Pilwon**Hur**

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Appointments

Texas A&M University   *College Station, TX*

ASSISTANT PROFESSOR - MECHANICAL ENGINEERING   *Aug. 2014 - PRESENT*

COURTESY APPOINTMENTS - BIOMEDICAL ENGINEERING, ELECTRICAL ENGINEERING   *Under Review*

- 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, Optimization, Biomechanics, Sensorimotor System for Human Movement, Estimation Theory, Functional Analysis for Engineering Optimization

Texas A&M Engineering Experiment Station   *College Station, TX*

CENTER FOR REMOTE HEALTH TECHNOLOGIES AND SYSTEMS   *Jun. 2015 - PRESENT*

University of Wisconsin-Milwaukee   *Milwaukee, WI*

POSTDOCTORAL RESEARCH FELLOW - CENTER FOR ERGONOMICS   *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   *Urbana, IL*

PH.D. MECHANICAL ENGINEERING   *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   *Daejeon, Korea*

M.S. MECHANICAL ENGINEERING   *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 Kown, Jung Kim

Hanyang University   *Seoul, Korea*
B.S. MECHANICAL ENGINEERING   *Mar. 1998 - Aug. 2004*
- Fields of Interests: Robotics, Automatic Control, Mechatronics
- Thesis: Implementation of a clock using LEDs and inverted pendulum
- Advisor: Jahng-Hyon Park
- Summa Cum Laude

Busan High School   *Busan, Korea*
HIGH SCHOOL DIPLOMA   *Mar. 1995 - Feb. 1998*
- Concentration on Mathematics and Science
- Summa Cum Laude

Research Experience

Texas A&M University   *College Station, TX*
ASISSTANT PROFESSOR   *Aug. 2014 - PRESENT*
- Design and control of transfemoral prosthesis.
- Shared control of an exoskeleton with compliant human-robot interaction.
- Control of bipedal walking with slip/push recovery.
- Upper limb rehabilitation for stroke survivors using gyroscopic effect.
- Balance rehabilitation using sensory augmentation via skin stretch and electrotactile feedbacks.
- Development of sensors for real-time monitoring of equine-assisted activities and therapy.
- Haptic customization for the novice wheelchair driver for the optimal performance.
- Muscle synergy and slip recovery mechanisms for after unexpected slip.

University of Wisconsin-Milwaukee   *Milwaukee, WI*
POSTDOCTORAL RESEARCH FELLOW   *Sep. 2010 - Jun. 2014*
- 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.

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

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
- MEEN431: Advanced System Dynamics and Controls - Fall 2016
- MEEN655: Design of Nonlinear Control Systems - Spring 2016
- MEEN689: Advanced Robotics - Spring 2017

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 - PRESENT

PH.D. STUDENTS

- Moein Nazifi - Muscle synergy based rehabilitation for slipping perturbation, Sep. 2014 - PRESENT
- Yitsen Pan - Balance and gait rehabilitation, Dec. 2014 - PRESENT
- Kenneth Chao - Dynamic bipedal robotic walking with slipping perturbation, May. 2015 - PRESENT
- Christian DeBuys - Shared control of an exoskeleton for paraplegic SCI patients, Jun. 2016 - PRESENT
- Shawanee Patrick - Biomechanical evaluation transfemoral prosthetics, Jul. 2016 - PRESENT

M.S. STUDENTS

- Daniel McGowan - Design of hybrid transfemoral prosthesis, Sep. 2015 - PRESENT
- Woolim Hong (ECEN) - Control of transfemoral prosthesis, Sep. 2015 - PRESENT
- Namita Anil Kumar - Design of upper limb rehabilitation device for stroke patients using gyroscopic effect, Sep. 2015 - PRESENT
- Kenny Chour - Electrotactile display and rehabilitation, Jan. 2016 - PRESENT
- Shawanee Patrick - Biomechanical evaluation transfemoral prosthesis, Jul. 2015 - Jun. 2016
- Victor Christian Paredes Cauna - Control of transfemoral prosthesis using spline-based optimization, Jul. 2015 - Jun. 2016

UNDERGRADUATE STUDENTS

- Wyatt Hahn, Fall 2016 - PRESENT
- William Barr, Fall 2016 - PRESENT
- Tyler Marr, Summer 2016 - PRESENT
- Teresa Fang, Spring 2016 - PRESENT
- Adrian Alba, Spring 2016 - PRESENT
- Jung Kyoo Kim (ECEN), Fall 2015 - PRESENT
- Lanna Lytle, Spring 2015 - PRESENT
- Ian De Vlaming, Fall 2015 - Spring 2016
- Shyla Escobedo, Spring 2015 - Spring 2016
- Michelle Petersen, Spring 2015 - Spring 2016
- Haley Worsham, Fall 2015 - Spring 2016
- Eric Matthews (BMEN), Spring 2016
- Tyler Martin (BIOL), Spring 2016
- Sohee Kim, Spring 2015
- Gulam-Mustafa Mohammed, Spring 2015
- Jarrett Battistini, Spring 2015

Visiting Scholars and Interns

VISITING SCHOLARS

INTERNS

- 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
- Ivan De Jesus Diaz Rodriguesz (ECEN, Shankar Bhattacharyya) - Modern design of classical controller, 2016
- Sitae Kim (MEEN, Alan Palazzolo) - Multiple steady state responses prediction for nonlinear rotordynamic systems, Planned
- Chi-Wei Kuo (MEEN, Chii-Der Suh) - Controlling bifurcation and dynamic behavior in vibro-impact systems, Planned
- Niladri Das (ASEN, Raktim Bhattacharya) - Control of tensegrity systems, Planned

