

PilwonHur

Assistant Professor, Department of Mechanical Engineering, Texas A&M University

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Appointments

Texas A&M University

ASSISTANT PROFESSOR - MECHANICAL ENGINEERING

College Station, TX

Aug. 2014 - PRESENT

- Research Interests: Rehabilitation Robotics/Engineering for Neurologically-Impaired Patients (e.g., Elderly, Stroke, SCI, MS) or Physically-Disabled Patients (e.g., Amputee), Dynamic Bipedal Walking, Unification of Bipedal Walking, Trajectory Optimization, Prosthetics, Exoskeleton, Sensory Augmentation, Slip/Push Recovery, Virtual/Tele Rehabilitation, Neuromechanics, Biomechanics, Motor Control, Gait, Balance
- Teaching Interests: Robotics, Underactuated/Mobile Robotics, Nonlinear Control, Geometric Control, Multivariable Control, Optimization, Dynamics, Biomechanics, Sensorimotor System for Human Movement, Estimation Theory, Functional Analysis for Engineering Optimization

Texas A&M Engineering Experiment Station

CENTER FOR REMOTE HEALTH TECHNOLOGIES AND SYSTEMS

College Station, TX

Jun. 2015 - PRESENT

University of Wisconsin-Milwaukee

POSTDOCTORAL RESEARCH FELLOW - CENTER FOR ERGONOMICS

Milwaukee, WI

Sep. 2010 - Jun. 2014

- Research Interests: Rehabilitation for Stroke, Neuromechanics, Biomechanics, Hand Exoskeleton, Sensory Prosthesis, VR-based Rehabilitation, Gait Analysis, Ergonomics

Education

University of Illinois at Urbana-Champaign

PH.D. MECHANICAL ENGINEERING

Urbana, IL

Aug. 2006 - Dec. 2010

- Fields of Specialty: Controls, Dynamics and Applied Mathematics with Emphasis on Biomechanics and Postural Control
- Dissertation: Quantification of the human postural control system to perturbations
- Advisor: Elizabeth T. Hsiao-Wecksler
- Committee Members: Karl Rosengren, Srinivasa M. Salapaka, Prashant G. Mehta

M.S. APPLIED MATHEMATICS

Aug. 2008 - May. 2010

- Fields of Specialty: Analysis and Optimization
- Advisor: Karen Mortensen

Korea Advanced Institute of Science and Technology

M.S. MECHANICAL ENGINEERING

Daejeon, Korea

Sep. 2004 - Aug. 2006

- Fields of Specialty: Virtual Reality
- Thesis: HLA-based integration of underwater vehicle simulations using X3D multi-channel visualization and a motion platform
- Advisor: Soonhung Han
- Committee Members: Dong Soo Kwon, Jung Kim

Hanyang University

B.S. MECHANICAL ENGINEERING

- Fields of Interests: Robotics, Automatic Control, Mechatronics
- Thesis: Implementation of a clock using LEDs and inverted pendulum
- Advisor: Jahng-Hyon Park
- Summa Cum Laude

Seoul, Korea

Mar. 1998 - Aug. 2004

Busan High School

HIGH SCHOOL DIPLOMA

- Concentration on Mathematics and Science
- Summa Cum Laude

Busan, Korea

Mar. 1995 - Feb. 1998

Research Experience

Texas A&M University

ASISSTANT PROFESSOR

- Robotic rehabilitation framework using myoelectric control interface with skin stretch feedback for the upper limb deficiency patient.
- Design and control of the transfemoral prosthesis.
- Shared control of the exoskeleton with compliant human-robot interaction.
- Control of bipedal robotic walking with slip/push recovery.
- Upper limb rehabilitation for the stroke survivors using gyroscopic effect.
- Balance rehabilitation using sensory augmentation via skin stretch and electrotactile feedbacks.
- Development of the sensors for real-time monitoring of the equine-assisted activities and therapy.
- Haptic customization for the novice wheelchair driver for optimal performance.
- Muscle synergy based biomechanical analysis and rehabilitation for slipping perturbation.

College Station, TX

Aug. 2014 - PRESENT

University of Wisconsin-Milwaukee

POSTDOCTORAL RESEARCH FELLOW

- Identification of mechanism of sensory enhancement due to vibrotactile stimulation using EEG.
- Design and biomechanical analysis of an exoskeleton glove for the hand rehabilitation for stroke patients.
- Somatosensation enhancement and their effects on motor performance post stroke.
- Validation of Microsoft kinect for upperlimb rehabilitation.
- Development and usability test for virtual rehabilitation games for stroke patients.
- Development of devices for quantifying biceps spasticity for stroke survivors.
- Investigation of Botulinum toxin of the long finger flexor muscles on grip force control and muscle activation pattern post stroke.
- Design of a unilateral repetitive motion device (URMD) for the hand rehabilitation for stroke patients.
- Effect of vibrotactile stimulation on tactile sensation post stroke.
- Investigation of the role of sensory systems in detecting slip and fall accidents.
- Investigation of the effect of cutaneous sensory enhancement on the reaction time to perturbation.
- Optimal handle design and their breakaway strength to prevent falls from the elevation.
- Investigation of the contribution of intracortical inhibition in voluntary muscle contraction.
- Investigation of the effect of handle shapes and coefficient of friction on breakaway strength.
- Investigation of the effect of cutaneous sensation and coefficients of friction on muscle reaction time to handle perturbation.

Milwaukee, WI

Sep. 2010 - Jun. 2014

University of Illinois at Urbana-Champaign

Urbana, IL

RESEARCH ASSISTANT

Aug. 2006 - Dec. 2010

- Development of a fall risk prediction model of the elderly.
- Development of a novel stochastic method for analyzing center of pressure movement using Markov chains.
- Investigation of the effect of air bottle configuration on the balance and gait performance of the firefighters.
- Design of foot clearance sensing device.
- Investigation of the effect of fatigue on the balance of the firefighters.
- Development of an assessment tool for functional balance of the firefighters after strenuous activities.
- Development of a novel method for quantifying robustness of the human postural control system to an external perturbation.

Korean Advanced Institute of Science and Technology

Daejeon, Korea

RESEARCH ASSISTANT

Sep. 2004 - Aug. 2006

- Integration of underwater vehicle simulators with multi-channel display system and motion platform over HLA (High Level Architecture).
- Integration of virtual environments for national science museum.

