology, Northern Illinois University, DeKalb, IL (www.niu.edu/ceet)
2017 - 2023 (*July 2017 - June 2023*)

Responsible for the overall academic, administrative, fiscal, and strategic leadership of the College and for ensuring that this interdisciplinary College brings diverse people together with common goals and upholds its critical core values: academic excellence, student and faculty success, and community leadership. By "Bridging Theory with Practice", the College teaches students to discover and innovate, solve real-world problems, become engineering leaders, and make an influential difference. The College has 44 expert tenure and tenure-track faculty, 3 full-time instructors, and 24 industry adjuncts, who are committed to academic excellence, inclusivity, leadership, and impact, and has 40 state-of-the-art laboratories, and hundreds of partnerships with industry, students are well prepared for a successful career when they enter the global workforce. The College has a total of 13 undergraduate and graduate degree programs (B.S., M.S., and Ph.D.) in Biomedical Engineering, Electrical Engineering, Engineering Technology, Industrial and Systems Engineering, Mechanical Engineering, and Mechatronics Engineering, with various emphases offered in each along with various online options. Recent operational expenditures, discounting research, exceed $7.0M.
Core Responsibilities:

- Advance the shared strategic vision, mission, and core values of the college
- Promote excellence in teaching and research to support a balanced vision and mission
- Expand college diversity and equity, and promote inclusive decision-making processes
- Foster innovation, entrepreneurship, and engagement with industry, government agencies, military, academic, and public communities
- Develop external relationships and fundraising opportunities in support of the college and its programs and work with alumni and donors on college advancement
- Direct the college's multi-million dollar budget to support its mission and strategic plan
- Develop and support faculty, staff, and student partnerships with the business community
- Lead and interact effectively with faculty, staff, a strong shared governance structure, and faculty and staff unions, as well as with students, alumni, industry, and national and international academic communities
- Enhance and expand the research profile of the college
- Create and maintain strong relationships and connections with industry in and around Northern Illinois and Chicagoland
- Facilitate and maintain strong relationships and connections with neighboring Fermi National Laboratory and Argonne National Laboratory, as well as with the various funding agencies

Some Accomplishments:

- Please see recent Dean's Report at www.niu.edu/ceet/_files/2017-2021-ceet-deans-report.pdf
- Since arriving at NIU in 2017, increased and maintained a strong college ranking in U.S. News and World Report (for programs having no doctorate, e.g., 74 in 2018 to 33 in 2021)
- Bronze Award in the ASEE Diversity Recognition Program (ADRP) for sustaining and advancing the college's DEI mission, vision, and values

- Managed college budget through COVID and through challenging state and university cuts and worked to minimize impact to college units and to optimize administrative workflow, resource sharing, and workload distributions
- Ongoing advancement and alumni initiatives over a three-year span involving meetings with corporations and alumni within the region and nationally, with recent commitments totaling more than $5M
- Doubled research grant funding, with faculty supported for grant submissions that now total more than $25M per year
- Partnered with Hanover Research to increase grant submission abilities of faculty
- Incorporated use of data analytics with Tableau and APS for business intelligence to analyze and benchmark college performance, including program cost information, tracking student recruitment, admissions, enrollment, retention, and graduation data, and various course metrics such as D-F-W rates
- Implemented safety and security protocols for proper operation and access for all laboratories
- Created a monthly informal “Coffee & Chat” meeting with staff with the dean, associate deans, and department chairs, where staff are updated on college activities and can interact directly with college leadership
- Facilitated college retreats involving all faculty and staff for the initiation of a new faculty-led strategic plan for the college that contains success metrics and benchmarks (see www.niu.edu/ceet/about/strategicplan/index.shtml)
- Facilitated rebranding focus group exercises for the college in collaboration with NIU University Marketing and Simple Truth, with the outcome of a new CEET brand (see www.niu.edu/communicationstandards/_downloads/college-sub-brands/ceet-guidelines.pdf)
- Redesigned the office of the Associate Dean for Undergraduate Academic Affairs to oversee and infuse outreach and diversity initiatives throughout the college
- Established a scholarship program that specifically supports Hispanic women in engineering
- Participated in the Association of Public Land-Grant Universities (APLU) INCLUDES (Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science) project to increase faculty diversity

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  Restructured academic advising to be deeper, more impactful, and individualized for students (called "Precision Advising") to significantly increase retention and graduation rates
- Met regularly with the CEET Student Advisory Council, which is composed of student leaders from competition teams, as well as student clubs and professional society student chapters, as a feedback mechanism on the progress of the college and extra-curricular opportunities for students
- Developed a portfolio of external partnerships that overlap with many aspects of the college and align with our DEI strategies, including with Fermi National Accelerator Laboratory and Collins Aerospace
- Developed an engineering learning community that occupies a dedicated dormitory floor, with engineering students having access within the dorm space to specialized extra-curricular opportunities, faculty discussions and seminars, advising, and computers, makerspace, and IoT equipment
- In first two years, established new UG interdisciplinary degree programs in *Biomedical Engineering* and *Mechatronics Engineering* and new PhD degree programs in Electrical Engineering, Industrial and Systems Engineering, and Mechanical Engineering, including an innovative PhD *Industry Fellows Program* (IFP) with national and regional industry partners that allows full-time industry employees to realistically pursue a PhD degree (see newsroom.niu.edu/niu-unveils-first-ph-d-programs-in-engineering)
- Redesigned the senior design program (i.e., senior year capstone) for Biomedical Engineering, Electrical Engineering, Mechanical Engineering, and Mechatronics Engineering to link and cross-integrate these disciplines and promote industry-realistic, multidisciplinary student teams (*industry partnerships with this new integrated program have generated nearly $750,000 in five years*)
- Created a large Senior Design Studio to give senior design students exclusive access to a laboratory that is configured to foster innovation, creativity, and entrepreneurship
- Built and supported partnerships with regional, national, and international companies, such as: Boeing, Bourn and Koch, Collins Aerospace, ComEd, Concentric, Crane Composites, EDF Renewable Energy, Harley-Davidson, Harting, Hydro-Force, Ideal Industries, Instrument Associates, Invictus Medical, Ipsen, LEDiL, Midwest Keyless, Mitsubishi Electric Automation, Mitutoyo Advanced Manufacturing, Moxi Solar, NVIDIA, OMRON Panther Industries, PDT, SDA Consulting, Sears Seating, Sram, Stradis Healthcare, Supply Chain Management Consultants, Thermamax, Ultrasonic Power Corporation, Walmart, Woodward, etc., etc., to establish research and project opportunities for faculty and students
- Enhanced existing, and increased, online offerings, including marketing strategies and new opportunities for revenue generation for the college and the university
- Established and/or enhanced engineering articulation agreements with several community colleges within the region to including a focus on diversity and the recruitment of women and under-represented minorities
- Established collaborative contacts within regional school districts regarding outreach and recruitment strategies for high school students interested in engineering, especially female and minority students, and to pursue a dual credit "Introduction to Engineering" course offered at regional high schools
- Initiated and advancing articulation relationships with several international institutions in various countries, such as: China (Beihang University, Jiangsu University, Xi'an University of Technology, Zhejiang University of Technology), Czech Republic (Brno University of Technology), France (IMT École Mines Douai et Télécom Lille), India (Amrita Vishwa Vidyapeetham, PSG College of Technology, and other institutions through partnership with the NIU ELS program office), and South Korea (Sejong University), as well as new initiatives in progress with Egypt and the United Arab Emirates
- Continually working with the college deans from Liberal Arts and Sciences, Education, Health and Human Sciences, Visual and Performing Arts, and Business to foster transformative opportunities involving research, student experiences, joint hires, cross-listed courses, degree programs, etc., such as a joint physics-engineering hire for research and education in particle accelerator physics

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- Work closely with ETAS (CEET's Engineering and Technology Alumni Society) for student team funding and broader alumni engagement and tracking
- Continually working with faculty to invigorate various research facilities, including the expansion of industry, state, and federal contacts to stimulate high-quality research and applications for funding from industry, government, and military
- Wrote and submitted the successful application for NIU to join the NASA Illinois Space Grant Consortium
  Deepened relationships with Fermi National Laboratory and Argonne National Laboratory and in current exploration of facilitating graduate certificate programs and expanded involvement in national laboratory research and application thrust areas
  Several meetings with state agencies for economic development, such as the Illinois Department of Community and Economic Opportunity (DCEO) and Intersect Illinois
- Participated in Economic Roundtables with Congresswoman Cheri Bustos (Illinois 17th Congressional District) to discuss how CEET plays an integral role in the regional and state economy and helped to facilitate the visit by Congressman Randy Hultgren (Illinois 14th Congressional District) to NIU regarding engineering intrapreneurships
- In working with NIU's new Director of Innovation Partnerships and Technology Transfer, established working relationships with the DoD for innovation and translation initiatives (e.g., USAF AFWIC and APEX programs) and with municipalities for innovation districts for technology incubation and growth (e.g., Aurora, IL)
- Strengthening the emphasis on innovation and entrepreneurship within the college, with NIU now nationally ranked 3rd for "Impact on Innovation Productivity" by the George W. Bush Institute and the Opus Faveo Innovation Development consulting firm
- Represented NIU CEET at the national Engineering Deans Institute (EDI) of the American Society of Engineering Education (ASEE) in 2018 and organized and co-chaired a session on the future of graduate engineering education in 2019
- Visits to Washington D.C. with our federal government relations advocate for outreach to the federal government regarding NIU CEET research, education, and workforce readiness activities

Chair, ANSI TAG to ISO TC / 108 on Mechanical Vibration, Shock, and Condition Monitoring American National Standards Institute (ANSI) and Acoustical Society of America (ASA), NY (asastandards.org/iso-tc-tag-108/**)**
2022 -

Nominated and elected as Chair as of October 14, 2022. The purpose of ANSI Technical Advisory Group (TAG) to ISO TC/108 is to develop and maintain US consensus positions and activities in the fields of mechanical vibration and shock and the effects of vibration and shock on humans, machines, vehicles (air, sea, land and rail) and stationary structures, and of the condition monitoring of machines and structures, using multidisciplinary approaches. This includes terminology and nomenclature; excitation by sources, such as machines and vibration and shock testing devices; elimination, reduction, and control of vibration and shock, especially by balancing, isolation and damping; measurement and evaluation of human exposure to vibration and shock; methods and means of measurement and calibration; methods of testing; and methods of measurement, handling, and processing of the data required to perform condition monitoring and diagnostics of machines.

Responsibilities:
- Plan national priorities and goals in line with ANSI and ASA S-Committees

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- Oversee the development, transmission, and maintenance, via ANSI, of US consensus positions and comments on activities and ballots of TC/108, where activities and ballots include the approval, reaffirmation, revision, and withdrawal of ISO standards
- Oversee conformity assessment activities and submissions of New Work Item Proposals (NWIPs) for consideration and for ISO member voting regarding the development of new standards
- Ensure compliance with TAG procedures and with ISO policies and procedures
- Recommend experts to serve in TC/108 and identify delegates and experts to represent the US at international ISO meetings
- Work with a wide array of stakeholders and leaders from industry, government, private companies, educational institutions, consumer groups, and other organizations on solutions to emerging issues and obstacles that impact industry, product lines, or other areas of US interests
- Work closely with the teams developing standards and understand how US organizations are applying standards in business models
  Serve as the point of contact for US TAG members, manage questions and concerns about issues impacting industry, negotiate and communicate with stakeholders, and find common ground and promote a collegial environment and consensus between diverse and sometimes conflicting viewpoints

Chair, ANSI S2 WG39 and S3 WG39 on Human Exposure to Mechanical Vibration and Shock American National Standards Institute (ANSI) and Acoustical Society of America (ASA), NY
(asastandards.org/working-groups-portal/s2-wg39/**) and**
(asastandards.org/working-groups-portal/ansi-s3wg39/**) 2021**
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Nominated and elected as S2 and S3 Chair as of September 1, 2021. The purpose of the ANSI Work Group (WG) 39 under Committees S2 and S3 is to develop and maintain standards for shock and vibration and biodynamic environments with regard to criteria for health, safety, performance, and comfort. This also includes guidelines regarding the effects of occupational and non-occupational exposures on the human population with environments of primary interest including vibration, rotational oscillations, shock and impact transmitted to the whole-body or parts thereof. Guidelines also include terminology, characterization of biodynamic properties of humans with and without support and restraints, biodynamic models or analogs, and descriptions of physical, behavioral and physiological effects of mechanical environments. This WG also maintains communications and liaisons with other related ANSI WGs, relevant US regulatory agencies, and relevant ISO standards groups.

Responsibilities:
- Recommend individuals who will serve on the S2 and S3 subcommittees each calendar year
- Plan subcommittee goals and activities in line with the charge approved by the Board of Directors for the ANSI / ASA S-Committees
- Plan and oversee virtual and face-to-face meetings of the committee
- Participate in the meetings of the committee councils for S2 and S3 and provide summaries of activities during the past year, plans for the coming year, as well as any concerns or problems
- Solicit proposals from members for meetings and meeting topics, encourage participation of all members
- Provide orientation for incoming members by explaining the work involved and by inviting them to attend meetings prior to the start of their terms

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Chair (Inaugural), Committee F48 on Exoskeletons and Exosuits ASTM International, West Conshohocken, PA (www.astm.org/COMMITTEE/F48.html) 2017 - 2023

Nominated and elected as Inaugural Chair as of September 14, 2017. The purpose of ASTM Committee F48 is to develop and establish international consensus standards to address safety, quality, performance, ergonomics, and terminology for exoskeleton and exosuit systems and their components during the full life cycle of the product – from before usage, to maintenance, to disposal – including, security and information technology considerations. The activities of F48 cover military, industrial, emergency response, medical, and consumer applications and cover passive and active systems, enhancing and decreasing effects systems, as well as systems with physical and cognitive integration.
Responsibilities:

- Uphold the consensus process per ASTM regulations and Committee Bylaws, as well as general parliamentary procedures
- Chair meetings of both the executive subcommittee and the main committee
- Oversee the standards development activities of the committee, including five-year review, due process for negative voters, and actions on standards
- Appoint and mentor subcommittee chairpersons, liaisons, and executive subcommittee task groups, such as the nominating committee and strategic planning committee
  Ensuring that the executive subcommittee performs all required duties, such as approving membership applications and affiliate members, classifying members of classified committees, assigning voting status, and any duties outlined in the committee bylaws
  Manage ASTM circular letter ballots and other headquarter correspondence
- Manage general administrative duties, such as planning future meetings, managing committee funds, and approving proposals for symposia
- Provide guidance as needed to officers and committee members
- Conduct regular executive committee meetings, including preparation of the agenda, review of correspondence, review of minutes and action items from previous meetings, communicate with ASTM staff manager
- Work with executive committee and ASTM staff manager to maintain committee's profile in industry (for example: committee promotions, industry strategic partnerships, opportunities for committee representatives at industry events, student posters sessions, etc.)

Director, TAMU-T Regional Division, Texas Engineering Experiment Station (TEES; tees.tamu.edu)
Chair, Healthcare Research Working Group in TEES (2015 - 2017) Texas A&M University - College Station
2014 - 2017

Served as the TEES regional division director for A&M-Texarkana, which is a 100-year-old A&M University institution that has been performing, facilitating, and overseeing high-end engineering research and technology development to address state and national problems. TEES partners with industries, communities, government agencies, to develop solutions to improve quality of life, foster economic development, and enhance education.

- Represented TAMU-T in the regional divisions group
- Identified and created internal and external collaboration opportunities for TAMU-T faculty and students in order to build research capacity and create economic impact

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- Worked with TEES to identify research and translational opportunities for faculty and students across the TEES network
- Served as Chair for Healthcare research for all of TEES and establish an increase in funded state-wide collaborations for high-end healthcare and medical technology research – involves organizing and conducting regular meetings, organizing and chairing technical sessions at annual research conference, and assisting and fostering collaborative grant proposal submissions

Campus Director for TAMU-T, NASA Texas Space Grant Consortium Texas A&M University - Texarkana
2014 - 2017

Applied for, and established, TAMU-T as a member in the Texas Space Grant Consortium. As Campus Director, my role and responsibilities were essentially equivalent to that of my space grant directorships for UCONN and UCONN Health Center (as detailed in those sections below). I was successful in bringing the Office of Education at Johnson Space Center to Texarkana to engage NASA with the local K-12 STEM education system, which led to Texarkana becoming a NASA education partner/site and to our K-12 involvement on the NASA advisory board for STEM education.

- Represented TAMU-T on the TSGC Academic Advisory Board
- Disseminated NASA Space Grant funding opportunities to faculty and students and to educators and the general public in the great Texarkana region
- Advertised research and scholarship opportunities and encourage students and faculty members on their campuses, including the recruitment of members from underrepresented groups, to apply for grants and scholarships

Dean College of Science, Technology, Engineering, Mathematics, and Nursing
(web.archive.org/web/20161105061251/http://tamut.edu/Academics/Colleges-andDepartments/STEM/index.php**)**
Texas A&M University - Texarkana
2014 - 2016 (*Aug. 2014 - Dec. 2016*)

The learning-centered, transdisciplinary College of STEM and Nursing had a total of 10 undergraduate and graduate degree programs in Biology, Biotechnology, Chemistry, Computer Science, Electrical Engineering, Kinesiology, Mathematics, and Nursing, with various concentrations offered in each of these programs, such as computer engineering, nursing administration or education, as well as teacher certifications in the sciences and mathematics. The annual operational expenditures, discounting research, were complex and exceeded $5.0M. The College had 26 core faculty (tenured, tenure-track, or in-residence), more than 10 adjunct faculty, and 4 support staff who contributed to its multi-disciplinary programs. Under the strategic growth plan under my leadership, the College experienced a 20% increase in size in two and a half calendar years.

Responsibilities:
- Provided visionary leadership to accelerate the rise of this College to prominent state, regional, and national recognition, especially through consistent engagements with government and academic institutions and through frequent marketing and communications
- Created compelling visions for ongoing advancement and innovative expansions of the College, including practical increases in budgets, new building acquisitions, and utilization of existing infrastructure
- Responsible for short- and long-range strategic planning and development of instructional and cooperative enterprises, including engaging in fundraising and identifying and obtaining grants and contracts
- Promoted and support revolutionary and ambitious advancements in the curricula of the College that ensures cutting-edge real-world education, emphasizes multi-disciplinarity, and promoted student success by lowering attrition through enhanced student advising and practical student learning communities
- Facilitated cross-disciplinary and team-centered experiential environments with team-based learning and problem solving, especially within mentored student research, capstones, and senior designs from all STEM and Nursing programs
- Established and maintained strong cooperative relationships with the regional communities and industries, especially to pursue, define, increase, and sustain student and faculty opportunities
- Worked with University admissions to recruit diverse and motivated students to stably and realistically increase College enrollment
- Fostered transparency and enhanced faculty shared governance
- Facilitated the professional and scholarly growth of the faculty inside and outside of the University, particularly with the junior faculty
- Supervised all support staff as well as conduct annual evaluations of faculty and staff
- Oversaw all state, regional, national, and specialized accreditations in each discipline represented within the College, including regular presentations on assessment outcomes
- Enhanced contact with the growing base of College alumni, especially contacts that may lead to student and College opportunities
- Developed strong overlaps with regional K-12 STEM educational initiatives, including working to reinforce/increase female and minority engagement within the STEM disciplines
- Worked with the President, Provost, and Dean of Research in planning and coordinating strategic and tactical goals for the College

Accomplishments:
- Established cross-discipline collegiality and a *let's-get-things-done* attitude within the College, including administrative and financial support for new and ongoing initiatives

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- Developed and implemented with faculty a College-wide strategic growth plan in 2015 to provide investments in updating educational equipment and facilities and to expand the College, involving the increase in faculty numbers and the development and inauguration of 4 new B.S. degree programs for AY16-17 (Biotechnology, Chemistry, Kinesiology, and Nursing), 1 new B.S. degree program tentatively in AY17-18 (Paper and Bioprocess Engineering), and 4 targeted degree programs for AY18-19 and 19-20 (B.S. in Biomedical Engineering, B.S. in Mechanical and Mechatronics Engineering, and M.S. in Electrical Engineering, and M.S.N. in Family Nurse Practitioner)
  Identified new financial and facility resources to support existing and new faculty in their research, instruction, and professional development, including the creation of two centers of excellence - the STEM Innovation Laboratory and the STEM Student Project Studio - that also promote the mission of the College and hands-on experiential learning for students
- Developed a significant relationship for the College with the prestigious 100+-year-old Texas Engineering Experiment Station (TEES) agency, including their formal recognition of TAMU-T research and student success, that created new opportunities for faculty to participate in state-wide research collaborations
- Leveraged partnerships with regional companies, clinical entities, and entrepreneurs that have led to significant increases in sponsored research, projects, and design challenges for faculty and students
- Created learning communities between STEM disciplines, such as between parallel Chemistry and Mathematics courses structured to have overlapping course and lab materials and focused study sections
- Created new experiential learning opportunities for students, including capstone experiences in all degree programs and capstone-like challenges offered within the freshman through junior years to prevent attrition and the “sophomore slump”
- Restructured academic advising to promote curricular efficiency and meaning, especially in career guidance and mentorship, and progressively eliminated unnecessary curricular disruptions that can lead to student drop out
- Leveraged membership in the A&M System to create the System’s first shared Ph.D. engineering program with the flagship campus in College Station (no engineering Ph.D. program at TAMU-T)
- Established translational pathways for students and faculty, including IP management, patenting, small business formation, import/export control, incubation, etc., using my own developed technologies and methodologies to create the pathways (two provisional patents and six technology disclosures), as well as worked to establish a business incubator and an Angel Investor Network (AIN) for northeast Texas
- Worked to build meaningful and functional international academic and research relationships for faculty and students with academic institutions in China, Japan, and countries in Central and South America
- Created and hired the University’s first ever STEM Professor of Practice who assisted the college with the development of multidisciplinary experiences for students and faculty, including collaborations, internships, cooperative design efforts, capstone and senior design initiatives, and novel student projects and research initiatives
- Established an Engineer-in-Residence Program, where professionals from industry spend time on campus to connect with sponsored project teams, provide lectures, and mentor students
- Successfully aligned, and led, the College through the reaffirmation of regional accreditation by SACSCOC
- Revised advisory boards to better align the College with regional industries and partners, alumni, and potential donors
- Initiated and facilitated the process for the *initial* ABET accreditation for the Computer Science and Electrical Engineering degree programs; with a successful official ABET visit in October of 2016
- Facilitated and assisted with the approval of the new four-year B.S. in Nursing by the Texas Board of Nursing, the successful CCNE accreditation of the M.S. in Nursing, and the pending CCNE visit for the B.S. in Nursing in the spring of 2017

- Set the precedence to increase the diversity of the faculty, as the College rapidly expanded, by progressively supporting and encouraging the consideration of diverse applicants
- Worked to introduce industrial and professional certification programs offered by the College
- Established, and continuing to expand, state-wide community college partnerships on student transfer articulation for all STEM degree programs
- Worked with University leadership to obtain two new buildings: $32M in state appropriations for a 58,000square-foot academic building (for Nursing and STEM) and a Public-Private Partnership (P3) formed with partners throughout the Texarkana community for an $11M, 38,000-square-foot recreation center, which will house the College's new Kinesiology program
- Worked with the Chancellor of the A&M System to put forth the newly proposed B.S. in Paper and Bioprocess Engineering program as a $1M Legislative Appropriations Request (LAR) to the State of Texas in early 2017, in order to support the program and increase the presence/impact of the industry within the state

Founding Co-Director, Innovation Studio Connecticut Institute for Clinical and Translational Science (CICATS) University of Connecticut Health Center
2014

Nominated and selected as a Founding Co-Director of a newly established Innovation Studio that brings together relevant research experts to provide guidance and consultation to investigators in the field of translational research. Its purpose is to assist with hypothesis generation, study design, implementation, analysis and interpretation, as well as manuscript and research proposal development. It also assists with guidance and consultation to help investigators explore possibilities of applying research findings to unmet clinical needs and identify opportunities for dissemination of relevant findings into practice or entrepreneurial ventures.

Accomplishments:
- Formed and led a standing team to operate the Innovation Studio
- Positioned the Innovation Studio as a critical and beneficial resource to the community and state
- Determined investigator needs and developed innovative programs to accommodate those needs
- Worked closely with faculty, staff, and Core Interest Groups to respond to service requests
- Devoted effort to build a strong regional and national image for CICATS as an integrated home for researchers
- Identified appropriate context for disseminating research findings
- Recommended additional tests in order to successfully introduce research findings into real-world settings
- Examined unmet clinical needs pertaining to the findings of various research projects
- Connected investigators with local funding agencies, such as Connecticut Innovations (CI)
- Recommended an approach for translation of study findings and commercializing innovations

Interim Head, (new) Department of Biomedical Engineering Schools of Medicine and Dental Medicine, University of Connecticut Health Center 2013 - 2014

Appointed as the Health Center's first Head for the newly established, cross-campus Biomedical Engineering Department in the Schools of Medicine and Dental Medicine. I had conceptualized, proposed, and facilitated this new structure, which is now jointly administered, and sustained, with the Schools of Engineering, Medicine, and Dental Medicine.

Accomplishments:

-
- Facilitated and enhanced recruitment of exceptional faculty members
- Enhanced the recognition and prestige of the BME faculty
- Improved the recruiting success of graduate and undergraduate students
- Enhanced the success of development activities closely aligned with biomedical engineering
- Leveraged and enhanced the likely success of grant proposals submitted to NIH, NSF and other agencies that recognize the unique trans-disciplinary nature of the BME research efforts underway
- Affirmed the University's commitment to building world-class biomedical engineering undergraduate and graduate degree programs
- Enhanced the University’s prestige as an important destination for students, faculty, and researchers who seek to engage in top-tier biomedical engineering education, research, and entrepreneurial endeavors
- Directed and managed the undergraduate and graduate BME education program
- Managed the BME research staff and facilities located at the Health Center campus

- Initially structured the Promotion, Tenure, and Reappointment (PTR) processes for UCONN Health Centerbased BME faculty whose primary affiliation is within either the School of Medicine or the School of Dental Medicine
- Managed the graduate BME education program at the UCONN Health Center campus
- Managed the BME research facilities located at the UCONN Health Center campus
- Provided strategic planning for, and facilitation of, the research and educational agenda of the BME Department
- Determined the teaching assignments and loads of BME faculty members
- Managed of the joint BME Courses and Curriculum Committee
- Administered all BME faculty performance evaluations
- Worked closely with the Committee of Deans and the Provost to ensure the success of the new crosscampus Department and its faculty

Interim Program Coordinator, School of Engineering Technologies Springfield Technical Community College (STCC), Springfield, MA 2013

Interim leadership role on a state-funded planning grant from the Massachusetts Life Sciences Center to develop curriculum and determine equipment and infrastructure needs to deliver a life sciences education leading to employment in the field.

Accomplishments:
- Served as the initial project coordinator to begin the planning, organization, and institutional strategizing of a new Biomedical Engineering Technology degree in the School of Engineering Technologies
- Performed a Skills Gap Analysis and Developing a Curriculum (DACUM) analysis with STCC faculty and regional industry partners to determine tasks, knowledge, skills, and equipment needed for graduates to be successful in identified career pathways
- Worked with project consultants and overseeing project logistics, including a S.W.O.T. analysis centered on a multi-disciplinary and innovative curriculum involving regional and national industrial need

Chair, Industry Affairs Committee (IAC) Biomedical Engineering Society (BMES), Landover, MD 2012 - 2014

Nominated and elected as chair for a new industry affairs committee in the international flagship society for Biomedical Engineering. This position sought to expand translational efforts within BMES.
Accomplishments:
- Increased IAC membership with industry partners to represent a national cross-sectional perspective, including participation from various sectors of Biomedical (BM) industry, including medical devices, biotech, pharma, etc., as well as from clinical and legal practitioners
- Structured and conducted regional industry-based symposiums and/or forums around the United States
- Increased industry participation in the annual meeting of the BMES, including an increase in industrial/clinical/legal participation in the Translational BME track, an increase career fair participation, and an increase in industry presence in the exhibit hall
- Provided the vision and structure of the current IAC, as well as for the Industry-specific activities now successfully taking place in the national BMES meetings

Undergraduate Program Director, Biomedical Engineering School of Engineering, University of Connecticut 2010 - 2014

As the program entered a period of incredible transition into becoming a new cross-university department between the schools of engineering, medicine, and dental medicine, I served as the Undergraduate Program Director for an enrollment of about 350 undergraduate students. (Here, my role and responsibilities were essentially equivalent to that of the overall chairmanship as defined in the description immediately below, except for the graduate portion which continued to grow and was over 100 graduate students.) Following my chairmanship of the overall program (undergraduate and graduate), I focused on building and maintaining the strength of the Undergraduate Program, especially during this critical transition time.
Accomplishments:

- Served as Academic Advisor to almost 60 Honors undergraduate students (number of advisees have ranged between 55 and 100)
- Course instructor for 2 courses in fall of 2013, including the lead instructor of Biomedical Engineering Design I and II which is a two-semester senior capstone design course sequence, and 2 courses for the spring of 2014 (recent – 4 courses, fall of 2012; 4 courses, spring 2013), including the creation of a cuttingedge medical device senior design program involving clinicians, entrepreneurs, and local manufacturers.
- Served as ABET Coordinator for BME, with successful ABET visit in October 2013
- Established new University chapter in the Engineering World Health where undergraduates from any academic background can participate in hands-on experiences of designing and building medical devices intended for the use in developing countries
- Created and established a Biomedical Engineer-in-Residence (BMEiR) Program for the BME Undergraduate and Graduate Programs that regularly brings engineering professionals from industry to campus to work directly with students on projects and career options.