M.S. Degree
- Achu G Byju (BMEN, Michael Madigan) - Development of balance recovery training device and biomechanical measures for tripping risk, Planned
- Jacob D. Southern (MEEN, Chii-Der Suh) - High speed spindle design using radial and axial active magnetic bearings, Planned
- Shawanee Patrick (MEEN, Pilwon Hur) - Biomechanical analysis of lower limb powered prosthesis, 2016
- Victor Paredes (MEEN, Pilwon Hur) - Upslope walking with transfemoral prosthesis using optimization based spline generation, 2016
- Aakar Mehra (MEEN, Aaron Ames) - Analysis of various adaptive cruise controller via experimental implementation, 2015

Service Activities

Texas A&M University

Departmental
- Seminar Committee for MEEN 681 - Fall 2014, Spring 2015, Fall 2015
- Qualifier Committee for Control - Spring 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 BioRobotics

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

Journal

Reviewers

- IEEE Transactions on Human-Machine Systems
- IEEE Transactions on Haptics
- IEEE Transaction on Industrial Electronics
- ASME Journal of Biomechanical Engineering
- Advances in Mechanical Engineering
- Journal of Biomechanics
- Journal of Applied Biomechanics
- Journal of Neurophysiology
- PLOS ONE
- 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
- krean-American Scientist and Engineers Association
- American Society of Biomechanics
- Korean Society of Simulation
- Korean Society of CAD/CAM

Publication

Journal Papers

j22. Na Jin Seo, Vincent Crocher, Egli Spaho, Charles Ewert, Mojtaba F. Fathi, Pilwon Hur, Suzanne Marchant, Michelle Wood-bury, Sara J. Atkinson, Elizabeth M. Humanitzki, Abigail Lauer, "Capturing Upper Limb Gross Motor Categories Using the Kinect Sensor," *Journal of Hand Therapy*, Under Review

j21. 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

j20. Han Ul Yoon, and Pilwon Hur, "Customizing Haptic and Visual Feedback for Assistive Human-Robot Interface," *Robotics and Autonomous Systems*, Under Review

j19. Han Ul Yoon, and Pilwon Hur, "Effect of customized haptic feedback on navigation characteristics and performance," *IEEE Trans on Human-Machine Systems*, Under Review

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*, Under Review

j17. Na Jin Seo, Mojitaba Fathi-Firoozabad, Pilwon Hur, and Vincent Crocher, "Modifying Kinect Placement to Improve Upper

Limb Joint Angle Measurement Accuracy," *Journal of Hand Therapy*, Accepted

j16. 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*, 53(3), pp1-13, 2016

j15. 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*, 10.1109/TNSRE.2016.2542064, 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*, 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*, 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*, 61(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*, 24(1), pp159-164, 2014

j10. Pilwon Hur, Karl Rosengren, Gavin Horn, Denise Smith and Elizabeth Hsiao-Wecksler, "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*, 45(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*, 221(3), pp299-308, 2012

j6. Pilwon Hur, A. Kenneth Shorter, Prashant Mehta, and Elizabeth Hsiao-Wecksler, "Invariant Density Analysis: modeling and analysis of the postural control system using Markov chains," *IEEE Trans on Biomed Eng*, 59(4), pp1094-1100, 2012

j5. Kiwon Park, Pilwon Hur, Karl Rosengren, Gavin Horn, and Elizabeth Hsiao-Wecksler, "Effect of load carriage on gait due to firefighting air bottle configuration," *Ergonomics*, 53(7), pp882-891, 2010

j4. Pilwon Hur, Brett Duiser, Srinivasa Salapaka, and Elizabeth Hsiao-Wecksler, "Measuring robustness of the postural control system to a mild impulsive perturbation," *IEEE Trans on Neural Systems and Rehab Eng*, 18(4), pp461-467, 2010

j3. Gavin Horn, Elizabeth Hsiao-Wecksler, Karl Rosengren, Pilwon Hur, Kiwon Park, and Denise Smith, "Slips, trips, and falls on the fireground - A study at IFSI," *Fire Rescue*, 27(1), pp56-58, 2009

j2. Pilwon Hur, Byounghyun 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*, 85(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*, 13(1), pp45-57, 2008

Conference Papers

c46. Victor Parades, Woolim Hong, Shawanee Patrick, Huihua Zhao, Aaron Ames, and Pilwon Hur, "Upslope walking with transfemoral prosthesis using optimization based spline generation," *IEEE/RSJ International Conference on Intelligent Robots and Systems*, Oct 9-14, Daejeon, Korea, 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 tem-

porospatial 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 snergy 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. Mojitaba 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, Philadephia, 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-Tettey 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-Wecksler, "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-Wecksler, "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-Wecksler, "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-Wecksler, "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-Wecksler, "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-Wecksler, "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-Wecksler, "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-Wecksler, "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-Wecksler, 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-Wecksler, "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-Wecksler, "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-Wecksler, 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, Forthcoming

Invited Talks

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

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 Schoarship, 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, Delsys Travel Grant, 2016
- Han Ul Yoon, TAMU Postdoc Travel Grant, 2016
- Shawanee Patrick, ASB Diversity Travel Award, 2016
- Moein Nazifi, Mechanical Engineering Travel Grant, 2015, 2016
- 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

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

- 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