Research Grants

- g22. Pilwon Hur (PI), Duane Steward, Nancy Krenek, Priscilla Lightsey, "Tracking kinematic and kinetic data during horse riding for optimizing therapeutic outcomes," HHRF, (\$10,000, Prorated: \$10,000), Pending
- g21. Pilwon Hur (PI) "Linking Biomechanics to Functional Outcomes for the Transfemoral Amputees Wearing Powered Prosthesis," AOPA, (\$15,000, Prorated: \$15,000), Pending
- g20. Pilwon Hur (PI) "Unified Frameworks for Robotic Bipedal Walking with Perturbations," NSF ENG/CMMI/DCSD, (\$500,000, Prorated: \$500,000), Pending
- g19. Manoranjan Majji (PI), Robert Skelton, Raktim Bhattacharya, and Pilwon Hur "Structure Control Co-Design for Rehabilitative and Prosthetic Systems," NSF CPS, (\$671,738, Prorated: \$242,928), Pending
- g18. Pilwon Hur (PI) "Sensory Augmentation via Skin Stretch Feedback to Enhance Standing Balance of the Elderly," NIH NIA, (\$385,883, Prorated: \$385,883) Pending
- g17. Pilwon Hur (PI) "Muscle Synergy as a Targeted Motor Rehabilitation Tool for Slip Recovery," NIH NICHD, (\$373,854, Prorated: \$373,854) May. Pending
- g16. Pilwon Hur (PI), Lynntech (Company), "Wearable Haptic Feedback Rehabilitation Tool," NIH NIA SBIR, (\$150,000, Prorated: \$69,053) Pending
- g15. Pilwon Hur (PI), Reza Langari (Co-PI), Byung-Jun Yoon (Co-PI) "Robotic rehabilitation framework for the upper limb deficiency patient via myoelectric control interface with skin stretch feedback," PESCA, Division of Research, TAMU, (\$25,000, Prorated: \$25,000) May. 2017 - Apr. 2018
- g14. Pilwon Hur (PI), "Enhancing balance of the aged workers via sensory augmentation toward the reduction of injuries due to falls," NIOSH, Pilot Project Research Training, 5T42OH008421, (\$10,000, Prorated: \$10,000) Jul. 2016 - Jun. 2017
- g13. Pilwon Hur (PI), Texas A&M University (\$440,000, Prorated: \$440,000) Sep. 2014 - Aug. 2017
- g12. Pilwon Hur (PI), "Effect of enhancement of somatosensation on hand function post stroke," American Heart Association (AHA), Postdoc Fellowship, 12POST12090039, (\$100,000, Prorated: \$100,000) Jul. 2012 - Jun. 2014
- g11. Na Jin Seo (PI), Pilwon Hur (Co-I), "Improving assistive gloves for stroke survivors using dynamic biomechanical models and optimization," NIH R24- Rehabilitation Engineering Research Network Center, (\$50,000) Jul. 2012 - Jun. 2013
- g10. Pilwon Hur (PI), "Development of a biomechanical hand model to predict multi-segmental finger flexion forces," NIOSH, Pilot Project Research Training, T42-OH008672, (\$18,000, Prorated: \$18,000) Jul. 2012 - Jun. 2013
- g9. Pilwon Hur (PI), "Prevention of ladder fall by improved somatosensation and optimal rung design," National Institute for Occupational Safety and Health (NIOSH), Pilot Project Research Training, T42-OH008672, (\$20,000, Prorated: \$20,000) Jul. 2011 - Jun. 2012
- g8. Tchekanov (PI), Na Jin Seo (Co-PI), Pilwon Hur (Co-I), "Effect of botulinum toxin of the long finger flexor muscles on grip force control following stroke," Physical Medicine and Rehabilitation at Medical College of Wisconsin, (\$5,000) Jan. 2011 - Dec. 2013
- g7. Pilwon Hur (PI), Reza Langari (Co-PI), Byung-Jun Yoon (Co-PI) "Robotic rehabilitation framework for the upper limb deficiency patient via myoelectric control interface with skin stretch feedback," PESCA, Division of Research, TAMU, May. 2017

- Apr. 2018

- g6. Pilwon Hur (PI), "Enhancing balance of the aged workers via sensory augmentation toward the reduction of injuries due to falls," NIOSH, Pilot Project Research Training, 5T42OH008421, Jul. 2016 - Jun. 2017
- g5. Pilwon Hur (PI), "Effect of enhancement of somatosensation on hand function post stroke," American Heart Association (AHA), Postdoc Fellowship, 12POST12090039, Jul. 2012 - Jun. 2014
- g4. Na Jin Seo (PI), Pilwon Hur (Co-I), "Improving assistive gloves for stroke survivors using dynamic biomechanical models and optimization," NIH R24- Rehabilitation Engineering Research Network Center, Jul. 2012 - Jun. 2013
- g3. Pilwon Hur (PI), "Development of a biomechanical hand model to predict multi-segmental finger flexion forces," NIOSH, Pilot Project Research Training, T42-OH008672, Jul. 2012 - Jun. 2013
- g2. Pilwon Hur (PI), "Prevention of ladder fall by improved somatosensation and optimal rung design," National Institute for Occupational Safety and Health (NIOSH), Pilot Project Research Training, T42-OH008672, Jul. 2011 - Jun. 2012
- g1. Tchekanov (PI), Na Jin Seo (Co-PI), Pilwon Hur (Co-I), "Effect of botulinum toxin of the long finger flexor muscles on grip force control following stroke," Physical Medicine and Rehabilitation at Medical College of Wisconsin, Jan. 2011 - Dec. 2013

Teaching Experience

Texas A&M University

College Station, TX

ASISSTANT PROFESSOR

Aug. 2014 - PRESENT

- MEEN364: Dynamic Systems and Controls - Spring 2015
- MEEN408/612: Introduction to Robotics/Mechanics of Robotic Manipulators - Fall 2014, Fall 2015, Fall 2016, Fall 2017
- MEEN431: Advanced System Dynamics and Controls - Fall 2016, Fall 2017
- MEEN652: Multivariable Control System Design - Spring 2017
- MEEN655: Design of Nonlinear Control Systems - Spring 2016

University of Illinois at Urbana-Champaign

Urbana, IL

INSTRUCTOR/TEACHING ASSISTANT

Aug. 2006 - Dec. 2010

- ME340: Dynamics of Mechanical Systems (Instructor) - Summer 2009
- ME360: Signal Processing - Fall 2009
- TAM212: Introduction Dynamics - Fall 2008, Spring 2009
- ME460: Industrial Control Systems - Fall 2006

Advising

Student Advising

POSTDOCTORAL RESEARCHERS

- Han U. Yoon (Ph.D. from UIUC) - Haptic customization for training and rehabilitation, Sep 2014 - Jun 2017