Chair and Program Director, Biomedical Engineering School of Engineering, University of Connecticut (web.archive.org/web/20120506121635/http://www.bme.uconn.edu/**) 2010 - 2012**

The interdisciplinary Biomedical Engineering (BME) Program was home to four tracks: Biomechanics, Biomaterials (including Tissue Engineering and Biochemical Engineering), Bioinformatics, and Biosystems, Imaging, and Instrumentation. The School of Engineering administers an ABET-accredited undergraduate degree in BME as well as M.S. and Ph.D. degrees. The annual expenditures, discounting research were better than $2.0M during this period. The program had 29 core faculty and more than 30 affiliated faculty (tenured, tenure-track, or in-residence) who contribute to this interdisciplinary program, representing engineering, biomedical science, material science, chemistry, physics, medicine, and dental medicine. By the 2013-2014 academic year, it had four full-time, dedicated staff members, including two academic advisors, with an enrollment of 375 undergraduate students and 100 graduate students.

Accomplishments:

- Served as Academic Advisor to all Honors undergraduate students (approximately 100 during chairmanship)
- Developed and implemented a program-wide strategic plan in 2010, including investments in updating educational equipment in the BME laboratories and hiring two new assistant professors
- Promoted revolutionary and ambitious advancements in undergraduate and graduate studies in BME to ensure cutting-edge, and real-world, education, including restructuring the multi-disciplinary undergraduate and graduate tracks and curriculums, and the creation, and offering, of new undergraduate and graduate courses to support these changes

- For development and enhancement of the curricula, served as course instructor, or co-instructor, for 8+ courses in 2010-2011 and again in 2011-2012
- Scheduled, reviewed, and organized program and inter-departmental curricula and established progressive advisory programs for all BME students to support changes
- Responsible for the overall direction, coordination, and continuous evaluation, including ABET accreditation involving preparation, management, and maintenance of accreditation materials and requirements
- Solicited, and worked with, input on program direction from faculty and staff, including the facilitation of faculty meetings and the creation of new undergraduate and graduate courses and curriculum committees
- Advanced the recognition of engineering at the University of Connecticut Health Center by fostering collaborations with clinical and basic science faculty
- Developed, enhanced, and promoted working partnerships with leaders of other departments and programs, including the Schools of Medicine, Dental Medicine, and Biomedical Sciences, especially to pool academic resources for true multi-disciplinary educational experiences
- Worked in integrated teams of engineering, medical, and basic science faculty and staff to provide continuous improvement and creativity to the academic mission of the program, including the advancement of the research and teaching missions across multiple UCONN campuses
- Provided visionary leadership and continued the accelerating rise to national recognition, especially through co-chairing the BMES Annual Meeting in Hartford, CT, in 2011 (~3,000 in attendance)
- Publicized all aspects of the BME Program and worked with Undergraduate Admissions to recruit talented and diverse undergraduate and graduate students to increase quantity, and quality, of enrollment
- Organized and scheduled the entire curricula, courses, and teaching assignments for the graduate and undergraduate programs
- Facilitated the professional and scholarly growth of the faculty inside and outside (e.g., University of Hartford) of the university, particularly with junior faculty
- Provided recommendations for hiring of program faculty and staff by creating and operating searches and search committees
- Supervised program support staff, conducted annual evaluations of faculty and staff
- Created and managed complex budgets and schedules, and efficiently and effectively allocated operating budgets and funds to determine where budget cuts could be implemented
- Promoted diversity among program students, faculty, and related organizations, especially be engaging the SWE and SHPE societies
- Increased the diversity of the faculty by targeting and hiring two female assistant professors in 2011
- Advanced the presence of BME throughout the community by partnering with entities such as Hartford Hospital and Connecticut Children’s Medical Center on senior design projects and student internships
- Facilitated community engagement through the interaction of faculty (including myself) and students with regional middle school and high school students, teachers, and guidance counselors regarding STEM careers
- Established two undergraduate BME student chapters in the Biomedical Engineering Society and in the National Biomedical Engineering Honor Society (Alpha Eta Mu Beta) both of which offered seminars, student gatherings and socials, mentoring, etc.
- Worked to increase private and external funding opportunities to expand and enhance the program, including the submission of a GAANN proposal to the Dept. of Education to support diversity and underrepresented populations within the Ph.D. graduate program
- Assisted the Dean and Associate Deans of Engineering and the Associate Deans of the Graduate School in planning and coordinating strategic and tactical academic goals in the Biomedical Engineering Program
- Created compelling visions for the ongoing university advancement of the BME Program, including the increase in operating budget to well over $1.0M (excluding research) and the move, in November of 2012, to form a new Biomedical Engineering Department that now spans between the Schools of Engineering, Medicine, and Dental Medicine

Campus Director for UCONN, NASA Connecticut Space Grant Consortium
All Schools and Programs, University of Connecticut 2009 - 2011

Served as the Campus Director for the main campus of the University of Connecticut in Storrs, CT, for three years and jointly represented UCONN and UCONN Health Center (serving for UCONN Health Center since 2002; both are individual Consortium members), as well as serving on the CT Space Grant Consortium (CTSGC) Academic Advisory Board. This position involved 5% of my time (10% total), which was uncompensated for but justified as cost-share.

Accomplishments:

- Disseminated NASA resources and Space Grant funding opportunities to faculty and students and to educators and the general public in CT
- Advertised research and scholarship opportunities and encourage students and faculty members on their campuses, including the recruitment of members from underrepresented groups, to apply for grants and scholarships
- Participated in the review process for faculty and student awards funded by CTSGC
- Managed campus funds designated for use by the CTSGC for UCONN Health Center to support faculty and student opportunities, public lectures, outreach events, etc.
- Organized campus-wide NASA Space Grant outreach events to expose entire student body to NASA, Space Grant, and related opportunities, including a CT Space Grant Academic Year Kick-Off and a commemorative Apollo 13 event involving engineers from Hamilton Standard that were instrumental in saving the astronauts' lives. Assisted undergraduate students to organize a NASA Space Science Day, where middle school teachers were trained on how to incorporate space science, including the use of borrowed lunar samples, within their curriculum and instruction. Following teacher training, several middle school students participated in undergraduate student- and teacher-led space science activities.

Graduate Program Director, Biomedical Engineering School of Engineering, University of Connecticut
2008 - 2012

During this time, the graduate program was home to five tracks: Biomechanics, Biomaterials (including Tissue Engineering and Biochemical Engineering), Bioinformatics, Physiological and Biomedical Modeling, Clinical Engineering, and Bioimaging and Instrumentation and has M.S. (thesis and non-thesis) and Ph.D. degrees. The program had more than 50 tenured, tenure-track, and in-residence faculty that contribute to this interdisciplinary graduate program, representing engineering, biomedical science, material science, chemistry, physics, medicine, and dental medicine. It has maintained an enrollment above 80 graduate students for several years, one third of which were Ph.D. students.

Accomplishments:

- Provided program leadership, constructed new bylaws, and advised the deans of engineering and of the Graduate School on program enhancements and new strategies
- Developed and implemented new and enhanced programs, including cross-campus collaborations in education and research, including submission of a GAANN proposal
- Worked with the Schools of Medicine and Dental Medicine to structure and establish a M.D./Ph.D. in BME program along with a training grant proposal (September 2012) to support this initiative
- Established the ability for self-funded, full-time engineers from industry to obtain a M.S. or Ph.D. in the program

- Structured BME graduate tracks to five and led, and facilitated, the development of several new courses within each track
- Redefined the standards in recruitment and increased the recruitment of high-quality graduate students by establishing, and administering, an BME Graduate Admissions Committee with rotating faculty members from all partner Schools within the university
- Established a BME Graduate Student Committee that organized faculty seminars, student gatherings and socials, undergraduate mentoring, etc.
- Served the University and the national and international BME Communities by establishing and providing volunteer and community service opportunities to graduate students to participate in the educational process with K-12 grade students about careers in biomedical engineering and STEM

Co-Executive Director Biomedical Engineering Alliance and Consortium (BEACON), Hartford, CT (web.archive.org/web/20140714152107/http://www.beaconalliance.org/index.html) 2008 - 2014

BEACON was a non-profit 501(c)(6) organization consisting of academic and medical institutions, as well as corporations, dedicated to the development and commercialization of new medical technologies. The Biomedical Engineering Alliance and Consortium (BEACON) was a collaborative among private and public entities pledged to developing and delivering commercially viable innovations in biomedical science and associated technologies for global healthcare applications. At the time of my departure, within its network, there were over 35 members from around southern New England and from various parts of the United States.

Accomplishments:

- Continual expansion of medical device trade association network in Connecticut
- Promoted collaborative research and partnerships among academic, medical, and industry partners in the field of biomedical engineering
- Facilitated the development of new medical device companies by assisting academics and clinicians in developing business plans and commercialization strategies, including intellectual property protection
- Provided consulting services for new/small business development, including academic support about the medical device industry
- Provided educational opportunities through seminars and programs that improve understanding and foster the acquisition of specific knowledge and expertise, including the future of medical devices and biomedical engineering
- Established and maintained links to global organizations focused on biomedical research and development
- Worked with regional universities on BME curriculum and student opportunities (intramural and extramural), with community colleges to develop curriculums in medical device manufacturing and biomedical engineering technicians, and with K-12 institutions, public and private, on establishing STEM academies with an emphasis on engineering and BME in curriculums
- Worked to establish regional medical device innovation gateways to serve as hubs for translational overlap, economic development, and workforce development
- With success before my departure, BEACON became a co-founder of Hartford Health Works in 2015, which is a hub of entrepreneurism and medical device manufacturing that seeks to build upon existing strengths in health care technologies from the region

Director, Bioengineering Center Schools of Medicine, Dental Medicine, and Biomed. Science, University of Connecticut Health Center 2006 - 2010

The Bioengineering Center offered engineering support to the broad biomedical research community at the UConn Health Center and was regarded as an in-house engineering organization capable of providing a wide range of biomedical, electrical, and mechanical engineering support services including prototype device conceptualization and construction, research equipment recommendation and selection, and research planning and participation. The Center also assisted with identifying faculty partnerships and engineering student candidates to participate on research projects and provides oversight on engineering student projects. The Bioengineering Center was originally structured as a fee-for-service center ($90 per hour labor plus material costs).

Accomplishments:

- Provided engineering support, including design of experiments, and research equipment design, development, and repair to the academic biomedical research and clinical communities
- Responsible for daily departmental operations
- Developed and oversaw annual departmental budget of about $100k
- Guided marketing and marketing strategies
- Guided new activities of the center
- Managed the support staff of one full-time technician and one part-time administrator

Campus Director for UCONN Health Center, NASA Connecticut Space Grant Consortium Schools of Medicine, Dental Medicine, and Biomed. Sciences, University of Connecticut Health Center 2002 - 2014

Applied for, and established, the UCONN Health Center as a member in the Connecticut Space Grant Consortium. Served as the Campus Director for the Health Center campus of the University of Connecticut in Farmington, CT. Note that my role and responsibilities were equivalent to that of the directorship as previously outlined for UCONN (please see above).

- Represented UCONN Health Center on the CT Space Grant Consortium Academic Advisory Board

Director and Founder, Biodynamics Laboratory School of Medicine, University of Connecticut Health Center 1999 - 2014

This internationally recognized multi-disciplinary research facility was focused on measuring and modeling human, organ, and/or cell performance, including exposures to various physical stimuli and the subsequent biological responses. This facility also investigated human–device interaction that led to applications on the design and development of tools, various medical devices, robotic assist devices, etc. The laboratory had five diverse faculty with backgrounds in medicine, physics, ergonomics, public health, and engineering, and it had two full-time research assistants and two dedicated administrators. At the time of my departure, the lab had been a critical component in several extramurally funded grant awards totaling more than $13M. In the Fall of 2013, the Biodynamics Laboratory was home to 14 BME graduate students, 6 Ph.D. and 7 M.S. students, and 1 M.D.S. (Master of Dental Science) student, and I was the major advisor and mentor for each of them. At that time, I had graduated more 45 M.S. students (18 of which produced a thesis), served as an associate advisor to 26 Ph.D. and M.S. thesis students and 3 post-doctoral students, provided 51 formal independent studies for 26 graduate students and 18 undergraduate students, and provided laboratory rotations and internships for 13 graduate students, 37 undergraduate students, 13 international undergraduate and graduate students, and 13 regional high-school students.

Accomplishments:

- Based completely on soft funding, I grew lab from 1,000 sq. ft. to a facility totaling over 12,000 sq. ft., with the main lab (10,000 sq.ft.) and the acoustics lab (2,000 sq.ft.) housed on the Health Center campus, as well as a satellite lab (2,000 sq.ft.) on the School of Engineering campus from 2010 to 2014
- Responsible for engineering and project leadership with research teams that include biometricians, ergonomists, engineers, physicians, physicists, sociologists, and statisticians
- Self-sufficient, sustainable, extramurally-funded lab that models human performance and human exposure and response using biodynamic modalities, such as opto-electronic motion capture, electromyography, and force, and acceleration measures, to provide a platform for comparing observed biomechanical performance with predicted performance under various conditions of stress and use within laboratory and field environments
- Maintained a 100% placement rate for all graduate students trained within the laboratory
- Developed many advanced software-based systems, using LabVIEW and MatLAB, that integrate measurements assembled from diverse data collection systems for signal processing and data analysis
- Responsible for daily operation of lab including managing and promoting teamwork among research assistants and graduate and undergraduate students
- Developed partnerships with regional hospitals and global industry, including research and service contracts
- Fostered partnerships and collaboration with federal agencies including NIOSH, NASA, and NIH-NIBIB
- Fostered partnerships with international colleagues in Canada, Finland, Germany, Japan, and Sweden
- Hosted several national conferences on ergonomics and human exposures
- Work clinically with occupational disease patients in the Occupational Medicine clinic
- Established post-graduate, graduate, and undergraduate education within the laboratory environment
- Established laboratory community outreach by giving lectures in the Connecticut community college system on medical device manufacturing and careers in engineering and by inviting high school, and middle school, students to participate in a laboratory internship that is several weeks in length (typically over the summer)

Biomedical Engineering Coordinator Ergonomics Technology Center, Div. of Occupational and Environ. Medicine, School of Medicine, University of Connecticut Health Center
1996 - 1999

As a Ph.D. Graduate Research Assistant, conceptualized, initiated, and developed a medical-school-based research laboratory in biomechanics and biodynamics. Through many research efforts and through the support of my many graduate students, this laboratory became largely successful and evolved into the Biodynamics Laboratory (please see above).

Accomplishments:

- Developed and implemented a strategic plan and a business plan that guided budget allocations for longterm laboratory development and sustainability
- Developed methodologies to collect human biomechanics and human performance data from diseased and non-diseased populations throughout many diverse environments and scenarios
- Structured and conducted human performance research under several grants with the Division of Occupational and Environmental Medicine in the School of Medicine
- Responsible for equipment purchases and lab budget

HONORS AND AWARDS

2016 Fellow, American Institute of Medical and Biological Engineering (AIMBE), Washington D.C.
2015 Alice Hamilton Award of Excellence in Occupational Safety and Health, Engineering Controls Category, National Institute for Occupational Safety and Health (NIOSH), "For Leadership through Science by Publishing" (given for a Peer-Reviewed Publication below co-written by Dong and Peterson)
2004-2005 Nomination, Academic Advisor of the Year, UCONN
1996-1999 Ph.D. Graduate Assistant Award, Ergonomic Technology Center of Connecticut, UCONN Health Center
1994-1995 M.S. Graduate Assistant Award, Bioengineering Facility, UCONN Health Center
1990-1991 NASA Society Impact Project Award, "Applications and Implementations of Lunar Base Waste Management Technology on Earth", Worcester Polytechnic Institute

MEMBERSHIP IN NATIONAL AND INTERNATIONAL SCIENTIFIC SOCIETIES

2017 - Acoustical Society of America (ASA)
2017 - ASTM International
2016 - Fellow, College of Fellows, American Institute of Medical and Biological Engineering (AIMBE)
2015 - American Society of Engineering Education (ASEE)
2010-2014 Alpha Eta Mu Beta (AEMB), Biomedical Engineering Honor Society, Faculty Advisor
2008-2017 Society for Biological Engineering (SBE) 2001
- Biomedical Engineering Society (BMES)
1998 - Human Factors and Ergonomics Society (HFES)
1997-2014 Biomedical Engineering Alliance and Consortium (BEACON)

STUDENT GROUP MENTORSHIP

2022 - Faculty Advisor and Mentor, Engineering World Health Chapter, College of Engineering and Engineering Technology, NIU
2018 - Faculty Advisor and Mentor, Biomedical Engineering Society (BMES) Student Chapter, College of Engineering and Engineering Technology, NIU
2015-2017 Faculty Advisor and Mentor, Engineering World Health Chapter, College of STEM, TAMU-T
2013-2014 Faculty Advisor and Mentor, Engineering World Health Chapter, School of Engineering, UCONN
2010-2014 Faculty Advisor and Mentor, Alpha Eta Mu Beta (AEMB), Biomedical Engineering Honor Society, School of Engineering, UCONN
2010-2014 Faculty Advisor and Mentor, Biomedical Engineering Society (BMES) Student Chapter, School of Engineering, UCONN
2008-2014 Faculty Advisor and Mentor, BME Graduate Student Committee, Sch. of Engineering, UCONN

REVIEW ACTIVITIES – JOURNALS AND PUBLICATIONS

American Journal of Industrial Medicine, Applied Ergonomics, Bioengineered, Ergonomics, Industrial Health, IEEE Transactions on Biomedical Engineering, International Journal of Environmental Research and Public Health, Journal of Biomechanics, Journal of Sound and Vibration, Journal of the Acoustical Society of America, Measurement, Sensors, Journal of Toxicology and Environmental Health, Vibration, Journal of Engineering in Medicine, Journal of Applied Physiology

2015 - Member, Editorial Board, *Regenerative Engineering and Translational Medicine*, Regenerative Engineering Society, Springer

REVIEW ACTIVITIES – FUNDING AGENCIES

National Aeronautics and Space Administration, National Institute of Health, National Institute of Occupational Safety and Health, National Science Foundation

NATIONAL AND INTERNATIONAL COMMITTEES AND ACTIVITIES

2024 - Member-at-Large, ASTM Committee F48 on *Exoskeletons and Exosuits*, ASTM International, West Conshohocken, PA
2023 Co-Chair, ErgoX Symposium, Exoskeleton Track, Human Factors and Ergonomics Society (HFES), Washington, DC
2023 - Member, r2p Incubator Advisory Board, Northeast Center for Occupational Health and Safety, Cooperstown, NY
2023 - Member, International Advisory Committee on Hand-Arm Vibration
2022 Co-Chair, ErgoX Symposium, Exoskeleton Track, Human Factors and Ergonomics Society (HFES), Atlanta, GA
2022- Chair, ANSI TAG for ISO / TC 108 on *Mechanical Vibration, Shock, and Condition Monitoring*, ANSI and Acoustical Society of America (ASA), NYC and Melville, NY
2022 Session Chair and Organizer, WearRAcon 2022, “Risk Management”, Scottsdale, AZ
2021 Co-Chair, ErgoX Symposium, Exoskeleton Track, Human Factors and Ergonomics Society (HFES), *Virtual*
2021 - Chair, ANSI S2 WG39 and S3 WG39 on *Human Exposure to Mechanical Vibration and Shock*, ASA, Melville, NY
2021 Session Chair and Organizer, WearRAcon 2021, Risk Management Forum: What is Risk Management and How Does One Consider This?”, *Virtual*
2020 Co-Chair, ErgoX Symposium, Exoskeleton Track, HFES, *Virtual*
2019 Co-Chair, ErgoX Symposium, Exoskeleton Track, HFES, Seattle, WA
2019 Session Co-Chair and Organizer, “Graduate Student Training and Alternate Career Pathways”, American Society of Engineering Education (ASEE) Engineering Deans Institute (EDI), San Antonio, TX
2019-2023 Representative Member, Board of Directors, Illinois Manufacturing Excellence Center (IMEC), Peoria, IL (www.imec.org)
2017 - Chair, Committee F48 on *Exoskeletons and Exosuits*, ASTM Intl., West Conshohocken, PA
2017 - US Delegate, Intl. Standards Organization Technical Committee (ISO/TC) on *Human Exposure to Mechanical Vibration and Shock*, 108/SC 4, Geneva, Switzerland
2017-2022 Member, Board of Directors, Northern Illinois Research Foundation, NIU, DeKalb, IL

2017 - Committee Member, ANSI S2 WG 39 and S3 WG39 on *Human Exposure to Mechanical Vibration and Shock*, Acoustical Society of America (ASA), Melville, NY
2017 - US Delegate, Intl. Standards Org. Tec. Committee (ISO/TC) on *Human Exposure to Mechanical Vibration and Shock*, 108/SC 4, Geneva, Switzerland (*current US Lead for Hand-Arm Vibration*)
2015-2017 Chair, Healthcare Research Group, TEES Annual Research Conference, College Station, TX
2014 - Member, Engineering Technology Council, American Society of Engineering Education (ASEE), Washington, DC
2014-2017 Member, Council of Texas Engineering Deans
2013 Invited Moderator, "BME Jobs in Industry", Biomedical Engineering Society (BMES) 2013 Annual Meeting, Seattle, WA
2012-2014 Chair, Industry Affairs Committee, Biomedical Engineering Society
2012 Chair, Translational Biomedical Engineering, BMES 2012 Annual Meeting, Hartford, CT
2012 Conference Chair, 4th American Conference on Human Vibration, Hartford, CT
2011-2014 Member, National Meetings Committee, Biomedical Engineering Society
2011 Vice-Chair, BMES 2011 Annual Meeting, Hartford, CT
2011 Chair, Translational Biomedical Engineering, BMES 2011 Annual Meeting, Hartford, CT
2011 - Member, Scientific Advisory Committee, American Conference on Human Vibration
2010-2014 Judge, Regional Chairman's Award, F.I.R.S.T. Regional Robotics Competition, Hartford, CT
2010-2014 Member, National Council of Chairs for Biomedical Engineering
2009 Invited Judge, F.I.R.S.T. Regional Robotics Competition, Hartford, CT
2008 Symposium Facilitator, Host, and Chair, 2008 Lucien Brouha Work Physiology Symposium: "Knowledge at Work", Farmington, CT
2008 Session Chair/Facilitator, "Advances in Orthopedic Implants and Prosthetic Devices", MEDi 2008, Hartford, CT
2008 Session Chair/Facilitator, "Medical Product Development - Innovation, Solutions, Realization", EASTEC: Advanced Productivity Exposition, Society of Manufacturing Engineers (SME), West Springfield, MA
2008 Invited Judge, F.I.R.S.T. Regional Robotics Competition, Hartford, CT
2007 Session Chair/Facilitator, "Prototype Design: Testing and Clinical Trials of Medical Devices", EASTEC: Advanced Productivity Exposition, Society of Manufacturing Engineers (SME), West Springfield, MA
2007 Session Chair/Facilitator, "Advances in Prosthetic Devices", PharmaMedDevice Conference, New York, NY
2005-2009 Science Advisor, Biomedical Engineering Alliance and Consortium (BEACON), Hartford, CT
2004 Session Chair, Biomechanics, 30th Northeast Biomedical Engineering Conference, Western New England University, Springfield, MA
2004 Session Chair, Rehabilitation Engineering, 30th Northeast Biomedical Engineering Conference, Western New England University, Springfield, MA
2001 Session Chair, Human Dynamics, 27th Northeast Biomedical Engineering Conference, UCONN, Storrs, CT
2000 Symposium Director and Chair, 3rd Annual BEACON Symposium, "Ergonomics and Biodynamics", UCONN Health Center, Farmington, CT
1999 Session Chair, Human Mobility, 25th Northeast Biomedical Engineering Conference, University of Hartford, Hartford, CT
1997-2001 Member, Steering Committee, Biomedical Engineering Alliance for Connecticut, Hartford, CT

ACADEMIC BOARD MEMBERSHIPS AND ACTIVITIES

2018 - Member, Advisory Board, Midwestern University Chicago College of Osteopathic Medicine, Downers Grove, IL

2007-2012	Member, Board of Directors, Tagliatela School of Engineering, University of New Haven, New Haven, CT
2003 -	Member, Advisory Board, Department of Biomedical Engineering, Western New England University, Springfield, MA
2003 -	Member, Biomedical Engineering Advisory Board, Department of Civil, Environmental, and Biomedical Engineering, University of Hartford, West Hartford, CT

ADDITIONA . UNIVERSITY SERVICE

2018-2019	Search Committee for Provost and Executive Vice President, NIU
2014-2015	Search Committee for Dean of the College of Business, TAMU-T
2013-2014	Search Committee for BME Co-Department Head, Schools of Medicine and Dental Medicine, UCONN Health Center
2010-2014	BME Faculty Member, Courses and Curriculum Committee, School of Engineering, UCONN
2006-2012	Search Committees for BME and ME Faculty, School of Engineering, UCONN
2008-2011	Associate Core Director, Connecticut Institute for Clinical and Translational Science (CICATS), NIH Clinical and Translational Science Award (CTSA) Planning Committee, UCONN Health Center
2003-2014	Interviewer and Application Reviewer, Medical School Applicants, School of Medicine, UCONN Health Center
1999-2014	Interviewer and Application Reviewer, Occupational Medicine Residency Program, UCONN Health Center
1996-2014	Steering Committee, Ergonomic Technology Center of Connecticut, UCONN Health Center

RAPHIC NARRATIVE

Dr. Donald R. Peterson is a tenured Professor of Mechanical Engineering and the recent Dean of the College of Engineering and Engineering Technology at Northern Illinois University (NIU). He is an affiliated faculty member in the Department of Biomedical Engineering in the College of Engineering at Texas A&M University and a Fellow of the American Institute for Medical and Biological Engineering (AIMBE). Through research collaboration, he was recently appointed as a Guest Researcher in the Physical Effects Research Branch (PERB) in the Health Effects Laboratory Division (HELD) at the National Institute for Occupational Safety and Health (NIOSH) and as a Visiting Professor in the Institute of Sound and Vibration Research at the University of Southampton in the UK. In addition, he is currently Chair of the US Technical Advisory Group (TAG) for ISO / TC 108 on *Mechanical Vibration, Shock, and Condition Monitoring*, the Chair of ANSI S2 WG39, and S3 WG39, both on *Human Exposure to Mechanical Vibration and Shock*, and the recent Inaugural Chair of the ASTM International Committee F48 on *Exoskeletons and Exosuits*. Dr. Peterson is a graduate of Worcester Polytechnic Institute, earning a B.S. degree in Mechanical Engineering with a double major in Aerospace Engineering and in Biomedical Engineering, and a graduate of the University of Connecticut, earning an M.S. degree in Mechanical Engineering and a Ph.D. in Biomedical Engineering. Dr. Peterson has over 30 years of experience in biomedical engineering and medical research, which has been focused on measuring and modeling injury biomechanics and human, organ, and/or cell performance, including exposures to various physical stimuli and the subsequent biological responses. His research has involved the investigation of injury mechanisms and human–device interaction and has led to the generation of new technologies and systems, such as personal protection technologies, occupational exoskeleton systems, robotic assist devices for hemiplegic rehabilitation, long-duration biosensor monitoring and reporting systems,

novel surgical and dental devices and instruments, smart medical devices for home patient care, and biotechnology systems. To date, his research has been a critical component in securing extramurally funded grant awards totaling over $22.5M and he is currently working on translational initiatives involving patent applications and technology disclosures. Dr. Peterson has published over 135 peer-reviewed scholarly works, served as the editor of textbook sections and 10 textbooks in biomedical engineering, and is the Editor-in-Chief for The Biomedical Engineering Handbook by CRC Press and the Series Editor for academic textbooks in the Biomedical Engineering from Taylor and Francis and CRC Press.