PH.D. STUDENTS

- Namita Anil Kumar - Human-centric design for human rehabilitation, Expected to graduate in Dec 2021
- Shawanee Patrick - Biomechanical analysis of lower limb exoskeleton for paraplegic patients, Expected to graduate in May 2021
- Christian DeBuys - Control of lower limb exoskeleton for paraplegic patients, Expected to graduate in May 2021
- Kenneth Chao - Dynamic bipedal robotic walking with slipping perturbation, Expected to graduate in May 2019
- Yitsen Pan - Balance and gait rehabilitation using portable skin stretch feedback, Expected to graduate in May 2019
- Moein Nazifi - Muscle synergy based rehabilitation for slipping perturbation, Expected to graduate in Dec 2019
- Dongil Shin - Changed Research Topic, till Dec 2015
- Yooseok Kim - Stopped Studying due to Personal Reasons, till April 2015

M.S. STUDENTS

- Kenny Chour - Electrotactile display and rehabilitation, Expected to graduate in Dec 2017

- Woolim Hong (ECEN) - Unifying walking control of transfemoral prosthesis for various slopes, Expected to graduate in Dec 2017
- Namita Anil Kumar - Design of upper limb rehabilitation device for stroke patients using gyroscopic effect, Graduated in Aug 2017
- Daniel McGowan - Design of hybrid transfemoral prosthesis, Graduated in May 2017
- Shawanee Patrick - Biomechanical analysis of lower limb powered prosthesis, Graduated in Aug 2016
- Victor Christian Paredes Cauna - Upslope walking with transfemoral prosthesis using optimization based spline generation, Graduated in May 2016

UNDERGRADUATE STUDENTS

- Lanna Lytle, Jan 2015 - PRESENT
- Tyler Marr - Development of an IMU-based motion capture system, control of a robotic manipulator for the upper limb deficient patients, May 2016 - Aug 2017
- Wyatt Hahn - Development of an IMU-based motion capture system, Sep 2016 - PRESENT
- Seungjun Lee - Validation of the optimal design of an assistive glove for stroke patients, Jan 2017 - May 2017
- Ian De Vlaming, Sep 2015 - May 2016
- Shyla Escobedo, Jan 2015 - May 2016
- Michelle Petersen, Jan 2015 - Dec 2015
- Tyler Martin (BIOL), Jan 2016 - May 2016

Visiting Scholars and Interns

VISITING SCHOLARS

- Hak Sung Kim - Associate Professor, Mechanical Engineering, Hanyang University, Seoul, Korea, April 2017 - Feb 2018

INTERNS

- Seref Yagli, Rehabilitation Robotics, Harmony Science Academy High School, Houston, TX, Research Experiences for Teachers in Mechatronics, Robotics, and Automated System Design, NSF, Summer 2017
- Iván Nicolás Gutiérrez Arias, Biomechanical evaluation of assistive glove design for stroke rehabilitation, Pontificia Universidad Católica de Chile (PUC), Spring 2017
- Stephanie O'Donoghue, Control of series elastic actuators for robot compliance, Chattahoochee Technical College, Acworth, GA, Research Experiences for Teachers in Mechatronics, Robotics, and Automated System Design, NSF, Summer 2016
- Sam Nadell, Development of series elastic actuators for robot compliance, Washington University in St. Louis, St. Louis, MO, Research Experiences for Undergraduates in Mechatronics, Robotics, and Automated System Design, NSF, Summer 2016
- Jose Guillermo Colli Alfaro, Development of virtual rehabilitation environment for stroke patients, Model University, Mexico, CANIETI Program, Summer 2016
- Cosme Jose Basto Adrian, Development of virtual rehabilitation environment for stroke patients, Superior Tech Institute of Motul, Mexico, CANIETI Program, Summer 2015
- Abril Elvira Medina Moreno, Development of virtual rehabilitation environment for stroke patients, Autonomous University of Yucatan, Mexico, CANIETI Program, Summer 2015
- Junior Jose Garcia Sosa, Development of virtual rehabilitation environment for stroke patients, Model University, Mexico, CANIETI Program, Summer 2015
- Manuel Jurado Ledon, Development of virtual rehabilitation environment for stroke patients, Model University, Mexico, CANIETI Program, Summer 2015

Thesis Committee

PH.D. DEGREE

- Chong Ke (ETID, Xingyong Song) - Dynamic modeling and optimization of downhole drilling, Planned
- Chun Lin Yang (MEEN, Chii-Der Suh) - Characterization and Control of Real-World Complex Networks, Planned
- Serdar Coskun (MEEN, Reza Langari) - Stochastic Decision Making and Advanced-Control Design for an Emergency Lane Change Assistance System in Highway Driving, Planned
- Sangjin Han (ELEN, Shankar Bhattacharyya) - Multivariable control with time delay, Planned
- Niladri Das (ASEN, Raktim Bhattacharya) - Control of tensegrity systems, Planned

- Moein Nazifi (MEEN, Pilwon Hur) - Muscle Synergy for Slip Rehabilitation, Planned
- Yitsen Pan (MEEN, Pilwon Hur) - Gait and Balance Rehabilitation with Skin Stretch Feedback, Planned
- Chi-Wei Kuo (MEEN, Chii-Der Suh) - Controlling bifurcation and dynamic behavior in vibro-impact systems, Planned
- Jaewook Yoo (CSEN, Yoonseok Choe) - Sensorimotor Aspects of Brain Function: Development, Internal Dynamics, and Tool Use, Sep, 2017
- Sitae Kim (MEEN, Alan Palazzolo) - Multiple steady state responses prediction for nonlinear rotordynamic systems, Oct 2016
- Ivan De Jesus Diaz Rodriguez (ECEN, Shankar Bhattacharyya) - Modern design of classical controller, Feb 2017

M.S. DEGREE

- Kenny Chour (MEEN, Pilwon Hur) - Electrotactile Stimulation for Rehabilitation, Planned
- Aritra Biswas (AERO, Lisa Rowe) - Tensegrity inspired robotics, Planned
- Yalun Wen (MEEN, Prabhakar Pagilla) - Control, Planned
- Woolim Hong (ECEN, Shankar Bhattacharyya, Pilwon Hur (Co-Chair)) - Control of powered transfemoral prosthesis, Planned
- Namita Anil Kumar (MEEN, Pilwon Hur) - Hand Rehabilitation Device using Gyroscopic Effects, June 2017
- Aditya Vighnesh (ECEN, Aydin Karsilayan) - Analog to Digital converters, April 2017
- Daniel McGowan (MEEN, Pilwon Hur) - Design of Hybrid Powered Transfemoral Prosthesis, March 2017
- Jacob D. Southern (MEEN, Chii-Der Suh) - High speed spindle design using radial and axial active magnetic bearings, March 2017
- Achu G Byju (BMEN, Michael Madigan) - Development of balance recovery training device and biomechanical measures for tripping risk, Opt 2016
- Shawanee Patrick (MEEN, Pilwon Hur) - Biomechanical analysis of lower limb powered prosthesis, June 2016
- Victor Paredes (MEEN, Pilwon Hur) - Upslope walking with transfemoral prosthesis using optimization based spline generation, March 2016
- Aakar Mehra (MEEN, Aaron Ames) - Analysis of various adaptive cruise controller via experimental implementation, June 2015