Prior to NIU, he was the Dean of the College of Science, Technology, Engineering, Mathematics, and Nursing at Texas A&M University in Texarkana (TAMU-T) and a tenured Professor of Engineering. Prior to TAMU-T, he was an Associate Professor in the Department of Medicine and the Director of the Biodynamics Laboratory in the School of Medicine at the University of Connecticut (UCONN) and served as the Chair and Director of the Biomedical Engineering Program in the School of Engineering at UCONN as well as the Director of the Graduate Program, Director of the Undergraduate Program, and Coordinator of ABET accreditation. He has 27 years of leadership experience in academia with 25 years of instruction in engineering and medicine and has created and offered graduate-level and undergraduate-level engineering courses in the areas of biomechanics, biodynamics, biofluid mechanics, biotransport, engineering and science communication, engineering design, and ergonomics, and has taught in the UCONN School of Medicine in the subjects of gross anatomy, occupational biomechanics, occupational medicine, and human exposure and response. He was the co-Executive Director of the Biomedical Engineering Alliance and Consortium (BEACON), which was a nonprofit organization dedicated to the promotion of collaborative research, translation, and partnership among academic, medical, industry, and entrepreneurial professionals in the development and support of new medical technologies and devices. Dr. Peterson was also employed in industry with over 5 years of engineering experience in electrical and mechanical systems design, instrumentation and controls, manufacturing, and public utilities.

Dr. Peterson continues to serve as a mentor to many students from backgrounds in engineering, medicine, dental medicine, public health, and other sciences, where he has served as a major advisor for 5 Ph.D. and 53 M.S. students in Biomedical Engineering (BME), and as an associate advisor for 35 Ph.D. and M.S. students and 3 post-doctoral faculty members in BME, Public Health, and Dental Science. At NIU, he is the major advisor for 1 Ph.D. student in Mechanical Engineering on biomechanical modeling and human performance and he was recently the primary mentor of 1 post-doctoral faculty member in BME. With Dr. Peterson's appointment in BME at Texas A&M, he was recently the major advisor for a Ph.D. student researching biomechanical modeling and exoskeleton design.

CONSULTING

Covidien, Medtronic, DentalEZ Group, Dentsply International, MEDideas, Stanley Toolworks Inc., Milwaukee Tools, MCErgo, General Dynamics, NASA, National Institute of Occupational Safety and Health (NIOSH), Japan National Institute of Occupational Safety and Health (JNIOSH), Connecticut Children's Medical Center, St. Francis Hospital and Medical Center, Hartford Hospital, Asnuntuck Community College, Springfield Technical Community College, various K-12 educational institutions (on engineering education), Ciracet, Aetna Insurance, Travelers Insurance, IDEAL Industries, Delta Mobile Systems, Navatek, Corsair Innovations, various law firms (for forensics, accident reconstruction, product evaluation, etc.)

INDUSTRY EXPERIENCE

Assistant to the Editor Modeling in Physiology, American Journal of Physiology, The American Physiological Society Dr. Mary Anne Farrell Epstein, Editor 1994-1996

- Managed all manuscript submissions, including reviewing scientific manuscripts, identifying peer reviewers, coordinating reviewer and author correspondence, and preparing accepted manuscripts for publication

Biomedical Engineer
Bioengineering Facility, University of Connecticut Health Center 1994-1995

- First to be awarded a M.S. Graduate Assistantship in this facility
- Provided biomedical engineering consultation, computer programming, and research equipment design, development, and maintenance to the academic biomedical research community throughout the UConn Health Center

Instrumentation and Controls Engineer The Dexter Corp., Non-Wovens Division, Windsor Locks, CT 1993-1994 (and 1991-1992 internship during Undergraduate senior year)

- Held full-time engineer position while enrolled full time in graduate school
- Responsible for design, implementation, construction oversight, and troubleshooting of electrical systems, involving instrumentation and controls, and mechanical systems related to the paper manufacturing process
- Designed (in AutoCAD), developed, and implemented control systems and instrument panels for monitoring and controlling plant operations and processes for existing and new manufacturing processes
- Programmed TI Programmable Logic Controllers (PLC) for use with a real-time multitasking graphicalinterface software (Genesis) for plant operation and process data collection and analysis
- Worked on various project teams of mechanical, electrical, and industrial engineers and plant supervisors and personnel
- Responsible for communication between the engineering management and plant supervisors

Aerospace Manufacturing Engineer Dynamic Metal Products Co., Inc., Manchester, CT 1992

- Full-time industry position with a sub-contractor of a jet engine manufacturer (Pratt & Whitney), while enrolled full time in graduate school
- Worked with CADKey drawings to produce laser-cut metal components with very low tolerances for jet engines
- Converted complex 3D CAD drawings of parts into flat 2D parts for use in a Laser CAM process to cut parts from sheets of metal, which were then bent and manipulated into the original 3D design
- Worked with quality control engineers to manage projects to completion
- Responsible for communication with Pratt & Whitney engineers

Corrosion Protection Engineer Yankee Gas, A Northeast Utilities Company, Meriden, CT 1991 (Summer Intern)

- Responsible for design and construction oversight of corrosion protection systems for natural gas distribution systems
- Responsible for monitoring, troubleshooting, and diagnosing existing main and residential protection systems

- Worked with teams of engineers and construction supervisors to plan and organize construction or repair of corrosion protection systems
- Managed communication between construction personnel and engineering management

Field Operations Engineer Yankee Gas, A Northeast Utilities Company, Meriden, CT
1990 (Summer Intern)

- Responsible for design, drafting, and construction oversight of gas main systems and residential branches for natural gas distribution systems
- Worked with teams of engineers and construction supervisors to plan and organize construction or repair of gas systems
- Managed communication between construction personnel and engineering management

Electrical Engineering Apprentice Control Module, Inc., Enfield, CT 1989-1990

- Assisted in developing electronic systems to read magnetic strips and laser barcodes
- Developed practical electrical engineering skills including reading, drafting, and designing of electronic schematics, soldering, component testing, and prototype circuit construction and troubleshooting
- Worked on various project teams in a project-oriented environment

OVERVIEW OF ACADEMIC INSTRUCTION

2022-2023	Instructor and Developer, Biotransport, (BME 435, 3 Credits, Undergraduate Level), College of Engineering and Engineering Technology, NIU
2022-2023	Instructor and Developer, Topics in Engineering and Engineering Technology - Engineering Internship, (IEET 490, 3 Credits, Undergraduate Level), College of Engineering and Engineering Technology, NIU
2021-2023	Lead Instructor, Primary Lecturer, Course Director and Developer, Mechatronics Engineering Senior Design I and II (MCTR 481 and MCTR 482, 6 Credits, Undergraduate Level Senior Design, 2 semesters), College of Engineering and Engineering Technology, NIU
2019-2023	Lead Instructor, Primary Lecturer, Course Director and Developer, Senior Biomedical Engineering Design I and II (BME 495 and BME 496, 6 Credits, Undergraduate Level Senior Design, 2 semesters), College of Engineering and Engineering Technology, NIU
2018-2023	Lead Instructor, Primary Lecturer, Course Director and Developer, Senior Electrical Engineering Design I and II (ELE 495 and ELE 496, 6 Credits, Undergraduate Level Senior Design, 2 semesters), College of Engineering and Engineering Technology, NIU
2018-2023	Lead Instructor, Primary Lecturer, Course Director and Developer, Senior Mechanical Engineering Design I and II (MEE 485 and MEE 486, 6 Credits, Undergraduate Level Senior Design, 2 semesters), College of Engineering and Engineering Technology, NIU

2015-2017 Lead Instructor, Primary Lecturer, Course Director and Developer, Computer Science Senior Design I and II, (CS 490 and CS 491, 6 Credits, Undergraduate Level Senior Design, 2 semesters) College of STEM, TAMU-T

2015-2017 Lead Instructor, Primary Lecturer, Course Director and Developer, Electrical Engineering Senior Design I and II, (EE 490 and EE 491, 6 Credits, Undergraduate Level Senior Design, 2 semesters) College of STEM, TAMU-T

2015-2017 Instructor and Developer, Engineering Internship I and II (ENGR 431 and ENGR 432, 3 Credits each, Undergraduate Level), College of STEM, TAMU-T

2013-2014 Lead Instructor, Primary Lecturer, Course Director and Developer, Biomedical Engineering Design I and II, (BME 4900 and BME 4910, 6 Credits, Undergraduate Level Senior Design, 2 semesters) School of Engineering, UCONN

2012-2014 Instructor and Course Director and Developer, Biofluid Mechanics (BME 4985, 3 Credits, Undergraduate Level), School of Engineering, UCONN

2010-2013 Co-Instructor, Biomedical Engineering Design I and II, (BME 4900 and BME 4910, 6 Credits, Undergraduate Level Senior Design, 2 semesters) School of Engineering, UCONN

2011-2012 Instructor, LabVIEW Basics for Biomedical Engineers (BME 3120, 1 Credit, Undergraduate Level), School of Engineering, UCONN

2011 Instructor, Bioinstrumentation, (BME 4500, 3 Credits, Undergraduate Level), School of Engineering, UCONN

2010-2014 Instructor and Developer, Biomedical Engineering Communication, Seminars, and Events (BME 4985, 1 Credit, Undergraduate Level) School of Engineering, UCONN

2010 Instructor, Statics and Dynamics for Biomedical Engineers (BME 3150, 3 Credits, Undergraduate Level), School of Engineering, UCONN

2008-2012 Instructor and Developer, Biomedical Engineering Communication, Seminars, and Events (BME 6086, 1 Credit, Graduate Level), School of Engineering, UCONN

2005-2010 Invited Lecturer, Biodontics (DENT 440), Dental Residency Program, School of Dental Medicine, UCONN Health Center

2003-2014 Academic Project Advisor, Department of Biomedical Engineering, Western New England University, Springfield, MA

2002-2014 Preceptor for Workplace Visits, PCM1 CBE Occupational Health Module, School of Medicine, UCONN Health Center

2001-2009 Co-Instructor, Human Systems, (Human Biology – Anatomy and Dissection of Extremities, Pectoral Girdle, and Back), Schools of Medicine and Dental Medicine, UCONN Health Center

2001-2014 Instructor and Course Director and Developer, Biofluid Mechanics (BME 6610, 3 Credits, Graduate Level), School of Engineering, UCONN

2000-2014 Instructor and Course Director and Developer, Biodynamics (BME 6630, 3 Credits, Graduate Level), School of Engineering, UCONN

1999-2014 Co-Instructor and Co-Developer, Exposure Assessment Methods in Ergonomics (BME 5341, 3 Credits, Cross-Listed Graduate Level), School of Engineering, UCONN, and Master of Public Health Program, School of Medicine, UCONN Health Center

1999-2014 Co-Instructor and Co-Developer, Introductory Ergonomics for Biomedical Scientists and Engineers (BME 5339, 3 Credits, Cross-Listed Graduate Level), School of Engineering, UCONN, and Master of Public Health Program, School of Medicine, UCONN Health Center

1999-2014 Instructor and Course Director and Developer, Human Biomechanics (BME 5600, 3 Credits, Graduate Level), School of Engineering, UCONN

1999-2014 Instructor, Clinical Aspects of Biodynamics and Ergonomics for Medical Residents and Physicians, Occupational and Environmental Medicine, School of Medicine, UCONN Health Center

1999-2014 Academic Project Advisor, Department of Civil, Environmental, and Biomedical Engineering, University of Hartford, West Hartford, CT

1999-2014 Academic Project Advisor, Engineering Department, Trinity College, Hartford, CT

1999-2014 Academic Project Advisor, School of Engineering, UCONN

UNDERGRADUATE COURSES OFFERED

NORTHERN ILLINOIS UNIVERSITY

BME 435 – Biotransport (3 Credits) – Understanding the movement of mass, momentum, and energy transport in living systems. Fundamental theory and governing equations will be introduced. Topics include diffusion, convection, reaction, cellular mechanics, fluid solid coupling, drug delivery, etc.

BME 495 – Senior Biomedical Engineering Design I (3 Credits) – Complete preparation of an engineering system design or project covering problem identification, conceptual design and analysis, prototyping, and the development of a work schedule required to carry out the project. Includes methodology, standards and safety codes, professional ethics, decision making, design evaluations, and oral and written communication. A writing-intensive course. Offered in the fall. Students are expected to take BME 496 the following spring.

BME 496 – Senior Biomedical Engineering Design II (3 Credits) – Execution of capstone design project under direct supervision of the instructor or other subject-matter expert. Students further refine and complete design solution to the engineering design problem proposed during BME 495 Senior Biomedical Engineering Design I. Students further refine and incorporate engineering design concepts, including safety and cost effectiveness, as well as employ analytical and computer tools. Team project required. A writing-infused course. The course is offered in the spring. Students are required to take BME 495 the previous fall.

BME 497 – Independent Study (3 Credits) on *Biotransport and Biomimetic Systems* – This Independent Study involves gathering and reporting recent work in the literature on biotransport and flow reactor systems that mimic biological systems in form and function. Work involves the collection and review of journal articles and/or textbook chapters on aspects of flow reactor system design, experimental use, results, and applications of results, with detailed discussion sessions occurring weekly.

CSCI 497 (Part I) – Independent Study (3 Credits) on *Senior Computer Science Design I* – (This Independent Study involved students from Computer Science joining the interdisciplinary engineering senior design program.) Complete preparation of a computer science system design or project covering problem identification, conceptual design and analysis, prototyping, and the development of a work schedule required to carry out the project. Includes methodology, standards and safety codes, professional ethics, decision making, design evaluations, and oral and written communication. A writing-intensive course. Part I offered in the fall. Students are expected to take CSCI 497 (Part II) the following spring.

CSCI 497 (Part II) – Independent Study (3 Credits) on *Senior Computer Science Design II* – (This Independent Study is a continuation of CSCI 497, Part I, seen above.) Execution of the design project under direct supervision of the instructor or other subject-matter experts. Students further refine and complete design solution to the computer science design problem proposed during CSCI 497, Part I, in the Fall semester. Students further refine and incorporate computer science design concepts, including safety and cost effectiveness, as well as employ analytical and computer tools. Team project required. A writing-infused course. This part of the course sequence is offered in the Spring semester. Students are required to take BME 497, Part I, the previous Fall semester.

ELE 495 – Senior Electrical Engineering Design I (3 Credits) – Complete preparation of an engineering system design or project covering problem identification, conceptual design and analysis, prototyping and the development of a work schedule required to carry out the project. Includes methodology, standards and safety codes, professional ethics, decision making, design evaluations, and oral and written communication. A writing-intensive course. Offered in the fall. Students are expected to take ELE 496 the following spring.

ELE 496 – Senior Electrical Engineering Design II (3 Credits) – Execution of capstone design project under direct supervision of the instructor or other subject-matter expert. Further refinement and completion of design solution to the engineering design problem proposed during ELE 495, Senior Electrical Engineering Design I. Further refinement and incorporation of engineering design concepts, including safety and cost effectiveness, as well as employ analytical and computer tools. Team project required. A writing-infused course. Offered in the spring. Students are expected to take ELE 495 the previous fall.

IEET 490 – Topics in Engineering and Engineering Technology - Engineering Internship (3 Credits) – This course oversees a practical, hands-on engineering experience in an industrial internship where students apply engineering knowledge to real world situations, develop workplace competencies necessary for professional success, integrate existing and new technical knowledge for an engineering service or industrial application, understand lifelong learning processes through critical reflection of the internship experience, and display responsibility, commitment, and ethics both in the education and practice phases of engineering.

MCTR 481 – Mechatronics Engineering Senior Design I (3 Credits) – Complete preparation of an engineering system design or project covering problem identification, conceptual design and analysis, prototyping and the development of a work schedule required to carry out the project. Includes methodology, standards and safety codes, professional ethics, decision making, design evaluations, and oral and written communication. A writing intensive course. Offered in the fall. Students are expected to take MCTR 482 the following spring.

MCTR 482 – Mechatronics Engineering Senior Design II (3 Credits) – Execution of capstone design project under direct supervision of the instructor or other subject-matter expert. A writing intensive course. Specific sections of the course are offered to students pursuing an emphasis in mechanical engineering. Offered in the spring. Students are expected to take MCTR 481 the previous fall.

MEE 485 – Senior Mechanical Engineering Design I (3 Credits) – Complete preparation of an engineering system design or project covering problem identification, conceptual design and analysis, prototyping and the development of a work schedule required to carry out the project. Includes methodology, standards and safety codes, professional ethics, decision making, design evaluations, and oral and written communication. A writing-intensive course. Offered in the fall. Students are expected to take MEE 486 the following spring.

MEE 486 – Senior Mechanical Engineering Design II (3 Credits) – Execution of capstone design project under direct supervision of the instructor or other subject-matter expert. A writing-intensive course. Specific sections of the course are offered to students pursuing an emphasis in mechanical engineering. Offered in the spring. Students are expected to take MEE 485 the previous fall.

TEXAS A&M UNIVERSITY - TEXARKANA

CS 490 – Computer Science Senior Design I (3 Credits) – This course is taken by seniors as the first part of the senior design experience in the semester before CS 491. Projects may involve the design of an algorithm, or a software and/or hardware system and topics covered may include the design process, project planning and management, and project costs, and includes aspects of ethics in computer science design, safety, environmental considerations, economic constraints, liability, manufacturing, and marketing. Projects are

carried out using a team-based approach and selection and analysis of a design project to be continued in CS 491 is carried out. Written progress reports, a proposal, a final report, and oral presentations are required.

CS 491 – Computer Science Senior Design II (3 Credits) – Projects involving the design of a device, circuit system, process, or algorithm that have started in the previous semester will be completed. Team solution to a computer science design problem as formulated and initiated in CS 490 will continue to take place. Written progress reports, a final report, design manuals, and oral presentations are required.

EE 490 – Electrical Engineering Senior Design I (3 Credits) – This course is taken by seniors as the first part of the senior design experience in the semester before EE 491. Projects may involve the design of a device, circuit system, process, or algorithm and topics covered may include the design process, project planning and management, and project costs, and includes aspects of ethics in engineering design, safety, environmental considerations, economic constraints, liability, manufacturing, and marketing. Projects are carried out using a team-based approach and selection and analysis of a design project to be continued in EE 491 is carried out. Written progress reports, a proposal, a final report, and oral presentations are required.

EE 491 – Electrical Engineering Senior Design II (3 Credits) – Projects involving the design of a device, circuit system, process, or algorithm that have started in the previous semester will be completed. Team solution to an engineering design problem as formulated and initiated in EE 490 will continue to take place. Written progress reports, a final report, design manuals, and oral presentations are required.

ENGR 431 and ENGR 432– Engineering Internship I and II (3 Credits each) – The course sequence provides experience in an engineering service, industrial, or research setting. The program provides engineering experience during the last two years of an undergraduate academic career. During this period students can complete at least one semester of work consisting of a 20-hour work week.

UNIVERSITY OF CONNECTICUT

BME 3120 – LabVIEW Basics for Biomedical Engineers (1 Credit) – Introduces the LabVIEW programming environment. The fundamentals of using graphical programming to collect, analyze, display and store data are covered. Learn techniques for designing stand-alone applications, creating interactive user interfaces and optimizing data flow.

BME 3150 – Statics and Dynamics for Biomedical Engineers (3 Credits) – Fundamentals of statics and dynamics using vector methods on physiological systems. Resolution and composition of forces; equilibrium of force systems; rectilinear and curvilinear motion, translation, rotation, plane motion, work, energy and power.

BME 4500 – Bioinstrumentation (3 Credits) – Modeling, analysis, design, and operation of transducers, sensors, and electrodes, for physiological systems; operational and instrumentation amplifiers for bioelectric event signal conditioning, interfacing and processing; A/D converters and hardware and software principles as related to sampling, storing, processing, and display of biosignals and digital computers.

BME 4900 – Biomedical Engineering Design I (3 Credits) – Discussion of the design process; project statement, specifications project planning, scheduling and division of responsibility, ethics in engineering design, safety, environmental considerations, economic constraints, liability, manufacturing, and marketing.

Projects are carried out using a team-based approach. Selection and analysis of a design project to be undertaken in BME 4910 is carried out. Written progress reports, a proposal, an interim project report, a final report, and oral presentations are required.

BME 4910 – Biomedical Engineering Design II (3 Credits) – Design of a device, circuit system, process, or algorithm. Team solution to an engineering design problem as formulated in BME 4900, from first concepts through evaluation and documentation. Written progress reports, a final report, and oral presentation are required.

BME 4985 – Biofluid Mechanics (3 Credits) – Provides a foundation for continued studies of biofluid mechanical subjects. Topics covered include kinematic principles, the Navier-Stokes equations, the vorticity equation, unsteady fluid flows of physiologic relevance, turbulence and interfacial phenomena. Emphasis is placed on physical analysis of the cardiovascular and pulmonary systems, as well as of other biologic systems of interest.

BME 4985 – Biomedical Engineering Communication, Seminars, and Events (1 Credit) – Scientific and engineering communication, including audience definition, literature searches and reviews, document organization and drafting, and creating and effectively using graphics. Aspects include proposals, journal articles, oral presentations, and resumes. Students work to produce and present sample material based on their current coursework. Students also attend several BME, engineering, and science seminars and provide reviews and critiques for open debate and discussion.

GRADUATE COURSES OFFERED

NORTHERN ILLINOIS UNIVERSITY

MEE 697 – Independent Study (1 - 3 Credits) – Independent pursuit of advanced problems in mechanical engineering under faculty supervision. A written report is required. Course may be repeated, but only 3 semester hours credit will count toward the degree.

TEXAS A&M UNIVERSITY

BMEN 685 – BME Directed Studies (1 - 12 Credits) – Allows graduate students the opportunity to undertake, and complete for credit, limited investigations not included within thesis or dissertation research and not covered by other courses.

BMEN 691 – BME Research (1 - 23 Credits) – Research for thesis or dissertation.

UNIVERSITY OF CONNECTICUT

BME 5099 – Independent Study (1 - 3 Credits) – May be repeated for a total of 18 credits. Individual exploration of special topics as arranged by the student with an instructor of his or her choice.

BME 5339 – Introductory Ergonomics for Biomedical Scientists and Engineers (3 Credits) – (Co-Instructor) This problem-based course begins with a work-related overview of the design strengths and limitations of human anatomy and physiology (molecular, tissue and systems levels) and the contribution of work/worker mismatches to the development of disease. Measurement of the response of these biological tissues and systems to work-related stressors is examined, to define the mechanism and presentation of musculoskeletal disorders. The course addresses physiological and anatomical damage due to biomechanical, psychosocial and work organization stressors and explores the range of possible control strategies of interest to the engineer and public health practitioner. To measure presence and levels of risk factors, students will be introduced to the use of laboratory techniques (e.g., EMG, digital motion capture, force cells) as well as field methods used in ergonomic work-site assessment, ranging from simple checklists (geared towards workerbased interventions), through detailed time/motion studies, self-report effort scales, epidemiological instruments.

BME 5341 – Exposure Assessment in Ergonomics (3 Credits) – (Co-Instructor) – The goal of the course is to develop a broad understanding of ergonomic risk factors, knowledge of the measurement modalities available for characterizing workplace risk, and an appreciation of the advantages and disadvantages of each modality. Students will be introduced to the use of laboratory techniques (EMG, videotaping and digitization, digital motion capture, force cells, accelerometry and exercise physiology). They will also be instructed in methods used in ergonomic work-site assessment, ranging from simple checklists (geared towards worker-based interventions), through detailed time/motion studies, self-report effort scales, epidemiological instruments, and psychosocial and organizational measurement tools. The grade will depend on completion of a laboratorybased, field or epidemiological project.

BME 5600 – Human Biomechanics (3 Credits) – Applies principles of engineering mechanics in the examination of human physiological subsystems such as the musculoskeletal system and the cardiovascular system. Topics drawn for biosolid mechanics, biofluids, and biodynamics, the viscoelastic modeling of muscle and bone, non-Newtonian fluid rheology, blood flow dynamics, respiratory mechanics, biomechanics of normal and impaired gait, and sport biomechanics.

BME 5950 – Master's Thesis Research (1 - 9 Credits) – Research for thesis.

BME 6085 – Biomedical Engineering Communication, Seminars, and Events (1 Credit) – Scientific and engineering communication, including audience definition, literature searches and reviews, document organization and drafting, and creating and effectively using graphics. Aspects include proposals, journal articles, oral presentations, and resumes. Students work to produce and present sample material based on their current coursework. Students also attend several BME, engineering, and science seminars and provide reviews and critiques for open debate and discussion.

BME 6610 – Biofluid Mechanics (3 Credits) – Provides a foundation for continued studies of biofluid mechanical subjects. Topics covered include kinematic principles, the Navier-Stokes equations, the vorticity equation, unsteady fluid flows of physiologic relevance, turbulence and interfacial phenomena. Emphasis is placed on physical analysis of the cardiovascular and pulmonary systems, as well as of other biologic systems of interest.

BME 6630 – Biodynamics (3 Credits) – Dynamic modeling of biological systems using three-dimensional rigid body dynamics with a review of kinematics and kinetics and three-dimensional vector calculus. Applications of Newton's Laws and Lagrangian Equations presented. A critical review of various biodynamic assessment techniques and the principles of their operation will also be discussed. Biodynamic data analysis techniques will be shown along with fundamental model construction.

BME 6950 – Doctoral Dissertation Research (1 - 9 Credits) – Research for dissertation.

MEDICAL SCHOOL COURSES OFFERED

UNIVERSITY OF CONNECTICUT, SCHOOL OF MEDICINE (*Integrated Medical Curriculum*)

Human Systems – Entering medical and dental students begin their study of medicine with this course, including key concepts in biochemistry, molecular and cell biology, genetics, and immunology. Throughout the course, normal human function and form is emphasized. This course involves the combined effort of several professors, to which I was a co-instructor in the dissection of the upper and lower extremities, the thorax, and the spine, where I brought unique engineering perspectives on biomechanics and human function to the medical students by relating clinical and research experiences to the aspects under dissection.

Principles of Clinical Medicine 1 (PCM-1) (*Occupational Medicine Section*) – Principles of Clinical Medicine 1 is a one-year experiential course designed to teach first year medical students the fundamentals of being a physician. It is a hands-on course that helps students who are busy studying the basic science curriculum to take what they are learning out of the classroom and into a more clinical context. The Occupational Medicine section involved the education of students regarding the various types of work environments in which their patients may be employed, including strategies that can be used to prevent occupational safety and health hazards in the workplace, effective diagnosis and treatment of patients, and site visits to CT-based industries.

Residency Programs (*Occupational Medicine* and *Orthodontics*) – I provided detailed, regular one-on-one mentorship on occupational biomechanics to medical residents and detailed one-on-one mentorship on dental biomechanics to dental residents. This involved education on research methods and modalities and led to mentorship while performing required research and thesis work (i.e., Master of Public Health and Master of Dental Science).

RESEARCH AND ACADEMIC TRAINEES

GRADUATE / POST-GRADUATE

CURRENT GRADUATE STUDENTS – *NIU*		
NAME	**PRIOR INSTITUTION**	**PROJECT**
Ph.D. Program		
Parisa Torkinejad Ziarati	Northern Illinois U (M.S.)	Human response to high frequency hand-arm vibration exposures
M.S. Program		
Amber Fillmore	Northern Illinois U (B.S.)	Biomechanics and Human-Machine Interface (HMI) of exoskeleton use

PHYSICIAN INVESTIGATORS – *UCONN* – ASSOCIATE MENTOR				
NAME	**PRIOR INSTITUTION**	**AREA OF CONCENTRATION**	**PROJECT**	**TRAINING PERIOD**
Phillip Smith	U Cincinnati Coll. of Medicine (M.D.)	Obstetrics and Gynecology, Urology	Bladder volume signaling: A novel therapeutic target in old age	2012-2014

PAST Ph.D. GRADUATE STUDENTS – *TEXAS A&M*		
NAME	**PRIOR INSTITUTION**	**PROJECT**
Ph.D. Program		
Simon Kudernatsch	U Hartford (B.S.), U Conn. (M.S.)	A comprehensive approach to exoskeleton device evaluation and design

PAST Ph.D. GRADUATE STUDENTS – *UCONN*

NAME	PRIOR INSTITUTION	AREA OF CONCENTRATION	PROJECT	TRAINING PERIOD
Takafumi Asaki	U Hartford (B.S., M.Eng.), U Conn. (M.S.)	Biomedical Engineering	Lab and Field Based Approach for the Selection of ToolSpecific Vibration-Reducing Gloves	2009-2014
Rena Eudy	U Virginia (B.S.), Brown U (M.S.)	Biomedical Engineering	A multiscale systems model for advancement of a new line of therapy for osteoporosis (*was initial major advisor before leaving UCONN*)	2011-2015
Matthew John Solomito	WNEU (B.S.), U Conn. (M.S.)	Biomedical Engineering	Lagrangian approach to modeling the biodynamics of the upper extremity: Applications to collegiate baseball pitching	2012-2015
Alanna Ocampo Pelland	U Conn. (B.S., M.S.)	Biomedical Engineering	Pharmacokinetics and Pharmacodynamics – Vitamin D metabolism (*was initial major advisor before leaving UCONN*)	2012-2014
Tanimu Deleon-Nwaha	Manhattan Coll. (B.S., M.S.)	Biomedical Engineering	Investigating gender differences in the biomechanics of goal directed movements of the upper extremity	2012-2017

PAST M.S. GRADUATE STUDENTS – *UCONN*			
NAME	**AREA OF CONCENTRATION**	**TRAINING PERIOD**	**THESIS TITLE**
Stephanie Atkinson	Biomedical Engineering	2000-2001	Experimental investigations of fluid velocity patterns and wall shear stress levels in patient-based models of abdominal aortic aneurysm
Michael Fakhreddine	Biomedical Engineering	2001-2002	Non-Thesis
Laura Cimino	Biomedical Engineering	2002-2003	Non-Thesis; The development of a portable data collection system to monitor the biodynamics of geologic field work for Martian spacesuit development
Ashley Deliso	Biomedical Engineering	2003-2004	Non-Thesis
Jennifer Corey	Biomedical Engineering	2000-2005	Non-Thesis; Design of a parallel plate-flow chamber to expose a cultured monolayer of cells to a controlled fluid shear in a microgravity environment
Gizem Ucanok	Biomedical Engineering	2004-2006	Implications of heel height on knee and ankle joint deviations during female gait
Matthew Chowaniec	Biomedical Engineering	2005-2007	Dynamic loading of the shoulder during the Codman Exercise
Jayme Coates	Biomedical Engineering	2005-2007	Using a simplified marker configuration to determine shoulder orientation
Eric Bernstein	Biomedical Engineering	2005-2008	Portable data logging system for long-duration field measurement of biomechanical waveforms: Application to anatomical joint angles and vibration exposures

Erin Bill	Biomedical Engineering	2005-2008	A method for normalizing distal upper extremity motion during computer keyboarding
Philipp Irmler	Biomedical Engineering	2008-2009	Non-Thesis
Diptarka Ray	Biomedical Engineering	2008-2009	Non-Thesis
Jocelyn Dudley	Biomedical Engineering	2005-2010	Non-Thesis
Shan Huang	Biomedical Engineering	2009-2010	Non-Thesis
Anitha Saravana Kumar	Biomedical Engineering	2009-2010	Non-Thesis
Vaibhav Pandit	Biomedical Engineering	2009-2010	Non-Thesis
Aditya Bhargava	Biomedical Engineering	2009-2011	Non-Thesis
Abhijit Deb Roy	Biomedical Engineering	2008-2011	Effect of prostaglandin E2 on mechanical stresses applied by MC3T3-E1 osteoblastlike cells on a soft hydrogel substrate
Fernando Javier Garcia	Biomedical Engineering	2010-2011	Non-Thesis
Yao Jin	Biomedical Engineering	2009-2011	Non-Thesis
Alanna Shentelle Ocampo	Biomedical Engineering	2010-2011	Non-Thesis
Maria Qadri	Biomedical Engineering	2009-2011	Noninvasive assessment of joint motion over long durations: System evaluation and data analysis methods
Jithu Roy	Biomedical Engineering	2009-2011	Non-Thesis
Vaishnavi Sambandam	Biomedical Engineering	2010-2011	Non-Thesis
Matthew John Solomito	Biomedical Engineering	2008-2011	The use of motion analysis technology as an alternative means of assessing spinal deformity in patients with adolescent idiopathic scoliosis
Daniel Tichon	Biomedical Engineering	2010-2011	Finite element analysis of the effect of low-speed rear end collisions on the medial meniscus
Naga Uma Sowmya Vasa	Biomedical Engineering	2009-2011	Non-Thesis
Adithya Venkatesan	Biomedical Engineering	2009-2011	Automation of orthodontic wire tester for performing three point bending tests
Guangqian Yuan	Biomedical Engineering	2010-2011	Non-Thesis
Takafumi Asaki	Biomedical Engineering	2004-2012	Non-Thesis (obtained in conjunction with Ph.D. work)
Pamela Burcham	Biomedical Engineering	2009-2012	Non-Thesis

Robert Knapp	Biomedical Engineering	2010-2012	Second generation data-logging system for long-duration field measurement of vibration exposure and grip force
Adam Lafontaine	Biomedical Engineering	2010-2012	Non-Thesis
Drew Seils	Biomedical Engineering	2010-2012	A comprehensive methodology for assessing biomechanical risks associated with hand tool use: Applied to laparoscopic surgical instruments
Tarek Tantawy	Biomedical Engineering	2009-2012	Determining upper extremity posture using a simplified marker configuration for biomechanical risk evaluation during tool use
Alicia Thompson	Biomedical Engineering	2009-2012	Non-Thesis
Shane Tornifoglio	Biomedical Engineering	2010-2012	Development and application of a portable system to reliably measure grip forces using thin-film force sensors
Michael Bley Jorgensen	Biomedical Engineering	2011-2012	Automated point-of-care image processing methodology for the diagnosis of malaria
Katelyn Burkhart	Biomedical Engineering	2011-2013	Non-Thesis; Analysis of a method to track EVA-related biomechanics
Ahmad Osman	Biomedical Engineering	2010-2013	Non-Thesis
Theresa Hennessey	Biomedical Engineering	2010-2013	Non-Thesis
Matthew Philip Kozechek	Biomedical Engineering	2011-2013	Non-Thesis
Madison Nicole Tobar	Biomedical Engineering	2012-2013	Non-Thesis; Material characterization of stored porcine tissue used for surgical simulation
Marek Wartenberg	Biomedical Engineering	2011-2013	Design, fabrication and function validation of a myoelectric-activated torquecontrolled robotic rehabilitation device
Sampat Sai Nidadavolu	Biomedical Engineering	2010-2013	Computational Fluid Dynamics (CFD) modeling of parallel plate flow chambers that investigate the mechanotransduction of shear forces on living cells in various physiological conditions
Brandon Lee Calavan	Biomedical Engineering	2011-2013	Non-Thesis; Biomechanics modeling for rehabilitation engineering
Christopher Tokarz	Biomedical Engineering	2011-2013	Non-Thesis; Method of capturing human movement using KINECT technology
Eduardo Pallares	Biomedical Engineering	2013-2014	Non-Thesis; Biofluid modeling of carotid artery aneurysms
Simon Kudernatsch	Biomedical Engineering	2012-2014	Design of biomechanical sensor system for laboratory- and field-based measurements of hand-arm vibration exposures and palm and finger forces
Kaitlyn Marie Longo	Biomedical Engineering	2012-2014	Bimodal approach using spectroscopy and digital imaging to assist otitis media diagnosis

Jacob Baril	Biomedical Engineering	2013-2015	Ergonomic study and redesign of a medical device to enhance usability in laparoscopic surgical populations
Matthew Nagelschmidt	Biomedical Engineering	2013-2015	Evaluation and feasibility of a biodegradable magnesium staple
Brian Walter	Biomedical Engineering	2013-2015	Integration of bioinformatics with health care systems and devices

CURRENT GRADUATE STUDENTS – *NIU* – ASSOCIATE ADVISOR / EXAMINATION COMMITTEE				
NAME	**DEGREE PROGRAM**	**AREA OF CONCENTRATION**	**TRAINING PERIOD**	**THESIS TITLE**
Vishnu Sai Prabhakarababu	M.S.	Industrial and Systems Engineering	2022-2024	The effect of exoskeleton use on balance control
Tyler Vogen	M.S.	Mechanical Engineering	2021-2023	Laboratory protocol for digital musculoskeletal modeling of the upper extremity while using an exoskeleton and performing overhead tasks

PAST GRADUATE STUDENTS – *UCONN* – ASSOCIATE ADVISOR / EXAMINATION COMMITTEE				
NAME	**DEGREE PROGRAM**	**AREA OF CONCENTRATION**	**TRAINING PERIOD**	**THESIS TITLE**
Christopher Lundberg	M.D.S. (during dental residency)	Orthodontics	1994-1997	Regulation of inducible prostaglandin G/H synthase in bone cells by fluid shear stress
Izabella Gieras	M.S.	Biomedical Engineering	1999-2000	Decision support applications using statistical process control (SPC) and virtual instrumentation (VI)
Matthew Jenkins	M.S.	Biomedical Engineering	1999-2000	Investigation into the peristaltic contraction of the sigmoid colon by electrical stimulation: A pilot study in the pig
Christina Rideout	M.S.	Biomedical Engineering	1999-2000	Investigation of forces imposed upon the wrist during activities of daily living
Kenneth Shaw	M.S.	Biomedical Engineering	1999-2000	Development of a tibial slider to evaluate and validate a finite element model for friction in knee implants
Orlando Torres	M.S.	Biomedical Engineering	1999-2000	A noninvasive cardiopulmonary measurement system
Matthew Zawalich	M.S.	Biomedical Engineering	1999-2000	METRIXCE: A mobile, digital work order tool

Claudia Hix	M.P.H. (during medical residency)	Ergonomics	1997-2000	Constructing a taxonomy of use for computer mouse users
Sari London	M.S.	Biomedical Engineering	1999-2001	Investigation of upper body extremity biomechanics during the sports massage compression
Sunil Wadhwa	Ph.D.	Biomedical Science	1996-2002	Fluid shear stress induction of COX-2 expression in osteoblastic cells
Randy Trumbower	Ph.D.	Biomedical Engineering	2000-2003	Strategies to enhance FES-induced leg cycle ergometry for individuals with SCI

Takafumi Asaki	M.Eng. (U Hartford)	Mechanical Engineering	2002-2004	Design and analysis of a second generation device for the evaluation of active and passive shoulder and knee proprioception
Mark Croteau	M.P.H. (during medical residency)	Ergonomics	2001-2004	The influence of stimulation point and regional body temperature on segmental nerve conduction velocity of the median and ulnar nerves in healthy subjects and subjects with carpal tunnel syndrome
Syeda Uzma Abbas	M.P.H. (during medical residency)	Ergonomics	2001-2004	Pinch force and work-related musculoskeletal disorders in dental professionals
Hassan Almarshad	Ph.D.	Biomedical Engineering	2004-2005	Dynamics of human eye vision: Study of the iris radial and circular muscles during distance and close visual stimuli
Rebecca Jarvis	Ph.D.	Biomedical Engineering	2003-2005	Quantification of staphylococcus epidermidis specific adhesion to ligand-modified substrata controlling fibronectin orientation using immobilized antibodies
Evelyn Faille	M.S.	Biomedical Engineering	2004-2006	Development of a pediatric monitoring device and stimulator for pediatric apnea of prematurity
Matthew Veilleux	M.S.	Biomedical Engineering	2005-2007	Non-Thesis
Michael Holbert	M.D.S (during dental residency)	Orthodontics	2005-2008	First order archwire deflections: Comparing conventional, active self-ligating and passive self-ligating brackets
Robert Pesce	M.D.S (during dental residency)	Orthodontics	2007-2010	Evaluation of rotational control and forces generated during firstorder archwire deflections: A comparison of self-ligating and conventional brackets
Raja Abhilash Shah	M.D.S (during dental residency)	Orthodontics	2009-2012	Three-dimensional force systems produced by vertical v-bends in an arch wire

Paiyz E. Mikael	M.S.	Biomedical Engineering	2008-2010	Fabrication and characterization of novel reinforced biodegradable polymeric-water dispersible carbon nanotubes composite scaffolds for bone tissue regeneration
Mario Losa Llorente	M.S. (international student from U Madrid, Spain)	Mechanical Engineering	2011-2012	CFD simulation of the flow in a patient-specific left ventricle using CT scan to reconstruct geometry
Andrea Sarasola Sans	M.S. (international student from U Madrid, Spain)	Biomedical Engineering	2011-2012	Non-Thesis; Bioinstrumentation and neural control
Sarah Brittain	M.S.	Biomedical Engineering	2011-2013	Development and characterization of a bioactive injectable chitosan hydrogel for bone repair
Joseph Mummert	M.S.	Biomedical Engineering	2011-2013	Aortic tissue-stent mechanical interaction in transcatheter aortic valve replacement
Caitlin Martin	Ph.D.	Biomedical Engineering	2009-2013	(Transferred to GA Tech before defense) Transcatheter aortic valve modeling
Kewei Li	Ph.D.	Mechanical Engineering	2011-2013	Biomechanical simulations of transcatheter aortic valve
Thuy Pham	Ph.D.	Biomedical Engineering	2008-2013	Engineering analysis of minimally invasive mitral valve repair
Eric Sirois	Ph.D.	Mechanical Engineering	2009-2014	The use of computational fluids modeling in pre-operative planning of transcatheter valve replacement
Joseph Calderan	M.S.	Biomedical Engineering	2012-2014	Hemodynamics of the aortic root upon transcatheter aortic valve implantation
Keping Zuo	M.S.	Biomedical Engineering	2012-2014	Characterization of biomechanical properties of mitral valve chordae tendineae
Jennifer Nicole Etter	M.S.	Biomedical Engineering	2013-2015	Polyelectrolyte coatings for sequential delivery of growth factors: Automation and characterization
Sachin Agarwal	M.D.S (during dental residency)	Orthodontics	2012-2015	Comparison of root resorption, microbial colonization and periodontal status between clear aligners, self-ligating brackets and conventional brackets: A randomized controlled clinical trial
Stephany Santos	M.S.	Biomedical Engineering	2012-2015	Investigating simple shear mechanics of bovine cartilage using a triaxial shear test machine

PAST GRADUATE STUDENTS – *NIU* – ASSOCIATE ADVISOR / EXAMINATION COMMITTEE

NAME	DEGREE PROGRAM	AREA OF CONCENTRATION	TRAINING PERIOD	THESIS TITLE
Justin Berdell	M.S.	Electrical Engineering	2020-2022	Smart handle design with machine learning for exoskeleton and/or vehicle control
Parisa Torkinejad Ziarati	M.S.	Mechanical Engineering	2020-2022	Exoskeletons and Exposure to Hand-Arm Vibration

GRADUATE LABORATORY ROTATIONS / INTERNSHIPS – *UCONN*			
NAME	**DEGREE PROGRAM**	**AREA OF CONCENTRATION**	**TRAINING PERIOD**
Graduate Students			
Fredrick Fletcher	M.P.H.	Ergonomics	1998-2000
Terri Cavo	M.P.H.	Epidemiology	1998-2001
Yongqiang Feng	Ph.D.	Communication Sciences	2005-2006
Jeffrey Dussetschleger	M.P.H.	Epidemiology	2005-2006
Francyse Wintink Werner	M.S.	Biomedical Engineering	2005-2006
Ulysses Diva	Ph.D.	Statistics	2006-2008
Ashok Chaurasio	Ph.D.	Statistics	2010-2012
Kurt Peterson	Undeclared	Bioinstrumentation and Device Programming	2012-2013
Medical Residents			
Orlando Torres	Occupational Medicine (Division of)	Occupational Biomechanics and Exposure	2004-2005
Frank Ferrell	Occupational Medicine (Division of)	Occupational Biomechanics and Exposure	2004-2005
Joseph DeAngelis	Orthopaedic Surgery (Department of)	Implant Biomechanics	2005-2006
Non-UCONN Graduate Students			
Nancy Laurie	Ph.D. (U Mass. Amherst)	Ergonomics	1999-2000
Judy Gould	Ph.D. (U Mass. Lowell)	Ergonomics	2000-2001

POSTDOCTORAL FELLOWS – MENTOR – *NIU*			
NAME	**DEGREE PROGRAM (PRIOR INSTITUTION)**	**AREA OF CONCENTRATION**	**TRAINING PERIOD**
Simon Kudernatsch	Ph.D. (Texas A&M)	Human Exposure and Response	2021-2023

POSTDOCTORAL FELLOWS – MENTOR – *UCONN*			
NAME	**DEGREE PROGRAM (PRIOR INSTITUTION)**	**AREA OF CONCENTRATION**	**TRAINING PERIOD**
Judy Gould	Ph.D. (U Mass. Lowell)	Ergonomics	2006-2007
Gonggiang Yu	Ph.D. (U Wisconsin Madison)	Communication Sciences	2007-2014
Bodil Björ	Ph.D. (U Umeå, Sweden)	Occupational Exposure and Response to Vibration	2010

GRADUATE INDEPENDENT STUDIES – *UCONN* and *NIU* – INSTRUCTOR / MENTOR			
NAME	**AREA OF CONCENTRATION**	**SEMESTER**	**INDEPENDENT STUDY TITLE**
Jennifer Corey	Biomedical Engineering	Spring 2001	Biofluids in tissue engineering
Jennifer Corey	Biomedical Engineering	Fall 2001	Tactile biomechanics
Takafumi Asaki	Biomedical Engineering	Spring 2005	Dental biomechanics
Francyse Wynne Wentink	Biomedical Engineering	Spring 2005	Biomechanics literature review of hand-finger motion capture
Gizem Ucanok	Biomedical Engineering	Fall 2005	Lower-extremity biomechanics
Erin Bill	Biomedical Engineering	Spring 2006	Upper-extremity biomechanics
Yongqiang Feng	Communication Sciences	Spring 2006	Biomechanics of speech pathology
Gizem Ucanok	Biomedical Engineering	Spring 2006	Clinical pediatric gait analysis

Eric Bernstein	Biomedical Engineering	Fall 2006	Data logger design for biomechanical measurements
Jayme Coates	Biomedical Engineering	Fall 2006	Autonomous systems for tracking human movement
Takafumi Asaki	Biomedical Engineering	Fall 2007	Lectures in Japan on biomechanics and human exposure and response
Jithu Roy	Biomedical Engineering	Fall 2009	Automation of orthodontic wire tester using LabVIEW
Matthew Solomito	Biomedical Engineering	Fall 2009	Clinical biomechanics and assessment of scoliosis
Adithya Venkatesan	Biomedical Engineering	Fall 2009	Software development for an orthodontic wire tester
Eric Bernstein	Biomedical Engineering	Fall 2010	Capture of human movement using inertial measurement units (IMU)
Robert Knapp	Biomedical Engineering	Fall 2010	Applied bioinstrumentation
Alanna Ocampo	Biomedical Engineering	Fall 2010	Investigation of methods for simulating Vitamin D metabolism
Maria Qadri	Biomedical Engineering	Fall 2010	Instrumentation systems for biomechanical field measurements
Tarek Tantawy	Biomedical Engineering	Fall 2010	Biomechanical interpretation of human movement from kinematic data
Daniel Tichon	Biomedical Engineering	Fall 2010	Finite element methods in biomechanics and injury
Marek Wartenberg	Biomedical Engineering	Fall 2010	Design of microcontroller interface to removable storage media for longduration data logging
Robert Knapp	Biomedical Engineering	Fall 2010	Image analysis of synchrotron microCT images of bone
Drew Seils	Biomedical Engineering	Spring 2011	Analysis of various hand tool features and designs
Shane Tornifoglio	Biomedical Engineering	Spring 2011	Forces measurements in biomechanics
Matthew Kozachek	Biomedical Engineering	Spring 2012	Biomechanics of ophthamology
Tanimu DeLeon-Nwaha	Biomedical Engineering	Fall 2012	Tactile biomechanics
Rena Eudy	Biomedical Engineering	Fall 2012	Developing a mechanistic model of Multiple Sclerosis for a SBIR application
Sampat Nidadavolu	Biomedical Engineering	Fall 2012	Computational fluid dynamics methods in biofuid mechanics
Madison Tobar	Biomedical Engineering	Fall 2012	Biomechanics of porcine peritoneum tissue stored under varying conditions (in co-op with Covidien)
Rena Eudy	Biomedical Engineering	Spring 2013	Continuing development of a mechanistic model of Multiple Sclerosis
Simon Kudernatsch	Biomedical Engineering	Spring 2013	Design of biomechanical sensors for field monitoring of hand-arm vibration exposure

Kaitlyn Longo	Biomedical Engineering	Spring 2013	Design, development, and clinical trials of a video fluoroscopic pediatric otoscope
Matthew Nagelschmidt	Biomedical Engineering	Spring 2014	Compatible biomaterials for dental and surgical applications
Eduardo Pallares	Biomedical Engineering	Spring 2014	CFD modeling of biofluids: bifurcations and aneurysms
Matthew Solomito	Biomedical Engineering	Spring 2014	Lagrangian Biodynamics
Amber Fillmore	Mechanical Engineering (Human Biomechanics)	Fall 2019, Spring 2020	Exoskeletons and Human-Machine Interface
Parisa Torkinejad Ziarati	Mechanical Engineering (Human Biomechanics)	Spring 2023	Advanced Vibration Measurement and Monitoring Techniques

VISITING RESEARCH FACULTY

INVESTIGATORS – LABORATORY VISITATIONS AND RESIDENCIES – *UCONN*				
NAME	**HOME INSTITUTION**	**HOME DEPARTMENT**	**PURPOSE OF VISIT**	**PERIOD**
Anthony Brammer (Ph.D.)	National Research Council (Ottawa, Canda)	Institute for Microstructural Sciences	Laboratory, field, and clinical measurements of human vibration exposure and response	1999-2002
Tatsuto Suzuki (Ph.D.)	Maizuru National College of Technology (Kyoto, Japan)	Mechanical Engineering	Biomechanics and the application of mechanical engineering principles to laboratory and field measurements of human exposures	2005
Setsuo Maeda (Dr.Eng., Dr.Med.Sci.) (and colleagues)	Japan National Institute of Occupational Safety and Health (JNIOSH), (Kawaski, Japan)	Department of Research Planning and Coordination	Visitation from the Human Response to Vibration research group (seven faculty) from JNIOSH to study techniques of laboratory and field measurements of human vibration exposure and response and to establish a formal research collaboration	2009
Junya Tatsuno (Dr.Eng.)	Kinki University (Hiroshima, Japan)	Mechanical Engineering	Techniques of laboratory and field measurements of human vibration exposure and response	2012

RESEARCH AND ACADEMIC TRAINEES

UNDERGRADUATE

Major Academic Advisor in the UCONN BME Program to 171 students: 71 graduated in May of 2014 before my departing UCONN in 2014.

MAJOR ACADEMIC ADVISOR – *UCONN* BME PROGRAM	
NAME	**ADVISING PERIOD**
Christopher Andrew Ackell	2011-2012
Barbara Adu-Baffour	2010-2011
Joshua Michael Aferzon	2010-2011
Nabid Ahmed	2011-2014
Prince Alam	2010-2011
Robert Alexander Amatuli	2010-2011
Rockwell Raluchukwu Anyoha	2010-2011
Julia Marie Ariola	2010-2014
Thomas Patrick Bachant	2010-2013
Sonya Aycheh Bader	2013-2014
Kyle Robert Bagshaw	2010-2013
Jacob Charles Baril	2010-2013
Spencer Cole Beck	2012
Jordan Patrick Bellucci	2012-2014
Omkar Rajashekhar Betageri	2011-2013
Hiba Bilal	2010-2011
Musa Bilal	2011-2012
Andrew Richard Bligh	2011-2012
Lia Marie Bonacci	2010-2014
Taylor Armstrong Bonin	2011-2012
Peter Boutros	2011-2012
Katelyn Amanda Burkhart	2010-2011
Rebecca Lynn Calafiore	2011-2014
Thomas Peter Capuano	2010-2011
John Thomas Cerrato	2012-2014
Michael Chen	2010-2011
Savio John Chris	2011-2012
Veronica Winnie Clark	2011-2012
Kaitlyn Shoushan Clarke	2011-2012
Paul Martineau Clermont	2012
Allison Virginia Colberg	2013-2014
Brian Christopher Coleman	2010-2013

Martin Anand Collier	2010-2011
Paige Kimberly Collins	2011-2014
Kathleen Joyce Cooney	2010-2011
Kate Marie Craddock	2013-2014
Darryl Phillip Cummings	2012-2013
Matthew Lee Curreri	2011-2012
Hunter Steven D'Addeo	2011-2012
Kara Ann Der	2010-2011
Andrea Rose D'Eramo	2011-2012

Matthew Richard Desch	2010-2011
Colin Joseph Devaney	2012-2014
Connor John Dieck	2013-2014
Joshua Christopher Dobbins	2010-2014
Michael John Dolan	2012-2014
Timothy Ryan Donahoe	2013-2014
Thomas Dunkle	2012-2014
Celeste Marie Dupont	2011-2012
Erin Patricia Dwyer	2010-2011
Adam Eichen	2011-2013
Stephen Elovetsky	2011-2012
Alyssa Catherine Fasciano	2012
Dillon James Florence	2011-2014
Gabriella Satchi Frey	2011-2012
Matthew David Gajdosik	2011-2012
Alex Roland Gale	2010-2013
Ashley Mae Gale	2010-2011
Michael Scott Gallie	2011-2012
Joshua Tyler Ginsberg	2011-2014
Michael Hoyle Golden	2010-2011
Christian David Gonzales	2013-2014
Kayla Marie Gosse	2011-2012
Patrizia Cristina Grob	2013-2014
Ana Cecilia Groff	2010-2013
Susan Mary Hamilla	2010-2011
Kyle Wesley Hamilton	2011-2012
Craig William Hanna	2011-2012
Michael Joseph Heusser	2010-2011
Kaichie Ho	2013-2014

Jessica Lynn Hockla	2013-2014
Derek Timothy Holyoak	2010-2011
Jonathan Yuen-Chia Huang	2011-2012
Phoebe Heather Hughes	2012
Kenneth Ted-Luck Hung	2011-2012
Aimon Iftikhar	2010-2013
Amit Venkata Ika	2010-2011
Gregory William Johnson	2010-2011
Adrienne Lyn King	2010-2011
Stephanie Michelle Knowlton	2011-2014
Matthew Philip Kozachek	2010-2011
Eleni Kursten	2011-2012
Shruti Kuzhippat	2011-2014
James Taekyoon Kwan	2011-2012
Christopher Lee	2011-2012
Rachel Marie Lellis	2010-2011
Justin Henry Letendre	2012-2014
Joshua Anthony Leveillee	2010-2011
Richard David Lin	2011-2012
William David Lindsay	2010-2011

Siying Liu	2011-2012
Brandon Christopher Low	2012-2014
Andrus Erik Maandi	2012-2014
Kristen Elizabeth Malloy	2010-2011
Talya Frances Mandelkern	2012-2014
Sindhu Vasini Mannava	2012-2014
Kristen Rosa Manuzzi	2010-2011
Christopher Michael Mashiak	2012-2013
Stefan Joseph Mathews	2011-2012
Casey Charles McDermott	2010-2011
Katherine Lee McKenzie	2012-2014
Claudio Andres Melendez-Cooper	2011-2013
Jason Douglas Meyer	2010-2011
Nihit Hemant Mody	2010-2013
Eileen Allison Molloy	2010-2011
Rehan Umar Muhammad	2010-2011
Alejandra Caroline Munoz	2010-2011

Austin John Murray	2011-2012
Sonal Vijay Muzumdar	2012-2014
Bigdeli Omid Reza Nasser	2010-2011
Matthew William Newport	2011-2014
Jonathan Nip	2011-2012
Kyle Charles O'Brien	2010-2011
Catherine Elizabeth Oliver	2012-2014
Jennifer Marian Olson	2010-2011
Kelly Elise O'Neill	2010-2011
Takumi James Otsuka	2011-2014
Neyati Patel Jaydev Patel	2010-2014
Delaney Flanigan Patterson	2012-2013
Jacob Edward Peterson	2011-2012
Ragini Sanjay Phansalkar	2010-2011
Nicole Jenine Piscopo	2011-2014
Anthony Politano	2010-2011
Constantine Michael Poulos	2011-2012
Megan Lindsey Powell	2012-2014
Meredith Cozette Rittman	2012-2014
Juan Manuel Romero	2011-2012
Julian Akil Rose	2012-2014
Mikhail Rudinskiy	2011-2014
Dipanjan Saha	2010-2014
Stephany Santos	2011-2012
Yasemin Saplakoglu	2012-2014
Jason Schinis	2010-2011
Adarsha Selvachandran	2011-2012
Ardheeshan Selvachandran	2010-2011
Shashank Anand Settipalli	2010-2011
Maysarah Shahabuddin	2010-2011
Nicole Lynn Sharp	2012-2014
Viren Pravin Shinde	2012-2013
Brandon Matthew Shore	2013-2014
Thomas Carpenter Silva	2010-2011
Pranav Singla	2012
Catherine Michelle Skeggs	2011-2012
Alyssa Jane Smith	2010-2013
Kevin James Smith	2012-2014

Tyler Brandon Stahl	2010-2011
Michael Anthony Stellon	2011-2014
William Michael Stewart III	2012-2013
Oskar Mathias Stiansen-Perskaas	2010-2011
Alexandra Filomena Stowe	2012-2014
Haley Elizabeth Strassner	2011-2012
Kelly Lynn Stratton	2010-2013
Shiv Ilesh Sutaria	2011-2012
Kevinminh Tan Ta	2012-2014
Zaiba Husan Ahmed Tapkirwala	2012
Solomiya Teterichko	2010-2011
Hannah Theriault	2012-2014
Lior Anschel Trestman	2011-2014
Matt Christopher Turiano	2010-2011
Honorio Valdes	2011-2012
Christine Theresa Wakefield	2010-2011
Ruoxin Wang	2012-2014
Kelsey Elizabeth Welling	2010-2014
Alexander Lee Werne	2010-2013
Lyndsey Anne Williams	2012-2013
Rachel Christine Winsor	2011-2014
Zachary Thaddeus Woods	2011-2014
Andy Kingsley Xie	2011-2012
Cheng Yang	2011-2012
Joseph Yi	2011-2012
Yangyang Zhu	2011-2014

MAJOR ACADEMIC ADVISOR – *UCONN* BME PROGRAM	
NAME	**ADVISING PERIOD**
Cole Boni	2023 -
Brooke Benford	2020 - 2023
Crystal Berrios	2020 - 2023
Allyson Bowgren	2020 - 2022
Yeshua Gonzalez	2021 - 2022
Maria Corzo	2021 -
Mikayla Dirksen	2021 -
Noah Engles	2021 -
Emily Formella	2023 -

Major Academic Advisor to 32 students in the new NIU BME Program that has 87 total enrolled as of Fall 2022.