Service Activities

Texas A&M University

DEPARTMENTAL

- Seminar Committee for MEEN 681 - FA14, SP15, FA15
- Qualifier Committee for Control - SP16 (Alternate member for control area), FA16 (Member for control area), SP17 (Chair for control area)
- Distance Learning Committee – FA16, SP17
- Explorations Article Reviewer for 2016

Conferences

ASSOCIATE EDITOR

- IEEE International Workshop on Advanced Robotics and its Social Impacts

REVIEWERS

- World Congress on Biomechanics
- American Society of Biomechanics
- International Conference on Biomedical Engineering and Biotechnology
- ASME IMECE
- ASME Summer Biomechanics, Bioengineering and Biotransport Conference
- IEEE Haptics Conference
- IEEE Biomedical Robotics and Mechatronics
- American Control Conference

CHAIRS

- American Society of Biomechanics, Falls Session, 2012
- American Society of Biomechanics, Balance and Sensory Augmentation Session, 2015

Journal

REVIEWERS

- IEEE Control System Magazine
- IEEE Transactions on Human-Machine Systems
- IEEE Transactions on Haptics
- IEEE Transaction on Industrial Electronics
- ASME Journal of Biomechanical Engineering
- Journal of Translational Engineering in Health and Medicine
- Advances in Mechanical Engineering
- Journal of Biomechanics
- Journal of Applied Biomechanics
- Journal of Neurophysiology
- PLOS ONE
- CRC Press
- Journal of Translational Engineering in Health and Medicine
- Clinical Biomechanics
- Gait and Posture
- Applied Ergonomics
- Annals of Biomedical Engineering
- Medical & Biological Engineering & Computing
- Journal of Engineering in Medicine
- Quality and Reliability Engineering International

Professional Membership

- IEEE
- American Control Conference
- International Society for Virtual Rehabilitation
- American Heart Association
- Society for Neuroscience
- World Federation for NeuroRehabilitation
- World Congress on Biomechanics
- Korean-American Scientist and Engineers Association
- American Society of Biomechanics
- Korean Society of Simulation
- Korean Society of CAD/CAM

Publication

Journal Papers

j25. Yi-Tsen Pan, and Pilwon Hur, "Robotic Balance Rehabilitation," *IEEE Robotics & Automation Magazine*, Under Review

- j24. Mohammad Moein Nazifi, Kurt Beschorner and Pilwon Hur, "Correlation between slip severity and muscle synergies of slipping," *Frontiers in Human Neuroscience*, Under Review
- j23. Na Jin Seo, Vincent Crocher, Egli Spaho, Charles Ewert, Mojtaba F. Fathi, Pilwon Hur, Suzanne Marchant, Michelle Woodbury, Sara J. Atkinson, Elizabeth M. Humanitzki, Abigail Lauer, "Capturing Upper Limb Gross Motor Categories Using the Kinect Sensor," *Journal of Hand Therapy*, Under Review
- j22. Yi-Tsen Pan, and Pilwon Hur, "Effectiveness of Skin Stretch Feedback for a Balance Rehabilitation System: Is Velocity Information of Postural Sway More Simply Perceived by the User?," *Journal of NeuroEngineering and Rehabilitation*, Under Review
- j21. Han Ul Yoon, and Pilwon Hur, "Effect of customized haptic feedback on navigation characteristics and performance," *Experimental Brain Research*, Under Review
- j20. Han Ul Yoon, Namita Anil Kumar and Pilwon Hur, "Synergistic Effects on the Elderly People's Motor Control by Wearable Skin-Stretch Device Combined with Haptic Joystick," *Frontiers in NeuroRobotics*, Vol 11:31, 2017
- j19. Han Ul Yoon, Ranxiao F Wang, Seth A Hutchinson, and Pilwon Hur, "Customizing Haptic and Visual Feedback for Assistive Human-Robot Interface and the Effects on Performance Improvement," *Robotics and Autonomous Systems*, Vol 91, pp258-269, 2017
- j18. Mohammad Moein Nazifi, Han Ul Yoon, Kurt Beschorner, and Pilwon Hur, "Shared and Task-Specific Muscle Synergies During Normal Walking and Slipping," *Frontiers in Human Neuroscience*, Vol 11:40, 2017
- j17. Yi-Tsen Pan, Han U. Yoon, and Pilwon Hur, "A Portable Sensory Augmentation Device for Balance Rehabilitation Using Fingertip Skin Stretch Feedback," *IEEE Trans on Neural Systems and Rehab Eng*, Vol 25, Issue 1, pp28-36, 2017
- j16. Na Jin Seo, Mojtaba Fathi-Firoozabad, Pilwon Hur, and Vincent Crocher, "Modifying Kinect Placement to Improve Upper Limb Joint Angle Measurement Accuracy," *Journal of Hand Therapy*, Vol 29, Issue 4, pp465-473, 2016
- j15. Na Jin Seo, Jayashree Arun Kumar, Pilwon Hur, Vincent Crocher, Binal Motawar, Kishor Lakshminarayanan, "Development and usability evaluation of low-cost hand and arm virtual reality rehabilitation games," *Journal of Rehab Research and Development*, Vol 53, Issue 3, pp1-13, 2016
- j14. Pilwon Hur, Kiwon Park, Karl Rosengren, Gavin Horn and Elizabeth Hsiao-Wecksle, "Effects of air bottle design on postural control of firefighters," *Applied Ergonomics*, Vol 48, pp49-55, 2015
- j13. Na Jin Seo, Marcella Kosmopoulos, Leah Enders, Pilwon Hur, "Effect of Remote Sensory Noise on Hand Function Post Stroke," *Frontiers in Human Neuroscience*, Vol 8:934, 2014
- j12. Pilwon Hur, Yao-Hung Wan, and Na Jin Seo, "Investigating the Role of Vibrotactile Noise in Early Response to Perturbation," *IEEE Trans on Biomed Eng*, Vol 61, Issue 6, pp1628-1633, 2014
- j11. Pilwon Hur, Binal Motawar, and Na Jin Seo, "Muscular responses to handle perturbation with different glove condition," *Journal of Electromyography & Kinesiology*, Vol 24, Issue 1, pp159-164, 2014
- j10. Pilwon Hur, Karl Rosengren, Gavin Horn, Denise Smith and Elizabeth Hsiao-Weckler, "Effect of protective clothing and fatigue on functional balance of firefighters," *J Ergonomics*, S2:004, 2013
- j9. Leah R. Enders, Pilwon Hur, Michelle J. Johnson, and Na Jin Seo, "Remote vibrotactile noise improves light touch sensation in stroke survivors' fingertips via stochastic resonance," *Journal of NeuroEng and Rehab*, 10:105, 2013
- j8. Pilwon Hur, Binal Motawar, and Na Jin Seo, "Hand breakaway strength model – Effects of glove use and handle shapes on a person's hand strength to hold onto handles to prevent fall from elevation," *Journal of Biomechanics*, Vol 45, Issue 6, pp958-964, 2012
- j7. Binal Motawar, Pilwon Hur, James Stinear, and Na Jin Seo, "Contribution of intracortical inhibition in voluntary muscle relaxation," *Exp Brain Research*, Vol 221, Issue 3, pp299-308, 2012
- j6. Pilwon Hur, A. Kenneth Shorter, Prashant Mehta, and Elizabeth Hsiao-Weckler, "Invariant Density Analysis: modeling and analysis of the postural control system using Markov chains," *IEEE Trans on Biomed Eng*, Vol 59, Issue 4, pp1094-1100, 2012
- j5. Kiwon Park, Pilwon Hur, Karl Rosengren, Gavin Horn, and Elizabeth Hsiao-Weckler, "Effect of load carriage on gait due to firefighting air bottle configuration," *Ergonomics*, Vol 53, Issue 7, pp882-891, 2010
- j4. Pilwon Hur, Brett Duiser, Srinivasa Salapaka, and Elizabeth Hsiao-Weckler, "Measuring robustness of the postural control system to a mild impulsive perturbation," *IEEE Trans on Neural Systems and Rehab Eng*, Vol 18, Issue 4, pp461-467, 2010
- j3. Gavin Horn, Elizabeth Hsiao-Weckler, Karl Rosengren, Pilwon Hur, Kiwon Park, and Denise Smith, "Slips, trips, and falls on the fireground - A study at IFSI," *Fire Rescue*, Vol 27, Issue 1, pp56-58, 2009
- j2. Pilwon Hur, Byoungyun Yoo, Jeongsam Yang, and Soonhung Han, "An underwater vehicle simulator with immersive interface using X3D and HLA," *SIMULATION, Trans of the Society for Modeling and Simulation International*, Vol 85, Issue 1, pp33-44, 2009
- j1. Pilwon Hur, Jeongsam Yang, and Soonhung Han, "An Underwater Vehicle Simulator using X3D and a Motion Chair in a Multi-Channel Display Room," *Soc CAD/CAM Eng*, Vol 13, Issue 1, pp45-57, 2008