David Gavin	2023 -
Justin Grzonka	2023 -
Lauren Gratzke	2021 - 2023
Esteban Guzman	2020 - 2023
Emily Herbert	2021 -
Tina Jaroszkiewicz	2023 -
Kyle King	2021
Priyanka Kumar	2021 - 2022
Enosh Lim	2021 - 2022
Rosa Manuel	2021 - 2023
Liam Murphy	2021 - 2023
William Murtaugh	2021 -
Madelyn Overton	2021 - 2023
Khushi Patel	2023 -
Inam Rab	2020 - 2022
Niral Rathod	2020 - 2023
Ellaine Ray	2021 - 2022
Khadeeja Ridha	2020 -
Angelica Ross	2021 -
Parker Smith	2020 -
Evan Stielow	2020 - 2023
Isabelle Vondra	2021 - 2023
Alexia Wilk	2021 -

***NIU* UNDERGRADUATE SENIOR DESIGN PROJECTS (BME / ELE 495 and 496; MEE 485 and 486)**		
TITLE	**TEAM MEMBERS**	**AREA OF CONC.**
2017-2018 Calendar Year (Under Old Senior Design Program – ELE 491 and 492; MEE 481 and 482)		
Robotic Mobility Walker for High School Student with Dystonic Cerebral Palsy	Michael Bockwoldt, Meiya Carter, Michael Duda, William Dedic, Hnin Lin, Matthew Martone, Jazael Medina, Fahad Mohammedhussein, Mark Pacyga	Electrical Engineering & Mechanical Engineering
Intelligent Communication Device for High School Student with Dystonic Cerebral Palsy	Steven Binderup, Peter Cole, Murray Fordyce, Marianne Guieb, Andrew Murphy	Electrical Engineering
Fix Your Back-Pack (Ergonomic Back Pack for College Students)	Pierrick Fillon, Daniel Formas, Stephen Karkos, Samuel Vanderhei, John Wardaszka, Steven Yonkers	Mechanical Engineering
Arcject - Electrothermal Rocket Thruster	Malachi Fischer-Porter, Daniel Trygstad, Michael Zawadzki	Mechanical Engineering
The Structural Harness for Enhanced Load Lifting (SHELL) Exoskeleton	Adebayo Adejinie, Kate Chwistek, Dalsen Ferbert, Andrew Meyer, Ivan Rivera	Mechanical Engineering
2018-2019 Academic Year (Under New Interdisciplinary Senior Design Program – ELE 495 and 496; MEE 485 and 486)		
Enhanced Mobility Wheelchair (EMW)	Justin Cambell, Nathan Prebish, Wuthrich	Mechanical Engineering
Three-Dimensional Imaging of the Hand for Use in Occupational Therapy	Brooke Bailey, Maria Barlas, Amber Fillmore, Helia Lai	Electrical Engineering & Mechanical Engineering
Fluorescence Detection Device for Non-invasive Diagnosis of Diabetes	Hannah Medernach, Jessie Miles, Kristen O'Connor	Electrical Engineering & Mechanical Engineering
Exoskeleton Testing Grounds	Nicole Dumoulin, Patricia Dumoulin, Daniel Glabinski, Brianna Smyles	Mechanical Engineering
Smart Bag with Switchable Transparency Capability for Security Checks	Jesse Carrasco, Martin Carrasco, Michael Solorzano	Electrical Engineering & Mechanical Engineering
Autoinjector Integrated into a Phone Case	Martin Conneely, Mario Cordova, Nick Passeri	Mechanical Engineering
2D Optical Imaging	Amy Kofoed, Laura Vogl, Katelyn Zastrow	Electrical Engineering
Design and Development of Kinematically-Compliant Medical Exoskeleton for Upper Extremities	Kevin Au, Timothy Ross, Jack Weiland	Mechanical Engineering
Robotics Lift-Assistance System to Improve Industrial Ergonomics	Robert Anaya, German Ibarra, Marcin Jaskolski	Electrical Engineering & Mechanical Engineering

SciDrain - Chest Tube	Samuel Aluko, Alex Morales, Marcos Torrescano	Electrical Engineering
2019-2020 Academic Year (Under New Interdisciplinary Senior Design Program – ELE 495 and 496; MEE 485 and 486)		
Robotic Exoskeleton for Neuromuscular Rehabilitation and Exercise, Fourth Generation	Aletta Johnson, Nicole Hoffmann, Moises Reynoso	Electrical Engineering & Mechanical Engineering
Enhanced Wheelchair (EMW) (Second Generation)	Joseph Jackson, Matthew Koehler, Fabian Mandujano	Mechanical Engineering
Automating Anti-Vibration Glove Testing Following ISO 10819	Ian Gilmour, Porfirio Navar, Arthur Sobiech	Mechanical Engineering
MR Fluids – Application to Occupational and/or Rehabilitation Exoskeletons	Timothy Barry, Zach Elliott, Ian Kowalski	Electrical Engineering & Mechanical Engineering
Smart Hand Tool Technology	Collin Klein, Milica Milovancevich, Benjamin Schulz	Electrical Engineering & Mechanical Engineering
SecuriBot – Low-cost Autonomous Sentinel Robot	Shawn Bennett, Aaron Freedkin, Joshua Leung, Yingnan Xu	Electrical Engineering & Mechanical Engineering
Integration of a NAO Robot with an Autonomous Mobile Platform	Mark Lanman, Edward Lukas, Nick Roark	Electrical Engineering
Robotic Mobility Walker for High School Student with Dystonic Cerebral Palsy, Second Generation	Jayce Berggren, Colin Frank, Joshua Keene, Kyle Matthews	Electrical Engineering & Mechanical Engineering
2020-2021 Academic Year (Under New Interdisciplinary Senior Design Program – ELE 495 and 496; MEE 485 and 486)		
Integration of a NAO Robot with an Autonomous Mobile Platform (Phase II)	Bryce Jacob, Dylan Leon, Adam Bradley	Electrical Engineering & Mechanical Engineering
PLC-based Vibration Signature Analysis	Dexter King, Riley Plock, Ryan Shaw	Mechanical Engineering
SecuriBot – Low-cost Autonomous Sentinel Robot (Phase II)	Michael Brons, Jerrel Grays, Daniel Ingalsbe	Electrical Engineering & Mechanical Engineering
2021-2022 Academic Year (Under New Interdisciplinary Senior Design Program – ELE 495 and 496; MEE 485 and 486)		
Robotic Exoskeleton for Neuromuscular Rehabilitation and Exercise (Fifth Generation)	Samuel Hancock, Jalen Taylor, Malcom Walker	Biomedical Engineering & Mechanical Engineering
SecuriBot: Low-Cost Autonomous Sentinel Robot (Phase III)	Jorge Fernandez, Cindy Gomez, Kaylen Platt	Electrical Engineering, Mechanical Engineering, & Mechatronics Engineering
Enhanced Wheelchair (EMW) (Third Generation)	Acelyn Galsim, Lauren Gratzke, Inam Rab	Biomedical Engineering & Mechanical Engineering

Novel Mobility Device for Conjoined Twins	Allyson Bowgren, Stephen Loftis, Cristhian Ocana	Biomedical Engineering, Electrical Engineering, & Mechanical Engineering

***TAMU-T* UNDERGRADUATE SENIOR DESIGN PROJECTS (CS / EE 490 and 491)**		
TITLE	**TEAM MEMBERS**	**AREA OF CONC.**
2015-2016 Academic Year		
Orthotic pressure feedback system	Juan Gomez, Clayton McDonnell, Kyle Price	Electrical Engineering
Environmental monitoring system	William Cody Power, Ryan Reed, Kenan Strange	Electrical Engineering
Intelligent irrigation control system	Janie Giles, Thomas Hammons, Lindsay Johnson	Electrical Engineering
Intelligent car control modular development	Lucus Allgood, Kenneth Hoelscher	Computer Science
Design of a vibratory platform to assess the effects of launch and re-entry vibration exposures on astronaut performance	Christopher Homes, Caleb Sparks	Electrical Engineering
2016-2017 Academic Year		
Smart hard hat for the mining, petroleum, and construction industries	Jonathan Hall, Taylar Hudson, Tabitha Hooper	Electrical Engineering
Therapeutic training reaction device using visual light for rehabilitation patients	Channing Ward, Justin Litton, Dustin Freeman	Computer Science and Electrical Engineering
Data tracking for first time quality reporting and visual Key Performance Index (KPI) board for gain sharing within a manufacturing facility	Sergio Encino, Andrew Cromwell	Computer Science
Driving simulator for use in actual vehicles to assess rehabilitation patient readiness for driving	Steven Firmin, Gabriel Fuglaar, Hannah Baik	Computer Science and Electrical Engineering
Mistake proof arbor and shaft assembly for line trimmers on an assembly line	Humberto Galvan, Jacob Smith	Computer Science

***UCONN* UNDERGRADUATE SENIOR DESIGN PROJECTS (BME 4900 and 4910)**		
TITLE	**TEAM MEMBERS**	**AREA OF CONC.**

2011-2012 Academic Year		
Near infrared spectroscopy for neonatal bladder monitoring	Andreana Panzo, Anna Nash, Joanna Morgan	Biomedical Engineering
Low-cost 3D conversion system for legacy 2D ultrasound machines	Peter Boutros, Christopher Lee, Stefan Mathews, Paul Wilkens	Biomedical Engineering
Creation of precision devices and in vitro model to test emerging therapies for wound healing	Matthew Curreri, Urania Michael, Musa Bilal	Biomedical Engineering
Device to optimize tracheotomy tube attachment in infants	Christine Filosa, Deborah Dorcemus, Matthew Turiano, Rose Palmer	Biomedical Engineering
Expandable growing rods for treatment of pediatric spinal deformity with reduced rate of infection	Jonathan Nip, Carly Romanowicz, Dalia Gonzalez	Biomedical Engineering
Automated IV catheter insertion device	Owen Search, Kurt Peterson (Primary Team)	Biomedical Engineering
Automated IV catheter insertion device (part II)	Craig Hanna, Nick Woolsey, Kyle Hamilton (Secondary Team)	Biomedical Engineering
2012-2013 Academic Year		
Novel wireless sensor platform	Christine Mallek, Alex Tansey, Matthew Gajdosik	Biomedical Engineering
Development of an electronic stethoscope	Nadjat Adoyi, James Coulson, Maren Wennberg	Biomedical Engineering
A disposable expiratory pressure manometer project	Nadjat Adoyi, James Coulson, Maren Wennberg	Biomedical Engineering
Endotracheal and gastric tube fixation	Jennifer Etter, Umar Razzaq, Ashley Reichert	Biomedical Engineering
Continuous urinary output monitoring system	Jennifer Etter, Umar Razzaq, Ashley Reichert	Biomedical Engineering
Pressure transducer and flow rate meter for controlled media delivery to Rat lung vasculature ex-vivo	Alex Gray, Jeffrey Roberge, Dean Walston	Biomedical Engineering
In vitro model to test emerging therapies for human wounds	Nicholas Jannetty, Adrienne King, Stephen Miller	Biomedical Engineering
Endoscopy bite block design	Linda Caporale, Alex Gale, Andy Xie	Biomedical Engineering
Endoscopic Retrograde Cholangiopancreatography (ERCP) sphinctortome design	Linda Caporale, Alex Gale, Andy Xie	Biomedical Engineering
Robotic rehabilitative assistance and targeted muscle activation device	Brian Coleman, James Vallieres, Eric Sands	Biomedical Engineering
Intraluminal anastomosis evaluation method for Covidien	Matthew Conklin, Shreena Desai, Caroline Jackson	Biomedical Engineering
2013-2014 Academic Year		

Redesign of the personal epinephrine injection system	Spencer Beck, Ardheeshan Selvachandnan, Michael Stellon	Biomedical Engineering
Laryngeal surgery simulation station	Bozhidar Barakov, Joshua Dobbins, Alexander Gadecki	Biomedical Engineering
Three-dimensional imaging of the hand for use in occupational therapy	Julia Ariola, Christine Montagne, Sana Serhane	Biomedical Engineering
Design of an inhaler system for the control and management of asthma	Bryant Heimback, Matthew Schneiderhan, Cheng Yang	Biomedical Engineering
Robotic exoskeleton and rehabilitative assistive device	Lia Bonacci, Gregory Johnson, Dipanjan Saha	Biomedical Engineering
Contributions of thoracic motion to cervical and shoulder range of motion in patients suffering from cervical or shoulder pain symptoms	Kaichie Ho, Alekhya Revur, Jerry Sooklall	Biomedical Engineering

SENIOR DESIGN OR CAPSTONE PROJECTS – PRINCIPAL ADVISOR		
TITLE	**NAME (INSTITUTION)**	**AREA OF CONC.**
1998-1999 Academic Year		
Vibration mapping of the right hand during manual hammer use	Pedro Cabrerra (U Hartford)	Biomedical Engineering
1999-2000 Academic Year		
Biomechanics of manual hammering	Lana Lucetti (U Hartford)	Biomedical Engineering
2000-2001 Academic Year		
Biodynamic model of terrestrial geologic field work for use with Martian development	Kristi Palm (U Hartford) Biomedical Engineering	spacesuit and tool
2001-2002 Academic Year		
Thermal Imaging: A method for noninvasive detection of vascular occlusions	David Aloi (U Hartford)	Biomedical Engineering
Integrating motion capture data with VisualNASTRAN	Edward Timinski (U Hartford)	Biomedical Engineering
2002-2003 Academic Year		
The effect of body structure and composition on function of the elbow in hammering	David Constantine (Trinity College)	Biomedical Engineering
Effects of high-heeled shoes on women's leg joints and bones	Gizem Ucanok (Trinity College)	Biomedical Engineering
2006-2007 Academic Year		
Transcutaneous Electrical Nerve Stimulation (TENS) modulated by pressure transducers as a haptic interface for the NASA spacesuit glove	Carter Erwin (Trinity College), Robert Maloof (Trinity College)	Electrical Engineering
2007-2008 Academic Year		

Design of an all-terrain wheelchair (*Project Originator – Design led to formation of a start-up company called GO-MOTION*)	Geoff Cullen (U Conn.), Carlton Forse (U Conn.), Ryan Gresh (U Conn.)	Mechanical Engineering
Electro-goniometer field calibration, Phase I	Knittel Ansa (U Hartford)	Biomedical Engineering
Electro-goniometer field calibration, Phase II	Chirstopher Diyaolu (U Hartford)	Biomedical Engineering
Shoulder model project for electro-goniometer data logger	Arjun Karivaradhan (U Hartford)	Biomedical Engineering
Electro-goniometer data logger	Luke Tharathattel (U Hartford)	Biomedical Engineering
Dental handpiece performance testing	Matthew Waltz (U Hartford)	Biomedical Engineering
2010-2011 Academic Year		
Evaluation of iPi motion capture software for potential use in difficult motion capture environments	Kayla Cloutier (U Hartford)	Biomedical Engineering
Simulating FFT waveforms in LabVIEW for vibration applications	Chelsea Vendetti (U Hartford)	Biomedical Engineering
Testing protocols for force sensor conditioning unit	Simon Kudersnatch (U Hartford)	Biomedical Engineering

UNDERGRADUATE LABORATORY ROTATIONS / INTERNSHIPS – *NIU*			
NAME	**DEGREE PROGRAM (INSTITUTION)**	**AREA OF CONCENTRATION**	**TRAINING PERIOD**
Isabelle Vondra	B.S. (NIU)	Biomedical Engineering	2019 -
Nicholas Berger	B.S. (NIU)	Mechanical Engineering	2018-2020

UNDERGRADUATE LABORATORY ROTATIONS / INTERNSHIPS – *TAMU-T*			
NAME	**DEGREE PROGRAM (INSTITUTION)**	**AREA OF CONCENTRATION**	**TRAINING PERIOD**
Caleb Sparks	B.S. (TAMU-T)	Electrical Engineering	2015
Tyler Marler	B.S. (TAMU-T)	Electrical Engineering	2015
Keenan Strange	B.S. (TAMU-T)	Electrical Engineering	2015
Alex Walker	B.S. (LaTourneau U)	Mechanical Engineering	2016
Garrett Mason	B.S. (TAMU-T)	Electrical Engineering	2016

UNDERGRADUATE LABORATORY ROTATIONS / INTERNSHIPS – *UCONN*			
NAME	**DEGREE PROGRAM (INSTITUTION)**	**AREA OF CONCENTRATION**	**TRAINING PERIOD**
Nicole Broyles	B.S. (U Hartford)	Biomedical Engineering	2000-2001
Marsha Lidzbarski	B.S. (U Conn.)	Geology	2000-2001
Takafumi Asaki	B.S. (U Hartford)	Biomedical Engineering	2001-2002
Jason Bornas	B.S. (U Hartford)	Biomedical Engineering	2001-2002
Paola Jaramillo	B.S. (U Hartford)	Biomedical Engineering	2001-2002
Mpho Musengua	B.S. (U Hartford)	Biomedical Engineering	2002-2003
Sushma Venkatesh	B.S. (U Hartford)	Electrical Engineering	2003-2004
Karen Young	B.S. (U Conn.)	Biomedical Engineering	2005-2006
Max Feldman	B.S. (U Conn.)	Biomedical Engineering	2006-2007
Scott Michonsky	B.S. (U Conn.)	Biomedical Engineering	2006-2007
Bethany Lepine	B.S. (U Conn.)	Biomedical Engineering	2006-2007
Huy Quang Pham	B.S. (U Hartford)	Biomedical Engineering	2007-2008
Drew Seils	B.S. (U Conn.)	Biomedical Engineering	2007-2010
Shane Tornifoglio	B.S. (U Conn.)	Biomedical Engineering	2007-2010
Geoff Cullen	B.S. (U Conn.)	Mechanical Engineering	2008-2009
Carlton Forse	B.S. (U Conn.)	Mechanical Engineering	2008-2009
Ryan Gresh	B.S. (U Conn.)	Mechanical Engineering	2008-2009
Brittany Mejia	B.S. (U Hartford)	Biomedical Engineering	2008-2009
Maria Qadri	B.S. (U Hartford)	Biomedical Engineering	2008-2009
Kyle Bortok	B.S. (Rensselaer Polytechnic Institute)	Biomedical Engineering	Summer 2010
Joshua Holtzberg	B.S. (U Rochester)	Biomedical Engineering	Summer 2010
Austin McMann	B.S. (U Conn.)	Biomedical Engineering	2010-2011

Katelyn Burkhart	B.S. (U Conn.)	Biomedical Engineering	2010-2011
Kathryn Dobler	B.S. (U Conn.)	Biomedical Engineering	2010-2011
Dipanjan Saha	B.S. (U Conn.)	Biomedical Engineering	2010-2011
Joseph Wolanski	B.S. (U Conn.)	Biomedical Engineering	2010-2011
Jacob Baril	B.S. (U Conn.)	Biomedical Engineering	2011-2012
Brian Coleman	B.S. (U Conn.)	Biomedical Engineering	2011-2012
Ana Groff	B.S. (U Conn.)	Biomedical Engineering	2011-2012
John E. McCann	B.S. (U Hartford)	Biomedical Engineering	2011-2012
Stefan Sumsky	B.S. (U Rochester)	Neuroscience	Summer 2010
Simon Kudernatsch	B.S. (U Hartford)	Biomedical Engineering	2011-2012
Madison Tobar	B.S. (U Hartford)	Biomedical Engineering	2011-2012
Brian Coleman	B.S. (U Conn.)	Biomedical Engineering	2012-2013
James Vallieres	B.S. (U Conn.)	Biomedical Engineering	2012-2013
Eric Sands	B.S. (U Conn.)	Biomedical Engineering	2012-2013
Kayvon Ghoreshi	B.S. (U Conn.)	Molecular and Cell Biology	Summer 2013

UNDERGRADUATE INDEPENDENT RESEARCH (BME 497) – *NIU* – INSTRUCTOR			
NAME	**AREA OF CONCENTRATION**	**SEMESTER**	**INDEPENDENT STUDY TITLE**
Allyson Bowgren	Biomedical Eng. (BME 497)	Fall 2020	Methods of assessing exoskeletons and human performance
Jacob Martinez	Biomedical Eng. (BME 497)	Spring 2021	Biotransport and biomimetic systems
Yeshua Chacha Gonzalez	Biomedical Eng. (BME 497)	Fall 2021	Design of biomedical engineering systems
Enosh Lim	Biomedical Eng. (BME 497)	Fall 2021	Biotransport and biomimetic systems
Allyson Bowgren	Biomedical Eng. (BME 497)	Spring 2022	Biotransport and biomimetic systems
Isabelle Vondra	Biomedical Eng. (BME 497)	Spring 2022	Biotransport and biomimetic systems
Emily Hebert	Biomedical Eng. (BME 497)	Summer 2022	Healthcare technology repair in low-resource settings

Isabelle Vondra	Biomedical Eng. (BME 497)	Fall 2022	Cellular biomechanics
Noah Engles	Biomedical Eng. (BME 497)	Summer 2023	Clinical and translational research design and outcomes

NDERGRADUATE INDEPENDENT RESEARCH (EE 499) – *TAMU-T* – INSTRUCTOR			
NAME	**AREA OF CONCENTRATION**	**SEMESTER**	**INDEPENDENT STUDY TITLE**
Nicholas Rose	Electrical Engineering (EE 499)	Summer 2016	Design and construction of a reflective light analysis system to assist with selection of building materials based on human perception
Alex Walker (LaTourneau Univ. Student)	Mechanical Engineering (MEGR 4993 (*LaTourneau U*)	Summer 2016	Development of a magneto-rheological fluid damper for use with robotic exoskeletons

UNDERGRADUATE INDEPENDENT STUDY (BME 4999) – *UCONN* – INSTRUCTOR			
NAME	**AREA OF CONCENTRATION**	**SEMESTER**	**INDEPENDENT STUDY TITLE**
Drew Seils	Biomedical Engineering	Fall 2009	Human motion analysis: Technology, principles, and applications
Shane Tornifoglio	Biomedical Engineering	Fall 2009	Human motion analysis: Technology, principles, and applications
Katelyn Burkhart	Biomedical Engineering	Fall 2010	Design of a fluid flow apparatus for exposure of cells to fluid shear I: Computer Aided Design
Katelyn Burkhart	Biomedical Engineering	Spring 2011	Design of a fluid flow apparatus for exposure of cells to fluid shear II: Flow visualization
Kathleen Cooney	Biomedical Engineering	Spring 2011	Clinical bioinstrumentation and its applications to Parkinson's Disease (in co-op with Mass. General Hospital and Harvard U)
Austin McMann	Biomedical Engineering	Spring 2011	Mechanics of dental instrumentation and related human exposures
Alexander Werne	Biomedical Engineering	Spring 2011	Clinical bioinstrumentation and its applications to Parkinson's Disease (in co-op with Mass. General Hospital and Harvard U)
Christopher Lee	Biomedical Engineering	Summer 2011	Cardiovascular outcomes research and reporting
Stephen Elovetsky	Biomedical Engineering	Fall 2011	Measurements in biomechanics and hand-arm vibration exposures
Brian Coleman	Biomedical Engineering	Spring 2012	Applied biomechanics

Matthew Conklin	Biomedical Engineering	Spring 2012	Laboratory methods in biomaterials
Ana Groff	Biomedical Engineering	Spring 2012	Biomechanics of balance and center of gravity
Nihit Mody	Biomedical Engineering	Spring 2012	Single domain antibodies to target breast cancer antigens
Kyle Briggs	Biomedical Engineering	Fall 2012	Biomedical Engineering communications
Jeffrey Giara	Biomedical Engineering	Fall 2012	Developing methods and technology for next generation newborn sequencing
Brandon Calavan	Biomedical Engineering	Fall 2012	Optimal wheelchair design for multi-terrain use based on human performance
Thomas Bachant	Biomedical Engineering	Spring 2013	Electronic medical record (EMR) software for mobile devices
Derek Holyoak	Biomedical Engineering	Spring 2013	Applications of human biomechanics in human performance modeling
Kyle Ward	Biomedical Engineering	Spring 2013	Applications of human biomechanics in human performance modeling

RESEARCH AND ACADEMIC TRAINEES

INTERNATIONAL GRADUATE and UNDERGRADUATE

HIGH SCHOOL STUDENTS – LABORATORY INTERNSHIPS – *NIU*		
NAME	**HIGH SCHOOL**	**TRAINING PERIOD**

Arthur Bereznyakov	Stevenson High School, Illinois District 125	Summer 2020

INTERNATIONAL STUDENTS – LABORATORY INTERNSHIPS – *UCONN*			
NAME	**DEGREE PROGRAM (INSTITUTION)**	**AREA OF CONCENTRATION**	**TRAINING PERIOD**
Sonja Koneczny	B.S. (Hochschule Ulm, Germany)	Medical Engineering	9/1999-3/2000
Hansjorg Huber	B.S. (Hochschule Ulm, Germany)	Medical Engineering	9/2000-3/2001
Jochen Brunner	B.S. (Hochschule Ulm, Germany)	Medical Engineering	9/2000-3/2001
Andre Stielow	B.S. (Hochschule Ulm, Germany)	Medical Engineering	3/2001-8/2002
Michael Kraft	B.S. (Hochschule Ulm, Germany)	Medical Engineering	3/2001-8/2002
Ute Guenther	B.S. (Hochschule Ulm, Germany)	Computer Science	9/2001-2/2002
Max Singh	B.S. (Hochschule Ulm, Germany)	Medical Engineering	9/2001-2/2002
Ruth Nilges	B.S. (Hochschule Ulm, Germany)	Computer Science	2/2002-8/2003
Annett Krazter	B.S. (Hochschule Ulm, Germany)	Computer Science	9/2002-2/2003
Klaus Hofmann	M.S. (U Stuttgart, Germany)	Mechanical Engineering	3/2003-8/2003
Mario Losa Llorente	M.S. (U Madrid, Spain)	Mechanical Engineering	8/2011-6/2012
Andrea Sarasola Sans	M.S. (U Madrid, Spain)	Biomedical Engineering	8/2011-6/2012
Kenta Tsuchiya	M.S. (Kinki U, Japan) (*Undergraduate*)	Mechanical Engineering	8/2012

RESEARCH AND ACADEMIC TRAINEES

REGIONAL HIGH SCHOOL

HIGH SCHOOL STUDENTS – LABORATORY INTERNSHIPS – *TAMU-T*		
NAME	**HIGH SCHOOL**	**TRAINING PERIOD**

Jaden Varghese	Stevenson High School, Illinois District 125	Summer 2021
Riley Power	Texas High School, Texarkana ISD	Summer 2015, 2016

HIGH SCHOOL STUDENTS – LABORATORY INTERNSHIPS – *UCONN*		
NAME	**HIGH SCHOOL**	**TRAINING PERIOD**
Allyson Bower	East Windsor High School	Summer 2007
Sonali Bishnoi	Greater Hartford Academy of Math and Science	Summer 2008
Brian Andrew Finn	Greater Hartford Academy of Math and Science	Summer 2008
Merrill Gutkowski	Greater Hartford Academy of Math and Science	Summer 2008
Stephanie Ger	Greater Hartford Academy of Math and Science	Summer 2009
Alan Michael Havens	Greater Hartford Academy of Math and Science	Summer 2009
Joy Olayiwola	Greater Hartford Academy of Math and Science	Summer 2009
Christopher Naclerio	Greater Hartford Academy of Math and Science	Summer 2010
Jake Allen	Greater Hartford Academy of Math and Science	Summer 2010
Charles Ray	Greater Hartford Academy of Math and Science	Summer 2010
Taylor Malone	Greater Hartford Academy of Math and Science	Summer 2010
Anthony Valentine	Greater Hartford Academy of Math and Science	Summer 2010
Megan Boyer	Manchester High School	Fall 2012

STUDENT RESEARCH AND ACADEMIC GRANTS

GRADUATE / UNDERGRADUATE

NSF GRADUATE FELLOWSHIP AWARDS – PRINCIPAL ADVISOR / MENTOR – *UCONN*

NAME	TITLE	AREA OF CONCENTRATION	PROPOSAL SUBMITTED
Laura Cimino	The exposure response relationship in hand-arm vibration from the use of powered and non-powered construction tools	Biomedical Engineering	2002
Eric Bernstein	Development of a hybrid MR-hydraulic knee joint as next-generation prosthetic technology	Biomedical Engineering	2005
Jayme Coates	The biomechanics of human performance and device interaction with specific emphasis on females using hand tools designed with male anthropometry	Biomedical Engineering	2005

NASA CONNECTICUT SPACE GRANT COLLEGE CONSORTIUM STUDENT AWARDS – MENTOR / PROJECT LEAD			
NAME	**TITLE**	**AREA OF CONCENTRATION**	**AWARD PERIOD**
Past Graduate Fellowships			
Jennifer Corey	Identifying methods and technology for the future development of a force and tactile feedback system that can be incorporated into the EVA spacesuit glove	Biomedical Engineering	2000-2001
Jennifer Corey	Design of a parallel plate-flow chamber to expose a cultured monolayer of cells to a controlled fluid shear in a microgravity environment	Biomedical Engineering	2002-2003
Jayme Coates	Development of an autonomous motion tracking system to monitor astronaut movement within a spacesuit	Biomedical Engineering	2006-2007
Eric Bernstein	A system for monitoring biomechanics of human movement within a spacesuit	Biomedical Engineering	2007-2008
Katelyn Burkhart	Evaluation of Optiflex human motion tracking system	Biomedical Engineering	2011-2012
Marek Wartenberg	Surface electromyography control of a 2DOF robotic manipulator	Biomedical Engineering	2011-2012
Past Graduate Travel Grants			
Jayme Coates	Travel award to accompany Dr. Peterson to NASA/JSC in Houston, TX	Biomedical Engineering	2006
Erin Bill	Travel award to accompany Dr. Peterson to NASA/JSC in Houston, TX	Biomedical Engineering	2007
Current Graduate Fellowships			
Tanimu DeLeon-Nwaha	Changes in proprioception in astronauts from exposure to vehicle vibration	Biomedical Engineering	2013-2014
Recently Submitted Graduate Fellowships			

Kaitlyn Longo	Surface electromyography and infrared spectroscopy evaluation for determining the influence of gravitational forces on subjects with obstructed sleep apnea	Biomedical Engineering	invited to resubmit
Sampat Nidadavolu	Development of a parallel plate flow chamber to observe endothelial cell development in a fluid environment in micro-gravity	Biomedical Engineering	invited to resubmit
Christopher Tokarz	Design of an optic fiber-based motion capture system to monitor astronaut movement within a spacesuit	Biomedical Engineering	invited to resubmit
Past Undergraduate Fellowships			
Carter Erwin, Robert Maloof	Transcutaneous electrical nerve stimulation modulated by pressure transducers as a haptic interface for the NASA spacesuit glove	Electrical Engineering (Trinity College)	2006-2007
Brian Coleman	Robotic rehabilitative assistance and targeted muscle training device for low-gravity environments	Biomedical Engineering	2012-2013
Past Undergraduate Project Grants			
Brain Coleman, Eric Sands, James Vallieres	Robotic rehabilitative assistance and targeted muscle training device for low-gravity environments	Biomedical Engineering	2012-2013
Past Undergraduate Senior Design Grants			
Brain Coleman, Eric Sands, James Vallieres	Robotic rehabilitative assistance and targeted muscle training device for low-gravity environments	Biomedical Engineering	2012-2013
Past Undergraduate Travel Grants			
Thomas Bachant	Travel award to accompany Dr. Peterson to medical device and clinical communities in Puerto Rico for prototype development and clinical implementation and trials of mobile EMR device	Biomedical Engineering	2012-2013
Brain Coleman, Eric Sands, James Vallieres	Travel award to accompany Dr. Peterson to NASA/JSC in Houston, TX	Biomedical Engineering	2012-2013
Recently Submitted Undergraduate Fellowships			
Lia Bonacci	Robotic exoskeleton for astronaut rehabilitative assistance and strength enhancement	Biomedical Engineering	2013-2014
Recently Submitted Undergraduate Project Grants			
Lia Bonacci, Gregory Johnson, Dipanjan Saha	Robotic exoskeleton for astronaut rehabilitative assistance and strength enhancement	Biomedical Engineering	2013-2014
Recently Submitted Travel Grants			

Lia Bonacci, Gregory Johnson, Dipanjan Saha	Travel award to accompany Dr. Peterson to NASA/JSC in Houston, TX, to present project prototype and outcomes	Biomedical Engineering	2013-2014

***UCONN* HOLSTER SCHOLARS FIRST YEAR PROGRAM AWARDS – PRINCIPAL ADVISOR / MENTOR (honors.uconn.edu/special-programs/holster-scholars)**		
NAME	**TITLE**	**AREA OF CONCENTRATION**
Kayvon Ghoreshi	Re-designing the Epinephrine injection pen	Biomedical Engineering – Medical Devices and Biotechnology

SELECTED INVITED PRESENTATIONS

2023 Invited Seminar, “Vibration Transmissibility Studies on Gloves and on Exoskeletons and the Potential Influence on Standards Development”, Health Effects Laboratory Division (HELD), National Institute of Occupational Safety and Health (NIOSH), May 15

2022 Invited Speaker, “Standards for Industrial Exoskeletons and Exosuits”, Annual Conference of the Center of Research Expertise for the Prevention of Musculoskeletal Disorders (CRE-MSD 2022) at the University of Waterloo, Mississauga, Ontario, Canada, October 3

2021 Invited Seminar, “Exoskeleton Technologies”, Materials Handling Institute (MHI), Ergonomic Assist Systems and Equipment (EASE) special interest group, May 21 (*virtual*)

2021 Invited Workshop, “Human Exposure to Occupational Vibration”, American Society of Safety Professionals (ASSP), April 27 (*virtual*)

2021 Invited Workshop, “Exoskeleton Technologies – Application, Integration, and Standards”, American Society of Safety Professionals (ASSP), March 25 (*virtual*)

2020 Panelist, “When to use Exoskeletons as PPE”, ASTM International, November 19 (*virtual*)

2020 Invited Workshop, “Human Exposure to Occupational Vibration”, 93rd Annual Maine Safety and Health Conference, September 24 (*virtual*)

2020 Invited Workshop, “Exoskeleton Technologies – Application, Integration, and Standards”, 93rd Annual Maine Safety and Health Conference, September 24 (*virtual*)

2020 Invited Keynote, “Exoskeletons – Technologies, Assessment, and Standards”, 2020 Annual Meeting of the International Society of Occupational and Environmental Safety, September 17

2020 Panelist, “Exoskeleton Technologies – Giving Workforce Longevity”, General Aviation Manufacturers Association (GAMA) Innovation Webinar Series, July 31 (*virtual*)

2019 Invited Webinar Presentation, “Exoskeleton Standards”, American Association of State Compensation Insurance Funds (AASCIF) Safety and Technology Committee Meeting, July 19

2019 Invited Panelist, “Insurance Forum: Risk and Insurance Impacts of Using Wearable Robotics”, WearRA Con, Wearable Robotics Association, March 28, Scottsdale, AZ

2019 Invited Panelist, “Insurance Forum: Understanding Products Liability Insurance Issues”, WearRA Con, Wearable Robotics Association, March 28, Scottsdale, AZ

2019 Invited Keynote, “Exoskeletons - Meet the Standard”, Applied Ergonomics Conference (AEC), March 26, New Orleans, LA

2019 Invited Keynote, “ASTM International Committee F48 – Exoskeletons ad Exosuits – Current Activity”, Society of Casualty Safety Engineers, Chicago, IL

2018 Invited Speaker, ErgoX Symposium, HFES, “Exoskeletons in the Workplace - Assessing Safety, Usability, & Productivity”, October 1, Philadelphia, PA

2017 Invited Presentation, “Review of Research, Future Directions, and NIOSH Collaboration”, Health Effects Laboratory Division (HELD), National Institute of Occupational Safety and Health (NIOSH), January 25, Morgantown, WV

2016 Invited Speaker, Million Women Mentors (MWM) Arkansas Kickoff Event, Arkansas High School, December 12, Texarkana, AR

2016 Invited Panelist, “Cosmic Conversations: Science Fact vs. Science Fiction”, Texarkana Regional Humanities and Arts Council (TRAHC), April 8, Texarkana, TX

2015 Invited Speaker, “Stimulating Innovation in STEM”, Texas A&M University System Engineering Academic Partners and TEES Regional Division Heads Meeting, May 19, Weslaco, TX

2014 Invited Teacher Workshop Instructor, “How to Incorporate Engineering Education in the pre-K through 2nd Grade Curriculums”, CREC Academy of Aerospace and Engineering Elementary School, Rocky Hill, CT

2013 Invited Moderator, Panel on “BME Jobs in Industry”, BMES 2013 Annual Meeting, Seattle, WA

2013 Invited Webinar Moderator, “Developing an Industry Career in Biomedical Engineering”, April 17, Biomedical Engineering Society, Landover, MD

2013 Invited Keynote Speaker, “Biomedical Engineering – Understanding Career Options”, 2013 Bay Area Career Mixer, March 26, San Jose State University, San Jose, CA

2012 Keynote Speaker, “Simultaneous Measurement of Hand-Arm Vibration and Grip Force in Various Field Settings”, 20th Japan Conf on Human Resp to Vibration, Sept. 4, Osaka, Japan

2012 Invited Speaker, “Careers in Medicine and Biomedical Engineering”, Career Explorations Symposium, CREC Greater Hartford Academy of Math and Science (GHAMAS), Hartford, CT

2012 Invited Teacher Workshop Creator and Instructor, “BME Education can be Universally Applied”, CREC Medical Professions and Teacher Preparation Academy (MPTPA), Windsor, CT

2011 Invited Speaker, “Careers in Medicine and Biomedical Engineering”, Career Explorations Symposium, CREC Greater Hartford Academy of Math and Science (GHAMAS), Hartford, CT

2010 Invited Speaker, “Biomedical Engineering in STEM Education”, CREC Medical Professions and Teacher Preparation Academy (MPTPA), Windsor, CT

2010 Invited Speaker, “Careers in Medicine and Biomedical Engineering”, Career Explorations Symposium, CREC Greater Hartford Academy of Math and Science (GHAMAS), Hartford, CT

2009 Invited Speaker, 17th Japan Conference on Human Response to Vibration, Tokyo, Japan 2009

Invited Speaker, Puerto Rico Health Care Council, “Academic and Industrial Collaborations with the University of Connecticut Schools of Medicine, Dental Medicine, and Engineering and with BEACON”, San Juan, PR

2009 Invited Speaker, Career Explorations Symposium, CREC Greater Hartford Academy of Math and Science (GHAMAS), Hartford, CT

2008 Invited Presentation, 9th and 10th Grades, CREC Greater Hartford Academy of Math and Science (GHAMAS), Hartford, CT

2008 Invited Speaker, “Modeling the Mechanics of Human Performance, Exposure and Response”, Mechanical Engineering Seminar Series, UCONN

2007 Invited Speaker, Career Explorations Symposium, CREC Greater Hartford Academy of Math and Science (GHAMAS), Hartford, CT

2002 Invited Speaker, “The Biodynamics Laboratory at the University of Connecticut Health Center”, Biomedical Engineering Seminar Series, UCONN

2001 Invited Lecture, “Biodynamics and Human Exposure and Response”, Musculoskeletal Disability Services, Aetna Insurance, Hartford, CT

2000 Keynote Address, Graduation Ceremony of the Connecticut Math and Sciences Academy, “Biomedical Engineering Applications in the Space Program: EVA Suit and Tool Activities“, Hartford, CT

2000 Invited Lecture, “Biodynamics Research in the Space Program “, Connecticut Math and Sciences Academy, Hartford, CT

2000 Invited Lecture, “Biodynamics: Research and Applications”, Connecticut Math and Sciences Academy, Hartford, CT

2000 Invited Speaker, Seminar Series in Engineering, “A Method to Biodynamically Model Hand Tool Use”, WPI, Worcester, MA

1999 Invited Speaker, Department of Engineering Seminars, “A Method for the Comprehensive Biodynamic Evaluation of Manual Hammers”, Western New England University, Springfield, MA

1998 Invited Lecture, Post-Medical Graduate Education Courses (CME credited), “Ergonomics and Biomechanics” and “Ergonomics, Work Organization, and Biomechanical Modeling: Upper Extremity Disorders”, American College of Occupational and Environmental Medicine (ACOEM), Hynes Convention Center, Boston, MA

1995 Invited Speaker, Seminar on Mechanical Engineering and Manufacturing, “Exposing Cultured Cell Monolayers to Controlled Shear Stress Conditions”, WPI, Worcester, MA

1992 Invited Presentation, UMASS Medical Center and WPI Joint Research Projects

Symposium, “Arterial Stenosis Models”, School of Medicine, UMASS Medical Center, Worcester, MA

PEER-REVIEWED PUBLICATIONS

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1. Xia, T, Ziarati PT, Kudernatsch S, **Peterson DR**, “Effects of Exoskeleton Use on Human Response to Simulated Overhead Tasks with Vibration”, J Biomechanics, 2024 (*in process for submission*)
2. Xia, T, Ziarati PT, Kudernatsch S, **Peterson DR**, “Effects of Exoskeleton Use on Propagation of Overhead Hand-Transmitted Vibration Along the Arm and Trunk”, J Biomechanics, 2024 (*in process for submission*)
3. Kudernatsch S, **Peterson DR**, “Evaluation of Vibration Transmissibility of Commercially Available Gloves at the Palm and the Finger of the Hand”, Vibration, 2024 (*in process for submission*)
4. Kudernatsch S, **Peterson DR**, “Results of Gap Testing in Vibration Reducing Gloves following the new Annex C in ISO 10819”, Vibration, 2024 (*in process for submission*)
5. Kudernatsch S, **Peterson DR**, “Combining Ergonomic Observational Assessment Methods to Identify Potential Applicability of Occupational Exoskeletons at Work Sites”, Critical Reviews in Biomedical Engineering, 2024 (*preparing for resubmission*)
6. DeLeon-Nwaha T, **Peterson DR**,” Gender Differences in Upper-extremity Movement During a Touch Screen Task”, Human Factors, 2024 (*preparing for resubmission*)
7. Xia T, Ziarati PT, Kudernatsch S, **Peterson DR**, “Experimental Assessment of Effectiveness of ArmSupporting Exoskeleton for Overhead Work”, 7th Intl Digital Hum Mod Symp (DHM 2022), Iowa City, IA, 2022 (*full paper*)
8. Lowe BD, Billotte WG, **Peterson DR**, “ASTM F48 Formation and Standards for Industrial Exoskeletons and Exosuits”, IISE Trans Occ Ergo and Hum Fac, 2019;0:1-7
9. Upadhyay M, Shah R, Agarwal S, Vishwanath M, Chen P, Asaki T, **Peterson DR**, “Force system with vertical V-bends: A 3D in vitro assessment of elastic & rigid rectangular archwires”, J Vis Exp, 2018; (137)
10. DeLeon-Nwaha T, **Peterson DR**, “A Kinematic Approach to Understanding Performance in UpperExtremity Function during a Goal-Directed Man–Machine Interface Task in a Submariner Environment”, Critical Reviews in Biomedical Engineering, 2016; 44(4): 255-268
11. **Peterson DR**, Kudernatsch S, Asaki T, “Human-centered exoskeleton: Upper extremity strength augmentation in occupational settings”, Proc Waste Management Symposia, Phoenix, AZ, 2017 (invited full paper)
12. Kavanagh KR, Tsui Y, Cote V, Valdez T, Kudernatsch S, **Peterson DR**, “Pediatric laryngeal simulator using 3D printed models: A novel technique”, Laryngoscope, 2017; 127(4):E132-E137
13. Upadhyay M, Shah R, **Peterson DR**, Asaki T, Sumit Y, Agarwal S, “Force system generated by elastic archwires with vertical V bends: a three-dimensional analysis”, Eur J Orthod. 2017; 39(2):202-208
14. Vainstein F, **Peterson DR**, Kolosov D, “Using Multiple Scanning Devices for 3-D Modeling”, in Intelligent Systems for Computer Modelling, Stýskala V, Kolosov D, Snášel V, Karakeyev T, Abraham A, Editors, Springer, 2016:35-41
15. Valdez TA, Spegazzini N, Pandey R, Longo K, Grindle C, **Peterson DR**, Barman I, “Multi-color reflectance imaging of middle ear pathology in vivo”, Anal Bioanal Chem, 2015;407(12):3277-83
16. Dong RG, Welcome DE, **Peterson DR**, Xu XS, McDowell TW, Warren C, Asaki T, Kudernatsch S, Brammer AJ, “Tool-specific performance of vibration-reducing gloves for attenuating palm-transmitted vibrations in three orthogonal directions”, Intl J Ind Ergon, 2014;44(6):827-839
17. Pesce RE, Uribe F, Janakiraman N, Neace WP, **Peterson DR**, Nanda R, “Evaluation of rotational control and forces generated during first-order archwire deflections: A comparison of self-ligating and conventional brackets”, Eur J Orthod. 2014; 36(3):245-54

18. Brammer AJ, Yu G, Bernstein ER, Cherniack MG, Tufts J, **Peterson DR**, “Understanding speech when wearing communication headsets and hearing protectors with subband processing”, J Acoust Soc Am, 2014;136(2):671-681
19. **Peterson DR**, “Simultaneous measurement of hand-arm vibration and grip force in various field settings”, Proc 20th Japan Conf Human Resp Vibration, Osaka, Japan, 2012;1-5 (invited)
20. Asaki T, **Peterson DR**, “Design and implementation of a novel accelerometer mount for difficult vibration measurements in the field”, Proc 20th Japan Conf Human Resp Vibration, Osaka, Japan, 2012;14-22 (invited)
21. **Peterson DR**, Asaki T, Brammer AJ, Cherniack MG, “Novel method for quantifying noise and vibration exposures from dental instruments in a dental hygiene population”, Proc 17th Japan Conf Human Resp Vibration, Tokyo, Japan, 2009;70-77 (invited)
22. **Peterson DR**, Brammer AJ, Cherniack MG, “Exposure monitoring system for day-long vibration and palm force measurements”, Intl J Ind Ergon 2008;38(9-10):676-686
23. Cherniack MG, Brammer AJ, Lundstrom R, Morse TF, Neely G, Nilsson T, **Peterson DR**, Toppila E, Warren N, Diva U, Croteau M, Dussetschleger J, "The effect of different warming methods on sensory nerve conduction velocity in shipyard workers occupationally exposed to hand-arm vibration”, Int Arch Occup Env Health 2008;81(8):1045-1058
24. **Peterson DR**, Brammer AJ, Cherniack MG, “Long-duration vibration and grip force measurements using a custom-built data logger and palm-mounted sensors”, Proc 11th Intl Conf on Hand-Arm Vibration, Bologna, Italy, June 2007, 583-588
25. Cherniack MG, Brammer AJ, Morse, TF, **Peterson DR**, Warren N, Dussetschleger J, “Segmental sensory nerve conduction velocity in vibration exposed cohorts”, Proc 11th Intl Conf on Hand-Arm Vibration, Bologna, Italy, June 2007, 91-98
26. Brammer AJ, Yu G, **Peterson DR**, Bernstein ER, Cherniack MG, "Hearing protection and communication in an age of digital signal processing: Progress and prospects", Proc 9th Intl Congress on Noise as a Pub Health Hazard, Ledyard, CT, 2008:1-8
27. Cherniack M, Brammer AJ, Lundstrom R, Morse TF, Neely G, Nilsson T, **Peterson DR**, Toppila E, Warren N, Diva U, Dussetschleger J, "Syndromes from segmental vibration and nerve entrapment: Observations on case definitions for carpal tunnel syndrome", Int Arch Occup Env Health 2008;81(5):661-669
28. Cherniack MG, Brammer AJ, Lundstrom R, Meyer JD, Morse TF, Neely G, Nilsson T, **Peterson DR**, Toppila E, Warren, N, “The Hand-Arm Vibration International Consortium (HAVIC): Prospective studies on the relationship between power tool exposure and health effects”, J Occup Env Med 2007;49(3):289-301
29. Brammer AJ, **Peterson DR**, Cherniack MG, Diva UA, “Temporary changes in mechanoreceptor-specific vibrotactile perception to stimuli simulating impact power tools”, Inter-Noise 2006, Institute of Noise Control Engineering, Iowa State Univ, Ames, IA, 2006:1-7
30. Mehrotra M, Saegusa M, Wadhwa S, Voznesensky O, **Peterson DR**, Pilbeam CC, “Fluid flow induces Rankl expression in primary murine calvarial osteoblasts”, J Cellular Biochem 2006; 98(5):1271-1283
31. Cherniack MG, Brammer AJ, Lundstrom R, Meyer JD, Morse TF, Neeley G, Nilsson T, **Peterson DR**, Toppila E, Warren N, Atwood-Sanders M, Michalak-Turcotte C, Abbas U, Bruneau H, Croteau M, Fu RW, “Nerve conduction and sensorineural function in dental hygienists using high frequency ultrasound handpieces”, Amer J Indus Med 2006; 49(5):313-326
32. Brammer AJ, **Peterson DR**, Cherniack MG, Gullapalli S, “Improving the effectiveness of communication headsets with active noise reduction: Influence of control structure”, In: RTO-MP-HFM-123, New Directions for Improving Audio Effectiveness, North Atlantic Treaty Organization, Neuilly-sur-Seine, France, 2005: p.6-1 - p.6-8
33. Brammer AJ, Crabtree RJ, **Peterson DR**, Cherniack MG, “Active headsets: Influence of control structure on communication signals and nosie reduction”, ACTIVE 2004, Institute of Noise Control Engineering, Iowa State Univ, Ames IA, 2004:1-10
34. Cherniack MG, Morse TF, Brammer AJ, Lundstrom R, Meyer J, Nilsson T, **Peterson DR**, Toppila E, Warren N, Fu RW, Bruneau H, Croteau M, “Vibration exposure and disease in a shipyard: A 13-year revisit”, Am J Indus Med 2004; 45(6):500-512

35. Cherniack MG, Brammer AJ, Lundstrom R, Meyer J, Morse TF, Nealy G, Nilsson T, **Peterson DR**, Toppila E, Warren N, Fu RW, Bruneau H, "Segmental nerve conduction velocity in vibration exposed shipyard workers", Int Arch Occup Environ Health 2004; 77(3):159-176
36. Brammer AJ, Crabtree RB, **Peterson DR**, Cherniack MG, "Intelligibility in active communication headsets: Role of error path in active noise reduction and speech reproduction", *ICBEN*, edited by R. de Jong, T. Houtgast, E.A.M. Franssen, W.F. Hofman, 2003:58-64
37. Cherniack MG, Brammer AJ, Meyer J, Morse TF, **Peterson DR**, Warren N, Fu RW, "Skin temperature recovery from cold provocation in workers exposed to vibration: A longitudinal study", Occup Environ Med 2003; 60(12):962-968
38. Morse TF, Michalak-Turcotte C, Atwood-Sanders M, Warren N, **Peterson DR**, Bruneau H, Cherniack MG, "A pilot study of hand and arm musculoskeletal disorders in dental hygiene students", J Dental Ed, 2003; 77(3):173-179
39. Wadhwa S, Godwin SL, **Peterson DR**, Epstein MAF, Pilbeam CC, "Fluid flow induction of cyclooxygenase2 gene expression in osteoblasts by fluid flow is dependent on an ERK signaling pathway", J Bone Miner Res 2002, 17(2):266-274
40. Morse T, Warren N, Cherniack MG, Fletcher F, **Peterson DR**, "The creation of ergonomic data sheets for hazard communication of work-related musculo-skeletal disorders", Appl Occup Environ Hyg 2001, 16(8):823-831

PEER-REVIEWED SHORT PUBLICATIONS AND ABSTRACTS

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1. Ziarati PT, Xia T, Kudernatsch S, **Peterson DR**, "Exoskeleton Use on Shoulder Muscle Activity in Overhead Work with Vibrations", Proc Amer Soc Biomech, Knoxville, TN, 2023
2. Ziarati PT, Xia T, Kudernatsch S, **Peterson DR**, "Method to Study the Influence of Passive UpperExtremity Exoskeleton Systems and Posture on Human Exposure to Tool-Induced Vibrations", Proc Biomed Eng Soc Annual Meeting, San Antonio, TX, 2022
3. Dickinson K, Asaki T, **Peterson DR**, "Translation from Research to Practice: Development of Anti-Vibration Glove Selection Tool", Proc Biomed Eng Soc Annual Meeting, San Antonio, TX, 2022
4. Vondra I, Kudernatsch S, **Peterson DR**, "Creating an Accurate Aneurysm Model using Patient-Specific Imaging for In Vitro Flow Loop Studies of Endothelial Cell Mechanotransduction", Proc Biomed Eng Soc Annual Meeting, 2020 - *Virtual*
5. Kudernatsch S, Wolfe C, Ferdowsi H, **Peterson DR**, "Machine Learning Approach to Hand-Arm Motion Prediction for Active Upper Extremity Occupational Exoskeleton Devices", Proc Hum Fac Erg Soc, 2020 - *Virtual*
6. Azad A, Tahernezhadi M, **Peterson DR**, "Deepening Engineering Design Experience: A Novel Approach to Senior Design", Proc Am Soc Eng Edu IL-IN Section Conf, Purdue U, West Lafayette, IN, 2019
7. DeLeon-Nwaha T, **Peterson DR**, "Changes in standing posture and body weight resulting from upper extremity momentum during the execution of touchscreen tasks", Proc Biomed Eng Soc Annual Meeting, Atlanta, GA, 2018
8. Patil Y, Korampally V, Shapiro T, Dotseth K, Horn J, Griffin D, Pushparajan D, **Peterson DR**, "Microfluidic programmable lab-on-paper devices", Proc Biomed Eng Soc Annual Meeting, Atlanta, GA, 2018
9. Kudernatsch S, **Peterson DR**, "Biomechanical Testing of an Upper-Extremity Occupational Exoskeleton – Preliminary Report on Methodologies and Pilot Data", Proc Hum Fac Erg Soc, Philadelphia, PA, 2018
10. Asaki T, Naron C, Kudernatsch S, **Peterson DR**, "Low-Cost Mobile Data-Logging System to Track Patient Condition and Location", Proc Biomed Eng Soc Annual Meeting, Phoenix, AZ, 2017
11. DeLeon-Nwaha T, **Peterson DR**, "A Comprehensive Technique to Investigate Differences in Upperextremity Movement During a Touch Screen Task within an Open and a Constrained Environment", Proc Biomed Eng Soc Annual Meeting, Phoenix, AZ, 2017

12. Kudernatsch S, **Peterson DR**, “Robotic Exoskeleton for Upper Extremity Strength Augmentation: REUESA”, Proc Biomed Eng Soc Annual Meeting, Phoenix, AZ, 2017
13. Deleon-Nwaha T, **Peterson DR**, “A Kinematic Approach to Understanding Gender Differences in Upper Extremity Function During a Man-Machine Interface Task in a Submariner Environment:, Proc Biomed Eng Soc Annual Meeting, Minneapolis, MN, 2016
14. Kudernatsch S, Nidadavolu S, **Peterson DR**, “Average Aneurysm Wall Stress and Displacement in the Common Carotid Artery Increase with an Increase in Aneurysm Size: Initial Results using Fluid-Structure Interaction Simulations”, Proc Biomed Eng Soc Annual Meeting, Minneapolis, MN, 2016
15. Baril J, Horton K, Malkowski J, **Peterson DR**, “Ergonomic study and redesign of a medical device to enhance usability in female surgeon populations”, Proc Biomed Eng Soc Annual Meeting, Tampa, FL, 2015
16. Kudernatsch S, **Peterson DR**, “Low-cost method to create in vitro surrogates of common vessel bifurcations for cell plating and flow studies”, Proc Biomed Eng Soc Annual Meeting, Tampa, FL, 2015
17. Nagelschmidt M, Miesse A, Hodgkinson G, **Peterson DR**, “Evaluation and feasibility of a biodegradable magnesium staple”, Proc Biomed Eng Soc Annual Meeting, Tampa, FL, 2015
18. **Peterson DR**, Nidadavolu, Kudernatsch S, “Modeling changes in flow conditions throughout simulated aneurysm expansions”, Proc Biomed Eng Soc Annual Meeting, Tampa, FL, 2015
19. Strange K, Sparks C, Kudernatsch S, Asaki T, **Peterson DR**, “Electroencephalograph-based interface to control portable robotic exoskeleton for neuromuscular rehabilitation”, Proc Biomed Eng Soc Annual Meeting, Tampa, FL, 2015
20. Valdez T, Kavanagh KR, Kudernatsch S, **Peterson DR**, Cote V, “Modular 3D printed laryngeal models for surgical simulation”, Proc Am Soc Pedi Otolaryng, Boston, MA, 2015
21. Asaki T, Kudernatsch S, **Peterson DR**, “Preventing hand-arm vibration injuries by selecting gloves based on tool-specific vibrations”, Proc Biomed Eng Soc Annual Meeting, San Antonio, TX, 2014
22. Deleon-Nwaha T, **Peterson DR**, “Modeling influence of whole body vibration on upper extremity neuromuscular performance during space vehicle launch”, Proc Biomed Eng Soc Annual Meeting, San Antonio, TX, 2014
23. Kudernatsch S, Asaki T, **Peterson DR**, “Wearable biomechanical sensor system for vibration exposure and grip force measurements”, Proc Biomed Eng Soc Annual Meeting, San Antonio, TX, 2014
24. Longo K, **Peterson DR**, Valdez TA, “Novel device to diagnose otitis media using spectroscopy and digital imaging”, Proc Biomed Eng Soc Annual Meeting, San Antonio, TX, 2014
25. Pallares E, Kudernatsch S, Nidadavolu SS, **Peterson DR**, “Determining the influence of aneurysm geometry and location on flow through a carotid bifurcation”, Proc Biomed Eng Soc Annual Meeting, San Antonio, TX, 2014
26. Asaki T, Kudernatsch S, **Peterson DR**, “Incorporating a finger adapter into ISO 10819 to measure the vibration transmissibility of gloves at the fingers”, Proc 5th Am Conf on Human Vibration, Guelph, Ontario, Canada, June 2014
27. Asaki T, **Peterson DR**, “Measuring the vibration transmissibility of gloves using different excitation conditions”, Proc 5th Am Conf on Human Vibration, Guelph, Ontario, Canada, June 2014
28. Asaki T, **Peterson DR**, “Selecting tool-specific vibration–reducing gloves using ISO 5349 and ISO 10819 Measurements”, Proc 5th Am Conf on Human Vibration, Guelph, Ontario, Canada, June 2014
29. Kudernatsch S, Asaki T, **Peterson DR**, “Design of a hand-mounted palm and finger adapter system to measure palm and finger forces and vibration exposures”, Proc 5th Am Conf on Human Vibration, Guelph, Ontario, Canada, June 2014
30. Kudernatsch S, Asaki T, **Peterson DR**, “Transmissibility of ISO 10819 palm adapters made from conventional and 3D printed materials”, Proc 5th Am Conf on Human Vibration, Guelph, Ontario, Canada, June 2014
31. Dong RG, Welcome DE, **Peterson DR**, Hewitt S, Xu S, McDowell TW, Warren C, Asaki T, Kudernatsch S, Brammer AJ, Cheriack MG, “Tool-specific effectiveness of vibration-reducing gloves for attenuating palmtransmitted vibration”, Proc 5th Am Conf on Human Vibration, Guelph, Ontario, Canada, June 2014