Conference Papers

- c54. Kenneth Chao, and Pilwon Hur, "A Step Towards Generating Human-Like Walking Gait via Trajectory Optimization through Contact for a Bipedal Robot with One-Sided Springs on Toes," *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Sep 24-28, Vancouver, Canada, 2017
- c53. Woolim Hong, and Pilwon Hur, "Transfemoral Prosthesis Control for Slope Walking with Principal Component Analysis," *American Society of Biomechanics*, Aug 8-11, Boulder, CO, 2017
- c52. Wyatt Hahn, Tyler Marr, Moein Nazifi, and Pilwon Hur, "Accurate Estimation of the Kinematics Using an IMU-Based Motion Capture System," *American Society of Biomechanics*, Aug 8-11, Boulder, CO, 2017
- c51. Namita Anil Kumar, and Pilwon Hur, "Design of a Compact and Portable Hand Rehabilitation Device for Stroke-Survivors," *American Society of Biomechanics*, Aug 8-11, Boulder, CO, 2017
- c50. Moein Nazifi, Kurt Beschorner, Rakie Cham, and Pilwon Hur, "Walking Muscle Synergies Influence Propensity of Severe Slipping," *American Society of Biomechanics*, Aug 8-11, Boulder, CO, 2017
- c49. Yi-Tsen Pan, and Pilwon Hur, "Interactive Balance Rehabilitation Tool with Wearable Skin Stretch Device," *IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)*, Aug 28-31, Lisbon, Portugal, 2017
- c48. Namita Anil Kumar, Han Yoon, Pilwon Hur, "A User-Centric Feedback Device for Powered Wheelchairs Comprising a Wearable Skin Stretch Device and a Haptic Joystick," *2017 IEEE International Workshop on Advanced Robotics and its Social Impacts (ARSO)*, Austin, TX, March 8-10, 2017
- c47. Victor Parades, Woolim Hong, Shawanee Patrick, and Pilwon Hur, "Upslope walking with transfemoral prosthesis using optimization based spline generation," *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Oct 9-14, Daejeon, Korea, 2016
- c46. Han Yoon, and Pilwon Hur, "An Approach to Customize Haptic Guidance for the Aged Power-Wheelchair Riders," *ATLAS, Safe Transportation & Aging Symposium*, Ann Arbor, MI, Sep 14-15, 2016
- c45. Kenneth Chao, Matthew Powell, Aaron D. Ames, and Pilwon Hur, "Unification of locomotion pattern generation and control Lyapunov function-based quadratic programs," *American Control Conference*, Jul 6-8, Boston, MA, 2016
- c44. Kenneth Chao, and Pilwon Hur, "Toward general capture point-based analysis on standing, walk and slip: the connection between robotic motions to human behaviors," *Dynamic Walking*, June 4-7, Holly, MI, 2016
- c43. Victor Parades, and Pilwon Hur, "Push recovery by center of pressure manipulation," *Dynamic Walking*, June 4-7, Holly, MI, 2016
- c42. Han U. Yoon, Lanna Lytle, Yi-Tsen Pan, Woolim Hong, Daniel McGowan, and Pilwon Hur, "Bidirectional skin stretch feedback," *American Society of Biomechanics*, Aug 2-5, Raleigh, NC, 2016
- c41. Shawanee Patrick, Victor Paredes and Pilwon Hur, "Gait symmetry of a powered transfemoral prosthesis," *American Society of Biomechanics*, Aug 2-5, Raleigh, NC, 2016
- c40. Yi-Tsen Pan and Pilwon Hur, "Velocity-based sensory augmentation via fingertip skin stretch on quiet standing," *American Society of Biomechanics*, Aug 2-5, Raleigh, NC, 2016
- c39. Han U. Yoon and Pilwon Hur, "Will your performance be improved by a customized haptic assistance? Check the temporospatial characteristics out!," *American Society of Biomechanics*, Aug 2-5, Raleigh, NC, 2016
- c38. Mohammad Moein Nazifi, Kurt Beschorner and Pilwon Hur, "Correlation between slip severity and muscle synergies of slipping," *American Society of Biomechanics*, Aug 2-5, Raleigh, NC, 2016
- c37. Moein Nazifi, and Pilwon Hur, "Shared and task-specific muscle synergies during normal walking and slipping," *American Society of Biomechanics*, Aug 5-8, Columbus, OH, 2015
- c36. Yooseok Kim, Yitsen Pan, and Pilwon Hur, "Design of sensory augmentation system for postural control rehabilitation," *American Society of Biomechanics*, Aug 5-8, Columbus, OH, 2015
- c35. Yitsen Pan, Yooseok Kim and Pilwon Hur, "Effect of sensory augmentation via skin stretch feedback on quiet standing balance," *American Society of Biomechanics*, Aug 5-8, Columbus, OH, 2015
- c34. Han Ul Yoon, and Pilwon Hur, "Effect of customized haptic feedback on navigation characteristics and performance," *American Society of Biomechanics*, Aug 5-8, Columbus, OH, 2015
- c33. Han Ul Yoon, and Pilwon Hur, "Slip-related muscle synergy during human walking," *Korean-American Biomedical Scientists Symposium*, Nov 1, Houston, TX, 2014
- c32. Hyun Gu Kang, Wenjun Li, Pilwon Hur, and Lewis Lipsitz, "Fall risk in older adults: Posture, distractions, and statistics in multidisciplinary teams," *International Symposium on Biomathematics and Ecology Education and Research*, Oct, Normal, IL, 2014
- c31. Mojtaba Firoozabad, Pilwon Hur, and Na Jin Seo, "Determination of the optimal location of kinect sensor for upper-limb virtual rehabilitation," *World Congress on Biomechanics*, Jul 6-11, Boston, MA, 2014
- c30. Marcella Kosmopoulos, Pilwon Hur, Leah Enders, and Na Jin Seo, "Effect of remote subthreshold vibrotactile noise on

- hand function post stroke,” *World Congress on Biomechanics*, Jul 6-11, Boston, MA, 2014
- c29. Pilwon Hur, Derek Kamper, and Na Jin Seo, “Optimizing cable-driven assistive glove design to help open post stroke paretic hand,” *World Congress on Biomechanics*, Jul 6-11, Boston, MA, 2014
- c28. Jayashree Arunkumar, Pilwon Hur, Kishor Lakshminarayanan, and Na Jin Seo, “Usability evaluation of a low-cost virtual reality rehabilitation game for stroke patients with upper limb impairment using Kinect and P5 Glove,” *World Congress on Biomechanics*, Jul 6-11, Boston, MA, 2014
- c27. Pilwon Hur, Seyed Hadi Salehi, and Na Jin Seo, “Development of biomechanical index finger model to predict multi-segmental grip forces for varying finger postures,” *American Society of Biomechanics*, Sep 4-7, Omaha, NE, 2013
- c26. Pilwon Hur, Ying-Ling Tseng, and Na Jin Seo, “Somatosensory cortex activity in response to fingertip stimulation can increase with remote subthreshold vibrotactile noise: An EEG study,” *American Society of Biomechanics*, Sep 4-7, Omaha, NE, 2013
- c25. Jayashree Arunkumar, Pilwon Hur, Binal Motawar, and Na Jin Seo, “Low-cost virtual reality game for upper limb rehabilitation using Kinect and P5 glove,” *American Society of Biomechanics*, Sep 4-7, Omaha, NE, 2013
- c24. Vincent Crocher, Pilwon Hur, and Na Jin Seo, “Low-cost virtual rehabilitation games: House of Quality to meet patient expectations,” *International Conference on Virtual Rehab*, Aug 26-29, Philadelphia, PA, 2013
- c23. Pilwon Hur, Yao-Hung Wan and Na Jin Seo, “Effect of vibrotactile stimulation on the response time to handle perturbation,” *Society for Neuroscience*, Oct 13-17, New Orleans, LA, 2012
- c22. Pilwon Hur, Daniel Lomo-Tetty and Na Jin Seo, “Improving an assistive glove for stroke survivors using advanced biomechanical model,” *Society for Neuroscience*, Oct 13-17, New Orleans, LA, 2012
- c21. Pilwon Hur and Kurt Beschorner, “Investigating the Link between Kinematic Deviations and Recovery Response to Unexpected Slips,” *American Society of Biomechanics*, Aug 15-18, Gainesville, FL, 2012
- c20. Pilwon Hur, Yao-Hung Wan, and Na Jin Seo, “Effect of Vibrotactile Stimulation on the Response Time to Handle Perturbation,” *Chicago Neuromechanics Symposium*, Apr 27, Chicago, IL, 2012
- c19. Yao-Hung Wan, Pilwon Hur, and Na Jin Seo, “Optimizing Rung Design to Increase Hand Breakaway Strength for Prevention of Ladder Fall,” *Chicago Neuromechanics Symposium*, Apr 27, Chicago, IL, 2012
- c18. Binal Motawar, Pilwon Hur, and Na Jin Seo, “Roles of cutaneous sensation and gloves with different coefficients of friction on fall recovery during simulated ladder falls,” *American Society of Biomechanics*, Aug 10-13, Long Beach, CA, 2011
- c17. Pilwon Hur, Binal Motawar, and Na Jin Seo, “Effects of glove and ladder rung design on prevention of ladder fall,” *American Society of Biomechanics*, Aug 10-13, Long Beach, CA, 2011
- c16. Pilwon Hur, Hyun Gu Kang, Lewis A. Lipsitz, and Elizabeth T. Hsiao-Weckslar, “Fall Risk Estimation of Community-Dwelling Elderly using Invariant Density Analysis,” *American Society of Biomechanics*, Aug 18-21, Brown University, RI, 2010
- c15. [Invited Talk] Pilwon Hur, Hyun Gu Kang, Lewis Lipsitz, and Elizabeth T. Hsiao-Weckslar, “Invariant Density Analysis of Postural Sway and Fall-Risk Estimation Model of Community-Dwelling Elderly Adults,” *World Congress on Biomechanics*, Aug 1-6, Singapore, 2010
- c14. Pilwon Hur, Hyun Gu Kang, Lewis A. Lipsitz, and Elizabeth T. Hsiao-Weckslar, “Invariant Density Analysis of Postural Sway and Prospective Fall Risk in Community-Dwelling Elderly,” *American Society of Biomechanics*, Aug 26-29, Penn State University, PA, 2009
- c13. Sunghoon Shin, and Pilwon Hur, “Effect of Golf Swing Styles on Resultant Joint Moments of Low Body Joints and L4/L5,” *American Society of Biomechanics*, Aug 26-29, Penn State University, PA, 2009
- c12. Pilwon Hur, K. Alex Shorter, and Elizabeth T. Hsiao-Weckslar, “Examining quiet standing center of pressure data using invariant density analysis,” *ASME Summer Bioengineering Conference*, Jun 17-21, Lake Tahoe, CA, 2009
- c11. Pilwon Hur, K. Alex Shorter, and Elizabeth T. Hsiao-Weckslar, “Modeling and analysis of posturographic data using Markov chains,” *Society of Engineering Science*, Oct 12-15, University of Illinois at Urbana-Champaign, IL, 2008
- c10. Pilwon Hur, and Elizabeth T. Hsiao-Weckslar, “Estimating the moment of inertia of the human body as a single link inverted pendulum model,” *North American Congress on Biomechanics*, Aug 5-9, University of Michigan Ann Arbor, MI, 2008
- c9. Sunghoon Shin, Pilwon Hur, Jeffery Casebolt, and Young-Hoo Kwon, “Weight transfer in different golf swing styles based on swing plane: a nonlinear dynamic approach,” *International Conference on Biomechanics in Sports*, Jul 14-18, Seoul, Korea, 2008
- c8. Pilwon Hur, Karl Rosengren, Gavin Horn, Denise Smith, and Elizabeth T. Hsiao-Weckslar, “Effect of fatigue and protective clothing on functional balance of firefighters,” *International Society of Electrophysiology and Kinesiology*, Jun 18-21, Niagara Falls, Canada, 2008
- c7. Pilwon Hur, Karl Rosengren, Gavin Horn, Ted Schroeder, Sara Ashton-Szabo, and Elizabeth T. Hsiao-Weckslar, “Assessment of postural sway during multiple load and visual conditions,” *International Society of Electrophysiology and Kinesiology*, Jun 18-21, Niagara Falls, Canada, 2008