32. Longo K, **Peterson DR**, Valdez TA, “Bimodal approach using spectroscopy and digital imaging to assist otitis media eiagnosis”, Proc 40th NE Bioeng Conf, Boston, MA, 2014
33. Nidadavolu SS, Kudernatsch S, **Peterson DR**, “Simulations involving three-dimensional cell monolayers in a parallel plate flow channel yields non-uniform shear stress distributions over cell surfaces”, Proc Biomed Eng Soc Annual Meeting, Seattle, WA, 2013
34. Tokarz CA, Kudernatsch S, Nidadavolu SS, **Peterson DR**, “Novel method to generate surrogate threedimensional cell monolayer surfaces for use in computational fluid dynamic simulations”, Proc Biomed Eng Soc Annual Meeting, Seattle, WA, 2013
35. McIsaac JH, **Peterson DR**, “Two low-cost tracking systems for 3-D imaging of the brachial plexus using 2D ultrasound”, Proc 4th NWAC World Anesthesia Conf, Bangkok, Thailand, 2013
36. **Peterson DR**, Tantawy T, Seils D, Kueck AS, “Instrument tip displacements during manual and powered laparoscopic stapler use”, Soc Amer Gastroint Endosc Surg, Baltimore, MD, 2013
37. **Peterson DR**, Seils D, Tantawy T, Kueck AS, “Comparison of the time needed to complete a staple firing sequence between a manual and powered laparoscopic stapler”, Soc Amer Gastroint Endosc Surg, Baltimore, MD, 2013
38. Nidadavolu SS, **Peterson DR**, “Computational validation of uniform flow behavior within a large scale parallel plate flow chamber”, Proc Biomed Eng Soc Annual Meeting, Atlanta, GA, 2012
39. Boutros PJ, Lee CX, Mathews SJ, Wilkens PJ, **Peterson DR**, McIsaac JH, “Novel 3-D brachial plexus reconstruction from 2-D ultrasound using XBOX Kinect tracking”, Proc Biomed Eng Soc Annual Meeting, Atlanta, GA, 2012
40. Brammer AJ, Yu G, Asaki T, **Peterson DR**, Eaman MJ, Cherniack MG, “Considerations for designing the next generation of vibrotactile threshold measuring instruments”, Proc 4th Am Conf on Human Vibration, Hartford, CT, 2012:97-98
41. Knapp RH, **Peterson DR**, Brammer AJ, Cherniack MG, “Second generation device for measuring daylong vibration exposure and grip force levels during hand-tool use”, Proc 4th Am Conf on Human Vibration, Hartford, CT, 2012:119-120
42. Tornifoglio SV, **Peterson DR**, “Minimum number of thin-film force sensors needed to represent overall hand grip force during tool use”, Proc 4th Am Conf on Human Vibration, Hartford, CT, 2012:50-51
43. **Peterson DR**, Seils D, Tantawy T, Kueck A, Roberts MKE, “Novel method for comprehensively assessing the biomechanical risks associated with the use of minimally-invasive surgical instruments”, Proc Soc Am Gastroint Endosc Surg, San Diego, CA, 2012:207
44. **Peterson DR**, Seils D, Tantawy T, Kueck A, Roberts MKE, “Review of surgical ergonomics research associated with minimally invasive surgery”, Proc Soc Am Gastro Endosc Surg, San Diego, CA, 2012:197
45. **Peterson DR**, Seils D, Tantawy T, Kueck A, Roberts MKE, “Comparing the biomechanical characteristics of manual and powered laparoscopic stapler designs”, Proc Soc Am Gastro Endosc Surg, San Diego, CA, 2012:197
46. Tornifoglio SV, **Peterson DR**, “Determining the minimum number of thin-film force sensors required to represent actual hand grip forces”, Proc 38th NE Bioeng Conf, Stony Brook, NY, 2012:223-224
47. Brammer AJ, Yu G, Bernstein ER, Cherniack MG, Tufts JB, **Peterson DR**, "Intelligibility of speech corrupted by nonlinear distortion", Proc 10th International Congress on Noise as a Public Health Problem, London, UK, 2011:287-292
48. Bernstein ER, Brammer AJ, Yu G, Cherniack MG, **Peterson DR**, "Integrating speech enhancement with subband active noise control to improve communication in hearing protectors", J Acoust Soc Am 2011; 130:2469
49. Asaki T, **Peterson DR**, Brammer AJ, Cherniack MG, “Changes in vibration and mechanical performance of high speed air turbine dental handpieces during clinical use”, Canadian Acoustics 2011; 39(2):120
50. Brammer AJ, Sutinen P, Toppila E, Pyykko I, Cherniack MG, Eaman MJ, **Peterson DR**, Starck J, “Longitudinal study of Suomussalmi forestry workers I – Vibrotactile thresholds”, Canadian Acoustics 2011; 39(2):18-19
51. **Peterson DR**, Brammer AJ, Toppila E, Cherniack MG, Sutinen P, Eaman MJ, “Longitudinal study of Suomussalmi forestry workers II – Vibration exposure”, Canadian Acoustics 2011; 39(2):40-41

52. Asaki T, **Peterson DR**, “Reducing biomechanical exposures to dental professionals by translating lab and clinical research into practice”, Proc Biomed Eng Soc Annual Meeting, Hartford, CT, 2011
53. Bernstein ER, Brammer AJ, Yu G, Cherniack, **Peterson DR**, “Integrating speech enhancement with active hearing protectors to improve communication”, Proc Biomed Eng Soc Annual Meeting, Hartford, CT, 2011
54. Qadri MJ, **Peterson DR**, “Translating long duration human movement into musculoskeletal injury prevention strategies”, Proc Biomed Eng Soc Annual Meeting, Hartford, CT, 2011
55. Solomito MJ, Lee MC, **Peterson DR**, “Biomechanical Assessment of the Rotational Aspect of the Spine in Patients with Scoliosis”, Proc Biomed Eng Soc Annual Meeting, Hartford, CT, 2011
56. Tichon DJ, **Peterson DR**, “Finite Element Analysis of the Medial Meniscus During Rear End Low-Speed Collisions”, Proc Biomed Eng Soc Annual Meeting, Hartford, CT, 2011
57. Qadri MJ, **Peterson DR**, “A method for modeling long-duration joint motion”, Proc IEEE 37th NE Bioeng Conf, Troy, NY, 2011:1-2
58. Solomito MJ, Lee MC, **Peterson DR**, “Using Motion Analysis Technology to Reduce Radiographs in Patients with Scoliosis”, Proc IEEE 37th NE Bioeng Conf, Troy, NY, 2011:3-4
59. Tichon DJ, **Peterson DR**, “Effect of rear end low-speed collisions on the meniscus”, in Proc IEEE 37th NE Bioeng Conf, Troy, NY, 2011:5-6
60. Brammer AJ, Cherniack MG, Toppila E, Sutinen P, Lundstrom R, Nilsson T, Neely G, Morse T, Sinha A, Eaman MJ, **Peterson DR**, Warren N, “Towards a quantitative sensory test for hand numbness”, Proc 3rd Am Conf on Human Vibration, Iowa City, IA, 2010:41-42
61. **Peterson DR**, Asaki T, Brammer AJ, Cherniack MG, “Noise and vibration exposures to dental hygienists”, Proc 3rd Am Conf on Human Vibration, Iowa City, IA, 2010:49-50
62. Brammer AJ, Yu G, Bernstein ER, Cherniack MG, **Peterson DR**, “Predicting the intelligibility of speech corrupted by nonlinear distortion”, Canadian Acoustics 2010; 38(3):80-81
63. Bernstein ER, Brammer AJ, Yu G, Cherniack MG, **Peterson DR**, “Ear cup selection for feedforward active noise reduction hear protectors”, Canadian Acoustics 2010; 38(3):82-83
64. Yu G, Brammer AJ, Swan K, Tufts JB, Cherniack MG, **Peterson DR**, “Relationships between the modified rhyme test and objective metrics of speech intelligibility”, J Acoust Soc Am 2010; 127:1903
65. **Peterson DR**, Warren N, “Characterizing WMSDs through direct postural measurements in a nursery population”, Proc Northeast Center for Agricultural and Occupational Health, Cooperstown, NY, 2009
66. **Peterson DR**, Asaki T, Brammer AJ, Cherniack MG, “Sound and Vibration Exposures from Polishers and Scalars in a Dental Hygienist Population”, Canadian Acoustics 2009, 37(3):218-219 (Invited)
67. Brammer AJ, Yu G, Bernstein ER, **Peterson DR**, Cherniack MG, Tufts JB, “Field measurement of sound pressure at the eardrum”, Inter-Noise 2009, Institute of Noise Control Engineering: Innovations in Practical Noise Control, Ottawa, Canada, 2009
68. Brammer AJ, Yu G, Bernstein ER, **Peterson DR**, Cherniack MG, Tufts JB, “Monitoring sound pressure at the eardrum for hearing conservation”, Canadian Acoustics 2009; 37(3):108-109 (Invited)
69. Cherniack MG, Brammer AJ, Lundstrom R, Morse T, Neeley G, Nilsson T , **Peterson DR**, Toppila E, Warren N, Bjor B, “Age and Neuropathies in Vibration Exposed Manual Workers”, Canadian Acoustics 2009; 37(3) (Invited)
70. Morse TF, Cherniack MG, **Peterson DR**, Warren N, Sinha A, “Assessment of static standing exposures among manufacturing workers”, Proc. 138th Annual Meeting of Amer. Pub. Health Assoc., Philadelphia, PA, 2009
71. Brammer AJ, Cherniack MG, Toppila E, Sutinen P, Lundström R, Nilsson T, **Peterson DR**, Warren N, Morse TF, "Influence of change in work practices on vibrotactile perception: Preliminary analysis of a prospective study of forestry workers", Proc 2nd Am Conf on Human Vibration, Chicago, IL, 2008:1-2
72. Bernstein ER, **Peterson DR**, “Next generation device for recording daylong hand-arm vibration and grip force waveforms”, Proc IEEE 33rd NE Bioeng Conf, Stony Brook, NY, 2007:100-101
73. Bill EJ, **Peterson DR**, “Distal upper extremity motion during keyboarding”, Proc 33rd NE Bioeng Conf, Stony Brook, NY, 2007:102-103
74. Chowaniec MJ, **Peterson DR**, “Dynamic loading of the shoulder during the Codman exercise”, Proc 33rd Northeast Bioeng Conf, Stony Brook, NY, 2007:5-6

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HANDBOOKS

1. Bronzino JD, **Peterson DR**, The Biomedical Engineering Handbook, 4th Edition (4 Volume Set), CRC Press/Taylor and Francis, FL, 2015 ○ Biomedical Engineering Fundamentals,
   Volume I (1,180 pages) ○ Medical Devices and Human Engineering,
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PATENTS AND INVENTION DISCLOSURES

Patent Applications

1. **Peterson DR**, Kudernatsch S, Valdez T, Modular Surgical Simulation Trainer for the Tracheoesophageal and Laryngeal Complex (US20170169733A1, 12/15/2017)
2. **Peterson DR**, Kudernatsch S, Birk J, Syringe Hand Grip Adapter (17/929,371, 09/02/2022)
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Disclosure Notifications

1. **Peterson DR**, Berggren J, Frank C, Keene J, Matthews K, Robotic Mobility Walker
2. **Peterson DR**, Asaki T, Kudernatsch S, Practical Design of an Anti-vibration Glove
3. **Peterson DR**, Kudernatsch S, Robotic Exoskeleton for Upper Extremity Strength Augmentation
4. **Peterson DR**, Kudernatsch S, Parallel Plate Flow Chamber for Precision-controlled Cellular Studies
5. **Peterson DR**, Smart Epinephrine Delivery System and Communication Protocol
6. **Peterson DR**, Smart Albuterol Inhalation and Monitoring System
7. **Peterson DR**, Smart Diaper System

RECENTLY SUBMITTED PROPOSALS - GRAND TOTAL $16,532,494

RECENTLY SUBMITTED NIH INITIATIVE ($532,494)

2024-2026 NIOSH R03, $149,000, “Determination of the Effects of Occupational Exoskeleton and Human Body Interaction on Lumbar Spine Loads using 3D Body Scan” (Role: Co-I; Responsibilities: provide mentorship to project PI (Assistant Professor Ting Xia), research related activities including providing expertise in exoskeleton and intellectual input and discussion for future studies, provide input on data collection and analysis, and assist with progress and final reports, etc.) – Conduct a feasibility study on using 3D body scans to determine the impact of body shape on exoskeleton-human body interactions and related health effects. This investigation will develop a 3D body scan database of varying body shapes considering obesity and gender, determine the impact of body shape on the exoskeleton-human body interaction, and determine the influence of body shape on lumbar spine loads when using exoskeleton. This will lead to a quantitative analysis method of the exoskeleton-human body interaction using 3D body scans to better predict the effectiveness of occupational exoskeleton in reducing MSD in varying worker populations and working environments.

2021-2023 (Top 15% Score, Resubmission in Progress) *1R21 OH011986-01*, NIOSH, $383,494, “Influence of Passive Upper-Extremity Exoskeleton Systems on Human Exposure to ToolInduced Vibrations” (Role: PI; Responsibilities: primary author of proposal, lead all research efforts, manage budget and hiring, apply for and manage IRB, execute experiments, oversee data analyses and reports, etc.) – Investigation on the influence of passive upper-extremity exoskeleton systems on human exposure to tool-induced vibrations, with the intent to reliably and effectively characterize the transmission of vibration energy from tool to body via an exoskeleton. Intensive laboratory and field assessments will begin to develop an understanding of exoskeleton and tool combinations and will contribute to defining the exposure-response relationships associated with passive exoskeleton use and structuring effective intervention strategies. The long-term goal of this work is the protection of worker health and safety from unforeseen hazards and unanticipated consequences related to the simultaneous use of passive upper-extremity exoskeletons and vibratory tools.

RECENTLY SUBMITTED NSF INITIATIVES ($16,000,000)

2023-2033 *INQ-22-01062*, NSF, Type 2 Regional Innovation Engine (a.k.a., NSF Engines) (Lead Institution: U Discovery Partners Institute and University of Illinois, Chicago), $160,000,000, “D2D: The Design to Delivery (D2D) Engine Catalyzing the Manufacturing of the Future” (Role: Co-PI; $15,000,000 over 10 years; Responsibilities: Leading the workforce development aspect of the proposed project, curricular and research related activities including providing expertise in workforce development, curricular structure, assessment, continuous improvement, data interpretation, manuscript preparation, presentations, etc.) – The Engine proposes to democratize the manufacturing ecosystem via modular, open, and transparent processes that will allow the formation of reconfigurable supply chains that adapt and respond automatically to the changing market and environmental landscape. Co-PI will lead efforts to develop, support, improve, and sustain the D2D workforce training ecosystem within the region, especially including community colleges that specialize in manufacturing training for the entire Chicagoland region.

2023-2025 *INQ-22-00651*, NSF, Type 1 Regional Innovation Engine (a.k.a., NSF Engines), $1,000,000, “Powering Prosperous Prairies: Revolutionizing Manufacturing, Reimagining Agriculture, and Renewing the Workforce and Communities of Northern Illinois” (Role: Co-I; Responsibilities:

Support networked partnerships with manufacturers, school districts, regional community colleges, national labs, and economic development councils, and broaden participation of a diverse group of students in talent and workforce development for manufacturers) – The Engine proposes to develop specific, use-inspired technological solutions and strategies to increase Industry 4.0, prepare for the 4th generation agricultural revolution, and foster greater diversity, equity, and inclusion (DEI).

FUNDED GRAND TOTAL $22,768,683

APLU / NIST FUNDED ECONOMIC INITIATIVE ($90,000)

7/16/21-6/30/22 *70NANB20H136*, APLU / NIST-MEP Economic and Community Development Initiative (on *Leveraging Universities to Advance Manufacturing Innovation through the MEP Network*), $90,000, "NIU-IMEC Partnership to Advance Manufacturing Innovation" (Role: PI; Responsibilities: primary author of proposal, led all research, economic, and political development efforts, managed budget and hiring, progress and final reports, met regularly with APLU, NIST, economic development entities, government agencies, etc.) – *One of three proposals chosen nationally*. Led the university collaboration with MEP-funded Illinois Manufacturing Excellence Center (IMEC) to leverage university and MEP resources and assist small- to medium-sized manufacturers (SMMs) with organizational improvement and Industry 4.0 innovation across the State of Illinois in advanced manufacturing, particularly in artificial intelligence (AI). Target SMMs are in metal manufacturing, especially for broadscope influence on Illinois' aerospace, automotive, and agricultural industries. The overarching goal was to develop a flexible and adaptable framework to position metal SMMs in the State of Illinois for a leading role in advancing Industry 4.0 practices by SMMs. The project served as a national model towards replication of effective low-cost, high-touch collaborative strategies for meeting workforce and R&D needs of SMMs, as well as for effective, practical, and sustainable technology adoption.

CONGRESSIONAL APPROPRIATION REQUESTS ($4,000,000)

4/1/02-9/30/03 *2-1544* - *Congressionally Directed Award*, NASA, $2,500,000, "Development of a Laboratory for Improving Communication between Air Traffic Controllers and Pilots" (Role: Co-PI and coauthor of request; Responsibilities: co-author of proposal, led engineering research team, managed all budgets, contracts, and hiring, oversaw new construction and renovations, etc.) – Designed, developed, and implemented a superior facility to investigate the effects of noise on people, to research noise reduction, and to develop electro-acoustic devices, especially to improve air traffic communications. Research has been directed toward improving speech communication and situational awareness in adverse environments and understanding the factors influencing hearing loss using facilities including an anechoic chamber and a reverberation room.

1/1/23-9/30/24 *Congressionally Directed Award*, Department of Education, $1,500,000, “Microchip Research and Training, including Equipment” (Role: Co-I and Initiator and co-author of request; Responsibilities: support education and research team and assist in managing all budgets, contracts, and hiring, oversee any lab renovations, etc.) – This project responds to the call for advancing microchip manufacturing in the US and enhancing US competitiveness in the microchip domain, with the goal to establish a state-of the art microchip innovation and workforce development hub at NIU campus through transforming an existing 4,200 sq.ft. cleanroom lab space to a state-of the art fab-lab dedicated to microchip research, design, workforce development and small business innovation and prototyping.

STATE LEGISLATIVE APPROPRIATION REQUESTS ($3,450,000)

9/1/15-8/31/17 The State of Texas, $1,800,000, “Nursing Program Expansion at Texas A&M University - Texarkana” (Role: Principal and Budget Manager) – Legislative Appropriation Request (LAR) to establish a stand-alone Bachelor of Science in Nursing (BSN) in the College of STEM at TAMU-T to serve the educational and workforce needs of the northeast Texas region, including addressing critical shortages in nursing in regional hospital and health care systems. In addition, this funding will assist in establishing a Family Nurse Practitioner (FNP) program to help address the shortage of physicians in rural communities and, with significant collaboration with the region’s expansive health care system, fill needed roles locally.

9/1/15-8/31/17 The State of Texas, $1,650,000, “Student Success Program at Texas A&M University – Texarkana” (Role: Minor Budget Manager) – Legislative Appropriation Request (LAR) to allow for expansion of existing Student Success Program to include methods such as peer mentoring, community service learning, and undergraduate student research. This is a university-wide initiative, where the College of STEM has hired a new engineering laboratory coordinator to work with students on hands-on labs, research projects, and experiential learning.

NIH FUNDED RESEARCH INITIATIVES ($13,483,516)

6/15/23-11/30/23 *75D30123P16383*, NIOSH, $24,000, “Pilot Testing of Knee Savers in Deep Squatting Tasks” (Role: Co-I; Responsibilities: provide mentorship to project PI (Assistant Professor Ting Xia), provide input on data collection and analysis, and assist with progress and final reports, etc.) – Obtain human biomechanical data required to develop a biomechanical model of the human deep squatting process with and without a knee saver device, with experimental data generated by conducting a series of tests of knee savers in deep squatting tasks.

9/30/99-9/29/03 *R01 OH04025*, NIOSH, $638,194, “Temporal and Impulsive Characteristics of Hand Arm Vibration” (Role: Co-PI; Responsibilities: primary author of proposal, led all research efforts, managed budget and hiring, applied for and managed IRB, wrote progress and final reports, etc.) – Repetitive shock and vibration are routinely encountered with the use of powered and non-powered hand tools and have been associated with injuries to the proximal arm, shoulder, and neck and with neurologic and neurovascular disorders of the hand. This research explored the effects of tool impulse, temporal pattern, and high and low frequency acceleration on acute physiological responses, especially since standards for the control of disease from vibration (e.g., ISO 5349) have been shown to be inapplicable to a wide range of tools having a large impact components.

9/30/00-9/29/06 *1U01 OH07312*, CDC/NIOSH, $1,775,775, “Exposure Response Relationship in Hand Arm Vibration” (Role: Co-Investigator; Responsibilities: co-author of proposal, led international engineering research teams, led international research teams at cohort field sites, managed all budgets, contracts, and hiring, co-authored progress and final reports, etc.) – Exposure to vibrating tools produces several characteristic disorders effecting tissues of the upper extremity (e.g., Hand-Arm Vibration Syndrome (HAVS)). This research included the combined plan of investigators from Canada, Finland, Sweden and the United States and studied four vibration-exposed cohorts in Europe and North America (ship builders and dental hygienists in Connecticut, truck manufacturers in Sweden, and forestry workers in Finland). Research involved detailed vibratory and biomechanical assessments of cohorts, including individual monitoring of daily work routines using data loggers and sensors, to understand real time biomechanical exposures and variables.

7/1/02-6/30/11 *AR047673*, NIH, $3,700,000, “Mechanical Loading of Bone and Prostaglandins” (Role: CoInvestigator; Responsibilities: contributed to proposal, led all engineering research) – Mechanical loading of bone maintains bone mass and skeletal integrity, where loading stimulates new bone formation while unloading causes bone loss. Mechanical strains in bone can generate interstitial fluid flow that exerts fluid shear stress (FSS) on cells and induces Cyclooxygenase (COX-2), a major enzyme for prostaglandin responses in bone that enhances bone formation and resorption and mediates the effects of loading or unloading. The goal of this research was to understand how mechanical signals via FSS are transmitted into biochemical signals and what role COX-2 plays in these processes.

7/1/06-6/30/11 *1 U19 OH008857*, NIOSH, $1,513,380, Center for the Promotion of Health in the New England (CPH-NEW) Workplace (Lead Institution: U Mass., Lowell), “Health Improvement through Training and Employee Control” (Role: Co-Investigator (UCONN); Responsibilities: contributed to proposal, led engineering research and development, led research teams at cohort field sites, managed lab and field budgets, etc.) – This Cooperative Agreement award implemented and evaluated multiple models that integrated health promotion with occupational health interventions, with a strong emphasis on musculoskeletal, cardiovascular, and mental health outcomes, on the underlying role of work organization, and on the importance of worker involvement in program design and implementation. CPH-NEW remains an ongoing joint initiative between the University of Massachusetts Lowell (Work Environment, Community Health, Nursing) and the University of Connecticut (Occupational and Environmental Medicine, Occupational Health Psychology, Allied Health), as well as with numerous private and public sector partners.

8/1/06-7/31/11 *5 R01 OH008669*, NIOSH, $1,546,508, “Active Hearing Protectors and Audibility of Critical Communications” (Role: Co-Investigator; Responsibilities: contributed to proposal, led engineering research and development, managed budget and hiring) – Hearing protection devices (HPDs) worn in noisy environments by aircraft air and ground crews, military personnel, emergency responders, and persons in industry, mining, and construction interfere with the ability to communicate and hear warning signals. An HPD that incorporates active noise reduction was developed that: 1) improved speech intelligibility of a built-in communication channel, 2) maintained the perception of alarm signals external to the HPD and, 3) maintained attenuation of environmental noise.

4/1/08-3/31/13 *5 R01 OH008929-01A2*, NIOSH, $2,088,487, “Aging, Musculoskeletal Disorders and Work Capacity” (Role: Co-Investigator; Responsibilities: contributed to proposal, led all engineering research and development, led research teams at cohort field sites, managed lab and field budgets, etc.) – Given aging workforces, this research assessed the effects of biomechanical, psychosocial, organizational and non-workplace factors on normal age related changes in musculoskeletal function and performance. In this lab- and field-based work, particular emphases was placed on gender differences and on identifying subpopulations that may be at increased risk of exceeding age expected changes in musculoskeletal function and performance.

9/1/09-8/31/14 *5 R01 OH008997*, NIH, $2,187,172, “Glove and Tool Intervention to Reduce Hand-Arm Vibration” (Role: Co-PI; Responsibilities: primary author of proposal, led all research efforts, managed budget and hiring, managed IRB, wrote progress reports, etc.) – This research provided a practical solution for protection against the exposure of hand-arm vibration from power tools from an intervention study that investigated the pairing of available power tools with anti-vibration (AV) gloving/materials. Pairing was optimized through laboratory-based modeling of glove-tool combinations for specific tools and then implemented in field studies to verify AV performance and if exposures can be successfully lowered to a level where symptomatic disease can be ultimately, and realistically, prevented.

9/21/11-8/31/12 *1R13EB014689-01*, NIH/NIBIB, $10,000, “Biomedical Engineering Society 2011 Annual Meeting” (Role: PI; Responsibilities: sole author and manager) – Financial support, in part, to publish the Program Book and to cover the entire expense of constructing and burning the proceedings on CD in a searchable PDF format. Research outcomes involved analyzing and reporting on impact of funding support.

NSF FUNDED RESEARCH INITIATIVES ($272,548)

9/21/11-8/31/12 *1144998*, NSF, $20,000, “Biomedical Engineering Society 2011 Annual Meeting” (Role: PI; Responsibilities: sole author and manager) – Funding support for student participation, including travel cost assistance and awards, from underrepresented minority and undergraduate and graduate students, post-baccalaureates, post-doctorates, junior faculty, and mentors/faculty scientists in the biomedical and behavioral sciences. Funding support also for distinguished speaker participation and, in part, publication printing costs. Research outcomes involved analyzing and reporting on impact of funding support.

8/1/20-7/31/23 *2019748*, NSF MRI, $252,548, “Acquisition of a Zeiss LSM 900 with Airyscan 2 for Research and Education at Northern Illinois University” (Role: co-PI) – Funding support for to acquire a high-end confocal laser scanning microscope (CLSM), the Zeiss LSM 900 with Airyscan 2, to address a wide range of basic, biological research questions. Shared use of the cutting-edge

capabilities of the Zeiss LSM 900 with Airyscan 2 will generate new knowledge by NIU's curiosity-driven research programs and will vitally impact each member's research program. Moreover, the new knowledge will be shared with science-interested public, first generation college students and graduate students to transform and improve the lives of citizens, thereby enhancing NIU's strong commitment to science, technology, engineering and math (STEM) education by training the next generation of skilled scientists in the leading edge of imaging technologies.