- c6. Elizabeth T. Hsiao-Weckslar, Pilwon Hur, and Brett A. Duiser, "Sway response and relative stability of the postural control system to an impulsive perturbation," *Society of Engineering Science*, Oct 21-24, Texas A&M University, TX, 2007
- c5. Pilwon Hur, Brett A. Duiser, and Elizabeth T. Hsiao-Weckslar, "Exploring the impulse response of the postural control system," *American Society of Biomechanics*, Aug 22-25, Stanford University, CA, 2007
- c4. Pilwon Hur, Seiji Naito, and Elizabeth T. Hsiao-Weckslar, "Estimating lean angle through application of the gravity line projection algorithm," *American Society of Biomechanics*, Aug 22-25, Stanford University, CA, 2007
- c3. Hyokwang Lee, Pilwon Hur, Junkyu Park, and Soonhung Han, "Real-time 3D visualization of underwater vehicle simulation," *Korean Society of CAD/CAM Engineers*, Jan 31 - Feb 2, Peoyngchang, Korea, 2007
- c2. Elizabeth Hsiao-Weckslar, Brett Duiser, and Pilwon Hur, "Characterizing the sway response of the human postural control system to an impulse perturbation," *Society for Neuroscience*, Oct 14-18, Atlanta, GA, 2006
- c1. Pilwon Hur, and Soonhung Han, "Internet-based X3D visualization of underwater vehicle simulation," *Korean Society for Simulation*, May 26th, Cheonan, Korea, 2006

Books

- b1. Pilwon Hur, 2012, "Understanding the human postural control system: mathematical methods to quantify the human postural control system and the applications," *LAMBERT Academic Publishing*, ISBN: 978-3-8484-8495-9

Book Chapters

- h1. Pilwon Hur, Kenneth Chao, and Victor Christian Paredes Cauna, "Unification of bipedal robotic walking using quadratic program-based control Lyapunov function: applications to regulation of ZMP and angular momentum" In Dan Zhang (Ed.) *Adaptive Control for Robotic Manipulators* CRC Press/Taylor & Francis Group, Boca Raton, FL, Nov 2016

Invited Talks

- i32. "Optimality and Robustness of Human Walking and Balance," *Department of Biomedical Engineering*, University of Los Andes, Bogota, Colombia, 6/12/2017
- i31. "Enhancing Balance of the Aged Workers Via Sensory Augmentation Toward the Reduction of Injuries Due to Falls," *NIOSH ERC Pilot Projects Research Symposium*, UTHHealth School of Public Health, Houston, TX, 6/2/2017
- i30. "Neuro/Biomechanics for Gait and Balance Rehabilitation," *Korean Aggies Bio Association*, Texas A&M University, College Station, TX, 4/28/2017
- i29. [Key Note]"Gait and Balance Rehabilitation," *South Central ASB Regional Conference*, Texas Back Institute, Plano, TX, 4/1/2017
- i28. "Robotics in Gait and Balance Rehabilitation," *Health Science Seminar, University of Houston*, Houston, 2/14/2017
- i27. "Neuro/biomechanics and its application in robotics," *MEEN 681 Seminar, TAMU*, College Station, TX, 1/25/2017
- i26. "Gait and Balance Rehabilitation," *West Gulf Coast Regional Conference, Korean-American Scientists and Engineers Association*, Houston, 11/19/2016
- i25. "Human-Like Walking and its Robustness to Perturbations," *Robotics Engineering, DGIST*, Daegu, Korea, 10/17/2016
- i24. "Linking Robotics and Neuro/Biomechanics," *Mechanical Engineering, Hanyang University*, Seoul, Korea, 10/14/2016
- i23. "Neuro/biomechanics and its applications in Rehabilitation Robotics," *Mechanical Engineering, GIST*, Gwangju, Korea, 10/13/2016
- i22. "Neuro/biomechanics and its applications in Robotics," *Mechanical Engineering, KAIST*, Daejeon, Korea, 10/12/2016
- i21. "Muscle Synergy as a Rehabilitation Tool," *The 1st Kinesiology Seminar, Seoul National University*, Seoul, Korea, 10/10/2016
- i20. "Usage of MATLAB in rehabilitaiton robotics," *Workshop on Scientific Computing with MATLAB at Texas A&M in conjunction with Dr. Cleve Moler's Talk on Evolution fo MATLAB*, College Station, TX, Apr, 2016
- i19. "From F=ma to complex robots and biomechanics," *MEEN Informational hosted by Mechanical Engineering Leadership Council*, College Station, TX, Mar, 2016
- i18. "Development of wearable balance rehabilitation device for the low-income elderly adults in Seoul," *Seoul City Forum, US-Korea Conference*, Atlanta, GA, Jul, 2015
- i17. "Collaboration with human rehabilitation group," *Lynntech*, College Station, TX, May, 2015
- i16. "Artificial sensory augmentation via skin stretch feedback and its effect in postural control," *TAMU ENG-LIFE 2015 Workshop, TAMU*, College Station, TX, Apr, 2015
- i15. "Optimality of human movement: diagnosis and rehabilitation for enhanced quality of life," *Kinesiology Seminar, TAMU*, College Station, TX, Feb, 2015
- i14. "Upper and lower limbs rehabilitation for the elderly and neurologically impaired patients," *Korea Institute of Industrial*

Technology, Seongnam, Korea, Aug, 2014

- i13. "Optimality of human movement: diagnosis and rehabilitation for enhanced quality of life," *GIST*, Gwangju, Korea, Aug, 2014
- i12. "Optimality of human movement: diagnosis and rehabilitation for enhanced quality of life," *Korea Institute of Industrial Technology*, Ansan, Korea, Jul, 2014
- i11. "Optimality of human movement: diagnosis and rehabilitation for enhanced quality of life," *Kyunghee University*, Suwon, Korea, Jul, 2014
- i10. "Optimality of human movement: diagnosis and rehabilitation for enhanced quality of life," *KAIST*, Daejeon, Korea, Jul, 2014
- i9. "Optimality of human movement: diagnosis and rehabilitation for enhanced quality of life," *Ajou University*, Suwon, Korea, Jul, 2014
- i8. "Optimality of human movement: diagnosis and rehabilitation for enhanced quality of life," *University of Tennessee-Knoxville*, Knoxville, TN, Feb, 2014
- i7. "Optimality of human movement: diagnosis and rehabilitation for enhanced quality of life," *Texas A&M University*, College Station, TX, Feb, 2014
- i6. "Improving quality of life: understanding fall mechanisms and potential fall preventions," *Florida International University*, Miami, FL, Nov, 2013
- i5. "Improving assistive gloves for stroke survivors using dynamic biomechanical models and optimization," R24-Engineering for Neurological Rehabilitation Meeting, *Rehabilitation Institute of Chicago*, Chicago, IL, Jun, 2013
- i4. "Upper and lower limbs rehabilitation for the neurologically impaired patients," *DGIST*, Daegu, Korea, Feb, 2013
- i3. "How mechanical noise enhance human sensation?," Series of Seminars at the Center for u-Healthcare, *Soon Chun Hyang University*, Asan, Korea, Oct, 2012
- i2. "Rehabilitation of the patients with physical weakness and neurologic impairments," *Hanyang University*, Seoul, Korea, Oct, 2012
- i1. "Sensory enhancement via vibrotactile stimulation and its effect on the motor response post stroke," *DGIST*, Daegu, Korea, Oct, 2012

Patent

- Daniel McGowan, and Pilwon Hur, "Light Weight Modular Powered Transfemoral Prosthesis." U.S. Patent to be filed soon
- Pilwon Hur, and Namita Anil Kumar, "Portable Gyroscopic Devices and Methods." U.S. Patent 62/413,130, filed Oct 26, 2016

Media Coverage

- "Researchers developing robotic prosthetics to restore balance" *The O&P Edge*, May 11th, 2017
- "Researchers developing robotic prosthetics to help restore balance in fall victims" *Texas A&M Engineering*, May 8th, 2017

Honors & Awards

- American Heart Association Postdoc Fellowship
- Travel Award, International Conference on Virtual Rehabilitation
- Travel Award, World Congress on Biomechanics
- Paul D. Doolen Scholarship on Aging, Nominated as alternate winner
- Graduate Travel Award, UIUC
- Schaller Travel Award, UIUC
- National Scholarship, Ministry of Science and Technology, Korea
- Summa Cum Laude, Mechanical Engineering, Hanyang University, Seoul, Korea
- Merit-based Scholarship, Hanyang University, Seoul, Korea

Honors & Awards (Students)

- Moein Nazifi, Mechanical Engineering Travel Grant, 2017
- Yitsen Pan, Mechanical Engineering Travel Grant, 2017
- Moein Nazifi, Best Paper Award, SCASB, 2017
- Moein Nazifi, Delsys Travel Grant, 2016
- Han Ul Yoon, TAMU Postdoc Travel Grant, 2016
- Han Ul Yoon, GenDepot Award, 2016
- Woolim Hong, GenDepot Award, 2016
- Moein Nazifi, Mechanical Engineering Travel Grant, 2016
- Shawanee Patrick, ASB Diversity Travel Award, 2016
- Moein Nazifi, Mechanical Engineering Travel Grant, 2015
- Yitsen Pan, Mechanical Engineering Travel Grant, 2015
- Kenneth Chao, Taiwan Government Scholarship for Outstanding Students to Pursue Graduate Study Abroad for 2 years, 2015
- Yitsen Pan, The Association of Chinese American Professionals (ACAP) Student Research Project Contest Finalist, Houston, TX, 2015
- Han Ul Yoon, GenDepot Award, 2014

Skills

Biomechanics

- Analyses of human balance and gait, passive dynamic walker, inverse dynamics, nonlinear dynamic techniques
- Motion analysis: Vicon Motion Systems, Motion Analysis Copr., Optotrak
- Force platform: AMTI, Bertec with treadmill, GaitRite
- EMG: Delsys, Bortec Biomedical
- EEG: NeuroScan
- Stimulator: TMS (Magstim), TENS (DS7), Tactor C3 (EAI)
- Pedar and Pliance (Novel)

Software & Programming

- MATLAB, Mathematica, LabVIEW, OpenSim, Visual Studio, Photoshop, Illustrator, Flash, Flash Builder, CATIA, SPSS, etc.
- C/C++/C#, Java, Visual Basic, Action Script, Python, PHP, XML
- Networking, Database (MySQL, MSSQL, Oracle), 3D Graphics (Direct3D, OpenGL, OSG, X3D), Internet Application

Hardware & Virtual Reality

- Analog/Digital circuit design, Microprocessors and Embedded Systems (AVR, PIC, Arduino, Raspberry Pi, Beagle Bone Black, Intel Edison), NI DAQ/RIO
- Multi-channel 3D Visualization over distributed network, CAVE

Applied Mathematics

- Signal processing, stochastic modeling, optimization, functional analysis, numerical analysis, differential geometry, nonlinear geometric control

Outreach & Extra Activities

- Faculty Mentor for Korean-American Scientist and Engineers Association (KSEA) at TAMU
- Faculty Mentor for First Generation Engineering Students (FGE)

- Helping establish a robotics program in the Department of Electrical and Computer Engineering Technology at Chattahoochee Technical College, Acworth, GA
- Advising a student organization “Texas A&M University Robotics Team and Leadership Experience (TURTLE)”
- Faculty Mentor for Louis Stokes Alliance for Minority Participation (LSAMP) Bridge to Doctorate Program (BTD)
- Robotics club at Deer Creek Intermediate School in Winconsin
- (Ordained) Deacon, Korean Church at Champaign-Urbana
- Web masters for several organizations
- Development of library information system for Korean Language School in Champaign
- Development of Election System for a Korean Church
- Flutist, Piano Accompanist at Korean Churches