NASA FUNDED RESEARCH INITIATIVES ($285,809)

6/1/00-5/31/01 NASA Connecticut Space Grant Consortium (CSGC), $12,000, "Development of a Biodynamic Model of Terrestrial Geologic Fieldwork with Implications on Martian Spacesuit and Martian Tool Development" (Role: PI; Responsibilities: sole author and research manager) – Determined the feasibility of using direct biodynamic and human performance modeling as a basis for establishing design criteria for Martian spacesuit and tool design.

3/1/06-7/31/07 *NCC5-601*, NASA/EPSCoR, (Lead Institution: U Hartford), $13,000, "Development of Analytical Tools to Assist with Space Hardware Sizing and Selection" (Role: PI; Responsibilities: sole author and research manager) – Developed efficient hardware- and software-based protocols to assist NASA engineers with size selection of spacesuit components and hardware based on an astronaut's anthropometry.

6/1/07-5/31/08 NASA/Johnson Space Center (*contract*), $10,000, "Development of an Autonomous Motion Tracking System to Monitor Astronaut Movement within a Spacesuit" (Role: PI; Responsibilities: sole author and research manager) – This work involved the development and configuration of an inertial motion capture system that is able to accurately and autonomously measure human motion within a spacesuit.

10/18/10-9/30/12 NASA/Johnson Space Center (*contract*), $20,000, "Improvement of an Optic Fiber Motion Analysis System to Autonomously Monitor Astronaut Movement within a Spacesuit" (Role: PI; Responsibilities: sole author and research manager) – Contracted by NASA to determine if novel NASA-funded STTR technology, which was deemed dysfunctional and inoperable, could be made functional and used to autonomously measure human motion within a spacesuit in actual microgravity environments.

7/1/18-6/30/20 NASA Illinois Space Grant Consortium (ISGC), $82,501, "NIU/ISGC NASA Internships, Fellowships, and Scholarships, STEM Engagement, Institutional Engagement, Educator Professional Development Project" (Role: PI; Responsibilities: grant management) – Funding for faculty research and student scholarships.

2/1/18-1/31/20 NASA Illinois Space Grant Consortium (ISGC), $77,500, "NIU/ISGC NASA Internships, Fellowships, and Scholarships, STEM Engagement, Institutional Engagement, Educator Professional Development Project" (Role: PI; Responsibilities: grant management) – Funding for faculty research and student scholarships.

10/1/19-5/15/21 NASA/Jet Propulsion Laboratory (*contract*), $10,000, "Robotic Ultra-Sensitive Chemical Monitoring System for Human Safety" (Role: PI; Responsibilities: provide support to project team, including to the junior faculty mentoring the team) – Contracted by JPL for an

undergraduate student team to develop a vibrational testing framework to identify an optimal design for the housing structure of the robot.

10/1/19-5/15/21 NASA/Jet Propulsion Laboratory (*contract*), $10,000, “Distributed Carbon Dioxide Sensor Array for the International Space Station – Part I” (Role: PI; Responsibilities: provide support to project team, including to the junior faculty mentoring the team) – Contracted by JPL for an undergraduate student team to develop a wireless carbon dioxide sensor array to monitor CO_2 within the ISS.

6/1/20-5/31/21 NASA Illinois Space Grant Consortium (ISGC), $20,808, “NIU/ISGC NASA Internships, Fellowships, and Scholarships, STEM Engagement, Institutional Engagement, Educator Professional Development Project” (Role: PI; Responsibilities: grant management) – Funding for faculty research.

10/1/20-5/15/21 NASA/Jet Propulsion Laboratory (*contract*), $10,000, “Distributed Carbon Dioxide Sensor Array for the International Space Station – Part II” (Role: PI; Responsibilities: provide support to project team, including to the junior faculty mentoring the team) – Contracted by JPL for a second undergraduate student team to continue to develop a wireless carbon dioxide sensor array to monitor CO_2 within the ISS.

10/1/21-5/15/22 NASA/Jet Propulsion Laboratory (*contract*), $10,000, “Wireless Sensor Network Ground Testing for Eventual Application on the International Space Station” (Role: PI; Responsibilities: provide support to project team, including to the junior faculty mentoring the team) – Contracted by JPL for an undergraduate student team to develop a wireless sensor network ground testing system for use within the ISS.

8/16/22-5/15/23 NASA/Jet Propulsion Laboratory (*contract*), $10,000, “Portable Tunable Laser Spectrometer Array for Monitoring Trace Gases in the International Space Station” (Role: PI; Responsibilities: provide support to project team, including to the junior faculty mentoring the team) – Contracted by JPL for an undergraduate student team to integrate air flow sensors into the existing network to collect air flow data within the ISS.

DoD FUNDED RESEARCH INITIATIVES ($14,999)

10/1/14-9/31/17 *N00014-15-1-2538*, Office of Naval Research (ONR), $14,999, “Technique to Measure Visual Proprioception with Respect to Human Performance” (Role: PI; Responsibilities: sole author and research manager) – This study is assessing two objectives as part of the NAVY’s Simulation Toolset for Analysis of Mission, Personnel and Systems (STAMPS): 1) model the intrinsic variability of a mixed gender sample representing a cross section of human variability during a Human Machine Interface (HMI) task and 2) assist in developing a systematic representation of crew teams and ship systems as individual entities. The first is being accomplished via visual proprioception, where visual proprioception is the appreciation of movement and position of the body and parts of the body based on information from visual and joint receptor senses, and the second by combining the visual proprioception results with results from a Job-Demand-Control (JDC) survey.

DoE FUNDED RESEARCH INITIATIVES ($15,000)

7/1/16-1/31/17 *28-S172812*, Department of Energy/Sandia National Laboratory subcontract, $15,000 (administered through Texas A&M University in College Station – PI: Robin Murphy), "Robotic Exoskeleton for Upper Extremity Strength Augmentation (REUESA)" (Role: PI (subcontract); Responsibilities: research and development manager and sole author of subcontract award) – Pilot funding to address deficits in worker performance through the development of an affordable and portable strength augmentation exoskeleton system that is extremely precise, has several modes of operation and control, and can be configured and programmed for use in various occupational settings. (This pilot work is expected by DoE to lead to a larger proposal for >$2.5M.)

TEXAS A&M UNIVERSITY SYSTEM FUNDED RESEARCH INITIATIVES ($25,000)

1/1/15-12/31/17 *AREA 41 Challenge Grant*, Chancellor of Texas A&M University System, $25,000, "Development and implementation of low-cost medical devices and technologies as a result of direct collaboration with clinical and industrial partners" (Role: PI; Responsibilities: sole author and research and development manager) – Focuses on the facilitation of the collaboration with clinical partners from regional health care environments to identify low-cost practical solutions to medical device challenges. Device concepts are defined directly by a clinician or through direct work with a clinician in their clinical environments (e.g., surgical ORs, patient exam rooms, clinical and therapy settings, etc.). Concepts are researched and prototypes are created with the goal of accelerating the development of novel low-cost technologies and identifying future device and health care trends.

SBIR / STTR FUNDED INITIATIVES ($90,000)

8/1/04-7/31/05 *SBIR A04-199*, DoD/Army, $69,152 (+$20,848 from company), Phase I, "An Active Noise Reduction Communication Earplug for Helicopter Crew" (Role: Engineer/Scientist, project with Etymotic Research, Inc.; Responsibilities: co-author proposal, led engineering research) – Developed and tested an active noise reduction (ANR) earphone system, that was worn inside the ear canal and used by helicopter crew for speech communication and hearing protection. The earplug-like system (in combination with an HGU-56 helmet) provided effective passive attenuation for all frequencies, produced clear speech quality, and is compatible with U.S. Army safety requirements, particularly with respect to potential injuries caused by side impacts.

CLINICAL AND TRANSLATIONAL SCIENCE FUNDED INITIATIVES ($50,000)

9/1/13-8/31/14 *CiCATS* (Connecticut Institute for Clinical and Translational Science), $50,000, "MultiWavelength Video Otoscopy for the Diagnosis of Otitis Media" (Role: PI;

Responsibilities: primary author and research manager, with Dr. Tulio Valdez from Connecticut Children's Medical Center) – Developed, and clinically tested, a novel video otoscope to study and understand the optical characteristics of the tympanic membrane and middle ear using multiple light spectrum wavelengths in normal and abnormal ears. The project also included the development of novel image processing and recognition algorithms that have immediate clinical applications.

INDUSTRY FUNDED RESEARCH INITIATIVES ($841,811)

5/1/98-4/30/99 Stanley Toolworks, Inc, $59,373, "Measured Ergonomic Characteristics of Hammers" (Role: PI; Responsibilities: sole author and research manager) – Developed a comprehensive and novel approach to biodynamically model hammers to determine the biomechanical and human performance characteristics influenced by hammer design and hammer use.

9/1/98-8/31/99 Office Ergonomics Research Committee (OERC), $23,105, "Constructing a Taxonomy of Use for Computer Mouse Users" (Role: Co-PI; Responsibilities: primary author and research manager) – This work involved the identification of reproducible basic generic patterns of mouse use in order to create a taxonomy and develop a methodology to evaluate the use of the computer mouse in actual office environments. The basic patterns/styles of computer mouse use in a healthy office population where characterized through structured videotaping, visual ergonomic work-site assessments, and mouse use questionnaires.

10/1/99-9/30/01 CT Innovations, $250,000, "Ergonomics Technology Center – Laboratory Development" (Role: PI; Responsibilities: co-author of proposal, led engineering research team, managed all budgets, contracts, and hiring, oversaw renovations, etc.) – Support from the state of CT to develop and implement the Biodynamics Laboratory and its collaboration with CT industry.

1/15/05-6/30/06 DentalEZ, $33,227, "Investigating the Acoustic and Vibration Behavior of the Solara Titanium Handpiece" (Role: PI; Responsibilities: sole author and research manager) – Investigated the sound and vibration performance of a new handpiece design.

11/1/05-12/31/09 National Dental Handpiece Repair Association, $10,000, "A Comparison Study of the Performance Characteristics of New, Generic Aftermarket, and Rebuilt High-Speed Air Turbines in Dental Handpieces" (Role: PI; Responsibilities: sole author and research manager) – Measured the mechanical performance characteristics of various dental handpieces using different types of turbines during actual clinical use and lifespan.

11/15/06-5/14/07 DentalEZ, $22,802, "Modifying and Testing the Solara Titanium Handpiece" (Role: PI; Responsibilities: sole author and research manager) – Developed an optimal Solara titanium handpiece based on the results of the sound and vibration performance investigations and developed the manufacturing process to convert existing Solara stock.

7/1/07-6/30/08 NEC/NYCAMH, $19,831, "Pilot Testing Direct Postural Measurement Instrumentation in a Nursery Population" (Role: Co-PI; Responsibilities: primary author and research manager) – Assessed the practicability of continuously monitoring the upper extremity motions of nursery workers using electro-goniometers and a custom-built long-duration datalogger.

4/15/09-4/14/10 NEC/NYCAMH, $15,000, “Characterizing WMSDs through Direct Postural Measurement Instrumentation in a Nursery Population” (Role: PI; Responsibilities: sole author and research manager) – Investigated the day-long upper extremity motions and movement disorders associated with nursery work using electro-goniometers and a custom-built long-duration datalogger on a population of workers. Predictive models of musculoskeletal risk were also developed based on the analyses of the long-duration waveforms.

1/1/11-12/31/12 Covidien, $175,494, “Ergonomic Evaluation of Surgical Staplers” (Role: PI; Responsibilities: sole author of proposal, led all research efforts, managed budget and hiring, managed IRB, wrote progress and final reports, etc.) – Measured the biomechanical and mechanical performance characteristics of two manual surgical staplers and one powered surgical stapler with the goal of understanding the musculoskeletal and neuromuscular exposures to operators and the associated risks to patients.

7/1/20-12/31/20 Illinois Manufacturing Excellence Center (IMEC), $100,000 “NIU-IMEC Senior Design Collaboration” (Role: PI; Responsibilities: mentor a junior faculty member on all research efforts, managing contract budget, IRB, reports, etc.) – Senior design program support and support to accelerate deeper collaborations with manufacturers.

11/20/20-5/20/21 LifeFitness, $21,388, “Evaluation of Tread Mill Designs” (Role: co-PI; Responsibilities: mentor a junior faculty member on all research efforts, managing contract budget, IRB, reports, etc.) – Examine the effects of two treadmill suspension systems on physiological response and user experience in walkers and runners.

12/1/21-5/4/24 Milwaukee Tools, $111,591, “Evaluation of Gloves and Materials” (Role: PI; Responsibilities: mentor a post-doctoral faculty member on all research efforts, managing contract budget, IRB, reports, etc.) – Conduct ISO testing of gloves and materials for vibration performance for eventual use in the design of novel vibration-reducing gloves, as well as the testing of the novel glove designs.

COMMUNITY COLLEGE FUNDED INITIATIVES ($150,000)

1/24/13-9/31/14 Massachusetts Life Sciences Center, $150,000, “Build It, Test It, Use It, Fix It: Life Sciences Education at Springfield Technical Community College (STCC)” (Role: Initial Program Coordinator, Responsibilities: co-author of proposal and project manager) – State-funded capital planning grant that determined an academic course of action and the related capital resources it most needs, in order to create and furnish up-to-date, industry-aligned, teaching laboratories to adequately educate and train a skilled technical life sciences workforce to serve the Southern New England region.

PROPOSALS SUBMITTED BUT *NOT* FUNDED - GRAND TOTAL $37,296,101

SYNOPSIS OF RESEARCH PROPOSALS SUBMITTED BUT *NOT* FUNDED ($33,292,701)

11/4/97 Office Ergonomics Research Committee (OERC), $100,000, “Development of a dynamic upper extremity model, integrating digital image capture and surface electromyography” (Role: PI) – This proposal seeks to image, and analyze, hand and distal arm motion in a non-diseased working population of computer keyboarders. It also seeks to correlate extrinsically imaged hand-arm movement with intrinsic muscle activity through customized surface electromyography. To produce an integrated upper extremity model, based on EMG and movement analysis, and to develop a technique modification outcomes study based on movement analysis and sEMG monitored muscle function.

4/1/98 Donaghue Foundation, $500,000, “Model of Upper-Extremity Biodynamics” (Role: PI) – Dynamic model of the upper extremity utilizing advanced imaging and measurement techniques and taking as its subject the integrated function of joints, muscles and tendons, peripheral nerves, and their central nervous system control. Focus on the movement characteristics of the wrist and the elbow and the sensory properties of mechanoreceptors in the fingertips.

10/1/99 NIOSH, $1,000,000, “Biodynamic Assessment With Digital InfraRed Motion Capture Technology for Keyboard Technique Retraining in Office Workers: A Clinical Intervention Study” (Role: Co-PI) – Detailed, prospective clinical intervention study of work related upper extremity musculoskeletal disorders in office keyboard workers using opto-electronic motion capture technology to assess the aspects of individual manual computer keyboarding technique including both keyboarding and numeric keying patterns ("intrinsic ergonomics"). This work adapts an advanced quantitative imaging method to a problem of clinical pathophysiology and intervention, investing early intervention and potentially, baseline primary prevention with minimally invasive tools. The work also aims at developing an integrated treatment model for repetitive strain injury patients, involving combined standardized medicine, physical medicine, and static and intrinsic ergonomic interventions.

10/31/99 Goldtouch, $10,000 (*industrial contract*), “Quantitative Laboratory Testing of a Prototype Keyboard Design” (Role: PI) – Perform laboratory testing on ten healthy experienced subjects using optoelectronic motion capture, surface electromyography, and force sensors to assess, and compare, the design of a prototype keyboard.

8/15/00 Bionx, $50,000 (*industrial contract*), “Modeling the Human Performance of ACL Reconstruction with Implication on the Design and Development of the Implant Tool” (Role: PI) – Determination of amount of force/torque required to drive implant into fixation position, comparisons between existing and new handle designs to include biomechanical, kinetic and human factors measures, and quantitative determination of effects of increasing the handle surface area on force/torque.

9/31/00 Hamilton Sundstrand Space Systems Intl. (HSSSI), $188,500 (*industrial contract*), “Research Partnership to Improve the Current Ergonomic Prevention Programs at HSSSI” (Role: PI) – Improve understanding of the specific risk factors and mechanisms that lead to reported computer-related injuries within HSSSI, which will facilitate improved intervention strategies designed to reduce or eliminate the hazards and reduce MSD incidence. Use of opto-electronic motion capture technology and linked measurement modalities (i.e., sEMG and force measurements) to predict injury potential based on specific postures, motions, and force requirements.

7/1/03 NIOSH, $1,000,000, “Oscillatory effects from segmental vibration on the peripheral nerve and vascular systems” (Role: Co-PI) – To examine human mechanoreceptor responses to oscillatory vibration within the physiological range (16-1,000 Hz) and to expand the assessment of physiological response by examining effects of exposure on finger blood flow and on finger micro-circulation and autonomic control. To establish more understanding of the relationships between physiological responses and the frequency of vibration with the goal of translating this understanding into an improved methodology for measuring and assessing occupational exposure to hand-transmitted vibration. This includes the development of a physiologically based exposure-assessment model that approaches tool design and protection that is targeted and implementable. (*Note that this proposal was completed but was ultimately not submitted*.)

1/10/03 CT Innovations, $436,883, “Development of a Prototype Vibration System for Integration into the Vivax Mobility System for Therapeutic Stimulation” (Role: PI) – To develop a prototype vibration stimulation system for integration into the current Vivax Mobility System (i.e., patient bed) for the treatment of various conditions including bed sores and circulatory deficiencies.

3/17/04 Knee-Necks, $17,100 (*industry contract*), “Biothermal Investigation of the Knee-Necks Insulating Leg Wrap for Lower Extremity Warming and Protection of Cutaneous Circulation” (Role: PI) – Model the thermal insulating properties of the Knee-Necks wrapping garment and compare to other commercially-available, leg-warming systems.

3/31/04 Selicor, $54,600 (*industry contract*), “Evaluation of SeliTherm Therapeutic Warming System” (Role: PI) – Determine the thermal quality and uniformity of the generated RF field by measuring the temperature distributions produced. Determine the optimal conditions (e.g., power requirements) for generation and duration of heating for maintaining stable regional, cutaneous and sub-cutaneous temperatures. Develop an accurate predictive model for thermal exposure based on experimental results and heat transfer theory. Quantify the differences between RF garment designs and recommend new designs, if needed.

7/30/04 *SBIR/STTR*, NIH, $99,000, “Next Generation Mobility System” (Role: Co-PI, with Vivax Medical Corp.) – Development of a patient mobility system using rigorous models of biomechanics and ergonomics. Product will be beneficial in effective and efficient patient care and assist in the hospital, rehabilitation, or hospice environments.

1/27/07 NIH, *R21*, $72,000, “Development of an Automatic Small Sample Multi-Molecular Fractionator” (Role: Co-PI) – Develop protocols and instrumentation to automatically separate mRNA, DNA and proteins from a single small sample. Provide a standard method to process samples such that complex molecular analyses can be obtained in a reasonable time with the least effort for almost any research application.

3/31/08 Covidien, $156,294 (*industry contract*), “Comparison Study of the Biomechanical Performance of Various Laparoscopic Dissector Designs” (Role: PI) – Comparison between existing and new dissector handle designs. Quantitatively determine amount of muscle force and dissector force/torque is required to effectively and efficiently operate each dissector. Quantitatively determine how handle differences influence the functional performance of the human and/or dissector.

8/5/08 *SBIR/STTR*, NIH, $99,415, “Mobile Workstation for Reduction of Muscular Skeletal Disorders” (Role: Co-PI, with Accuposture) – Bring the ergonomic benefits of height adjustability to today’s workforces in an effort to improve the planning, implementation, and to sustain effective measures for controlling work-related musculoskeletal disorders. Effectively reducing the incidence of MSDs will contribute to reduced costs, increased business productivity, and improved overall health.

4/1/09 Center for Construction Research and Training (CPWR), $35,830, “Improvement to the Solutions for Powered Hand Tools in Construction Solutions” (Role: PI) – Develop and implement an online construction safety database that describes hazardous exposures in core construction job tasks and presents control methods in a clear and simple web-based format that is easily accessible to employees and workers.

4/27/09 NIH CTSA Grant, *1U54RR026077*, $20,000,000, “Connecticut Institute for Clinical and Translational Science” (Role: Associate CTSA Core Director) – Become the leader in four areas that are critical to translational research that includes: application of basic science discoveries to the development and conduct of clinical trials, identification of best practices through research and clinical trials involving community healthcare providers and patients, development of science of dissemination that moves best practices rapidly into the healthcare delivery system and the community, both locally and nationally, and training of trans-disciplinary research teams.

9/1/09 Center for Construction Research and Training (CPWR), $750,000, “Comparing Tool Selection to Technique Training to Determine Influence on Limiting Musculoskeletal Risks” (Role: PI) – An intervention trial to determine if the use of ergonomic tools favorably alters work technique and reduce injury risk or if individual technique training on conventional tools is the more effective at lowering risk of injury and ease of tool use.

9/28/09 NSF STEP Program (Role: Participant, with U Hartford lead institution) – Encourage talented students from underrepresented populations in Connecticut to enter STEM training areas and pursue STEM-related careers. Through this initiative, faculty, staff, and graduate students in the Biodynamics Laboratory at Univ. of Conn. will educate students about biomedical engineering research and application.

11/1/09 R01, NIOSH, $2,928,931, “Comparing Tool Change and Technique Training to Study Impact on Biomechanical Risk” (Role: PI) - This study is directed to manual and power tool use in the construction industry and it addresses, through the mechanism of an intervention, whether the use of experimentally determined “best-designed” ergonomic tools favorably alters work technique and is therefore likely to reduce injury risk, or whether individual technique training on conventional tools is the more effective approach for lowering risk of injury and promoting ease of use and efficiency.

9/30/09 RC1 – NIH / NIAMS, $999,875, “Modeling Joint Function by Integrating Intrinsic Joint Structures with Extrinsic Dynamics” (Role: PI) – Modeling joint biomechanics using computer simulations of joint movement constructed using person-specific structure and function obtained from three-dimensional MRI or CT images and measured joint dynamics in the laboratory.

9/30/09 RC, NIH, $999,000, “Potential of In-Canal Sound Sensing to Improve Sound Quality of an Open Ear Mold Hearing Aid” (Role: Co-Investigator) – Development of open-ear hearing aid that increases communication effectiveness and incorporates active and passive noise control.

2/1/10 R01 NIOSH, $1,500,000, “Speech Understanding in Call Center Operators with an Aging Workforce” (Role: Co-Investigator) – Study population groups from various communication hubs (tele-centers) and, in particular, establish the prevalence of self-reported hearing loss affecting communication and its impact on work function and quality of life by questionnaire. This information will be used to identify subgroups of affected persons, and control groups, for further study. Members of the subgroups will be invited to participate in a clinical evaluation of their degraded speech understanding, and also in laboratory trials of a concept headset device that we propose to develop to aid communication for such persons.

9/9/10 Createc Consulting LLC, $31,416 (industrial contract), “Study of the Bioheat Transfer of a Cooling Garment Concept for Use in Firefighting” (Role: PI) – Comparison of bioheat transfer between traditional fire protection gear with an added phase change material (PCM) cooling garment and without a PCM cooling garment. Determination of how the PCM cooling garment influences the functional performance of the human and the role bioheat transfer plays in performance.

3/4/11 *5 R01 OH008669* (renewal), $1,500,000, “Application of active noise control to improve speech intelligibility in the communication channel of a hearing protector while optimizing noise reduction” (Role: Co-Investigator) – Develop an active hearing protector concept to eliminate troublesome barriers to use by providing increased comfort to wearers and compatibility with other headgear, as well as improved speech intelligibility and audibility and localization of warning sounds.

12/9/11 *PAR 10-272* (Parent R13/U13), NIOSH, $20,000, “The Fourth American Conference on Human Vibration in 2012” (Role: PI) – Provide financial support, in part, to cover various conference expenses, such as equipment, facility, and supply costs, student awards and stipends, guest speaker expenses, and to publish the Program Book and to cover the entire expense of constructing and burning the Proceedings on CD in a searchable PDF format.

6/1/12 Intuitive Surgical, Inc., $50,000 (*industry grant*), “Development of a Novel Ergonomic Surgical Chair to Improve Surgeon Posture and Decrease Fatigue during Robotic Surgery” (Role: PI) – Assess proper sitting posture and ergonomic positioning of the surgeon during robotic surgery and develop a standardized protocol for robotic surgery. Design a surgeon chair specifically for the robotic console.

3/15/13 Alpha Foundation, $500,000, “Risk Factors and Control Measures for Musculoskeletal Injuries Related to Cable Pulling in Underground Mines” (Role: Co-PI) – Implementation of a systematic ergonomic evaluation approach to identify and mitigate risk factors for musculoskeletal injuries related to cable pulling operations in deep mines.

12/20/13 Office of Naval Research, $50,000, “The Effect Visual Proprioception has on Human Performance” (Role: PI) – Modeling the variability of mixed-gender groups during human-machine interface tasks and analyze gender differences in visual and joint proprioception.

7/1/18 Sears Manufacturing Co., $47,323 (*industry contract*), “Seat Comfort Study on Sears and Competitor Seat Products for Tractors” (Role: PI) – Create an objective comfort measurement method to be used on Sears and competitor products that produces quantitative measurements to rate operator comfort. Utilize methodology for comfort comparison between Sears and multiple competitors’ products.

8/15/20 *SBIR/STTR*, DoD, $96,534, “Optimized Energy-Attenuating Seat Design for Ground Vehicles” (Role: co-PI with Navatek, LLC) – Computational and physical testing of energy-attenuating seat designs.

EDUCATIONAL PROPOSALS SUBMITTED BUT *NOT* FUNDED ($4,003,400)

3/28/01 Whitaker Foundation, Special Opportunities, $948,000, “A Laboratory-Based Curriculum in Biodynamics and Human Physiology for Engineers and Physicians” (Role: PI) – Development of laboratory-based learning curriculum for BME education. Establishment of a fellowship program in BME for graduate physicians and medical students. Development of an environment where engineers, scientists, and physicians can interact in the cooperative study of BME.

3/28/01 Whitaker Foundation, Special Opportunities, $1,000,000, “An Inquiry-based Approach to Life Science Education for Biomedical Engineering Students” (Role: Co-Investigator, with BEACON) – Utilize faculty resources within the Biomedical Engineering Alliance and Consortium (BEACON) to create a new laboratory-based, undergraduate biomedical engineering course program addressing life science topics. Develop a new set of courses predicated on an inquiry-based approach to life science instruction.

3/15/08 Burroughs Wellcome Fund, “Integrating Public Health with Laboratory and Biomedical Engineering Training” (Role: PI) – An emphasis on working life and components of health behavior changing over the adult lifespan requires understanding of adaptations to stress, aging and physical capacity. Cross-disciplinary training integrates biomedical engineers, who are trained in the principles of exposure assessment, particularly real-time extended sensing, with public health and/or biomedical science students through three tracks: engineering and human performance track in the public health PhD program, biometrics and physiology track in the BME Ph.D. program, and post-doctoral fellowship on effects stress and working life.

10/5/11 NSF Advanced Technological Education (ATE), “Connecticut Life Support and Sustainability Entrepreneurial Leadership (LSSEL) Program”, for Connecticut Community College System (Role: Senior Mentor) – Large educational initiative in the CT Community College system, where my role would be to provide biomedical-related student projects, allow students to experience firsthand experimental work at the UCONN Health Center Biodynamics Laboratory, and participate in student recruitment for the Program.

1/26/12 *P200A120210*, Dept. of Education *GAANN* Program, $1,055,400, “Graduate Assistance in Areas of National Need in Biomedical Engineering” (Role: PI) – To provide fellowships to graduate students of superior ability who also demonstrate financial need and plan to pursue a Ph.D. in Biomedical Engineering (BME). Specifically, focus placed on increasing the number of highly trained graduate students, particularly those from traditionally underrepresented minorities and women, in the field of BME. (My proposal was updated and resubmitted by UCONN BME in 2015 and was awarded!)

9/15/12 *K08*, NIH / NIDDK, Mentored Clinical Scientist Research Career Development Award, “Bladder Volume Signaling: A Novel Therapeutic Target in Old Age” (Role: Senior Mentor) – Training grant to provide new physician investigator with protected time, structured mentorship, and individualized training plan required for success in becoming an independent NIH-funded physician-scientist. Provide mentorship on the completion of a research plan defining the impact of aging and targeted pharmacologic interventions on physiologic suppression of bladder stiffness and the impact on volume sensitivity.

9/1/16 The State of Texas, $1,000,000, “Paper and Bioprocess Engineering at Texas A&M University – Texarkana” (Role: Principal and Budget Manager) – Legislative Appropriation Request (LAR) to establish state’s first and only Bachelor of Science degree in Paper and Bioprocess Engineering (PBE), in order to meet the employment and professional development needs of the paper industry located in Texas. This program will address the high demand for high quality engineers trained in paper engineering that includes bioprocess manufacturing and industrial science, as well as support the long-term sustained growth of a key east Texas industry (i.e., pulp and paper industry) and the state’s thrust areas in advanced manufacturing and chemical products.