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EDUCATION / TRAINING

Harvard Medical School, Cambridge, MA, USA (Advisor: Paolo Bonato)	Postdoctoral Research Fellowship in Physical Medicine & Rehabilitation	2016
University of California (UCLA), Los Angeles, CA, USA (Advisor: Majid Sarrafzadeh)	Ph.D. in Computer Science (with <i>Outstanding Research Award</i>)	2014
University of California (UCLA), Los Angeles, CA, USA	M.S. in Computer Science	2013
University of California (UCLA), Los Angeles, CA, USA	M.S. in Electrical Engineering	2010
Simon Fraser University, Burnaby, BC, Canada	B.A.Sc. in Computer Engineering (with <i>Honors</i>)	2008

PROFESSIONAL POSITIONS

Assistant Professor	September 2016 – Present	College of Information and Computer Sciences, University of Massachusetts, Amherst, MA, USA
Adjunct Assistant Professor	September 2018 – Present	Department of Biomedical Engineering, University of Massachusetts, Amherst, MA, USA
Adjunct Assistant Professor	November 2018 – Present	Department of Electrical and Computer Engineering, University of Massachusetts, Amherst, MA, USA
Postdoctoral Research Fellow	July 2014 – August 2016	Department of Physical Medicine and Rehabilitation, Harvard Medical School, Cambridge, MA, USA
Research Internship	June 2013 – September 2013	Embedded Processing Systems R&D Center, Texas Instruments (TI), Dallas, TX, USA
Research Assistant	September 2009 – June 2014	Computer Science Department, University of California (UCLA), Los Angeles, CA, USA

RESEARCH INTERESTS

- Biomedical and health informatics in physical medicine and rehabilitation
- Patient-centered mobile health system design
- Wearable sensor design, batteryless wearable sensing, power harvesting

HIGHLIGHTS

- **Cover Article of the Issue** at the IEEE Journal of Biomedical and Health Informatics, May 2019
- **NIH Trailblazer Award** for Early Career Investigators, September 2018
- **NSF CRII Award** for Early Career Investigators, July 2018
- **Elected Associate Member** of the Technical Committee on Wearable Biomedical Sensors and System of the IEEE Engineering in Medicine and Biology Society, 2018 – present
- **Editorial Board Member** (Academic Editor) of PLOS ONE, 2018 – current
- **Founding Associate Editor** of the IEEE Open Journal of Engineering in Medicine and Biology, 2019 – present.

FUNDED RESEARCH GRANTS

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|------|--|-------------|-------------|---------------|
| [G7] | NIH - NIBIB R01
Achieving Optimal Motor Function in Stroke Survivors via a Human-Centered Approach to Design an mHealth Platform
(Note: <i>This application received a 6th percentile review score.</i>) | \$2,825,577 | Pending | Role: PI |
| [G6] | NIH - NIMH R01
SCH: Acoustic Sensing-Based Wearable system for Monitoring Social Dysfunction in Schizophrenia.
(Note: <i>the PI Xiong and I had put equivalent efforts to prepare this grant application</i>) | \$1,144,121 | 09/19-08/23 | Role: Co-PI |
| [G5] | UMass Armstrong Fund for Research
Enabling Batteryless Wearable Sensors via Intra-Body Power Transfer | \$40,000 | 08/19-07/21 | Role: PI |
| [G4] | NIH - NINDS R15
Using Wearable and Mobile Data to Diagnose and Monitor Movement Disorders | \$395,701 | 12/18-11/21 | Role: Site PI |
| [G3] | NIH - NIBIB Trailblazer R21
A Wearable mHealth System for the Longitudinal Monitoring of Joint Function in Patients with Knee OA | \$615,892 | 8/18-4/21 | Role: PI |
| [G2] | NSF - SCH CRII
Applying Motor Control Theories for Ambulatory Monitoring of 3D Upper-Limb Movement. | \$174,288 | 7/18-6/19 | Role: PI |
| [G1] | UMass Institute of Applied Life Sciences
Development of a Body Area Networked System with Novel Finger-Worn Sensors to Monitor Hand and Arm Movements in Free Living Conditions. | \$10,000 | 6/18-8/18 | Role: PI |

PUBLICATIONS

Selected Publications

- [LP23] Y. Kim, H.T. Jung, J. Park, Y. Kim, R. Ramasarma, P. Bonato, E.K. Choe, **S.I. Lee**, “Towards the Design of a Ring Sensor-based mHealth System to Achieve Optimal Motor Function in Stroke Survivors,” ACM Interactive, Mobile, Wearable and Ubiquitous Technologies (ACM IMWUT), vol. 3 no. 4, November, 2019.
- [LP22] R. Shukla, N. Kiran, R. Wang, J. Gummeson, **S.I. Lee**, “SkinnyPower: Enabling Battery-less Wearable Sensors via Intra-Body Power Transfer,” The 17th ACM Conference on Embedded Networked Sensor Systems (ACM SenSys’19), New York, USA, November, 2019.
- [LP18] H.T. Jung, H. Lee, K. Kim, B. Kim, S. Park, T. Ryu, Y. Kim and **S.I. Lee**, “Remote Assessment of Cognitive Impairment Level based on Serious Mobile Game Performance,” IEEE Journal of Biomedical and Health Informatics (J-BHI), vol. 23, no. 3, pp 1269-1277, May, 2019 [**Cover Article of the Issue**].
- [LP17] **S.I. Lee**, X. Liu, S. Rajan, N. Ramasarma, E.K. Choe, and P. Bonato, “A novel upper-limb function measure derived from finger-worn sensor data collected in a free-living setting,” Plos One, vol. 14, no. 3, e0212484, 2019.

Long Publications – Journal Articles / Long Conference Proceedings

- [LP24] B. Oubre, J-F Daneault, H.T. Jung, K. Whritenour, J.G.V. Miranda, J. Park, T. Ryu, Y. Kim, **S.I. Lee**, “Estimating Upper-Limb Impairment Level in Stroke Survivors using Wearable Inertial Sensors and a Minimally-Burdensome Motor Task,” IEEE Transactions on Neural Systems & Rehabilitation Engineering (IEEE TNSRE), Accepted for Publication, 2020.

- [LP23] Y. Kim, H.T. Jung, J. Park, Y. Kim, R. Ramasarma, P. Bonato, E.K. Choe, **S.I. Lee**, "Towards the Design of a Ring Sensor-based mHealth System to Achieve Optimal Motor Function in Stroke Survivors," *ACM Interactive, Mobile, Wearable and Ubiquitous Technologies (ACM IMWUT)*, vol. 3 no. 4, November 2019.
- [LP22] R. Shukla, N. Kiran, R. Wang, J. Gummesson, **S.I. Lee**, "SkinnyPower: Enabling Battery-less Wearable Sensors via Intra-Body Power Transfer," *The 17th ACM Conference on Embedded Networked Sensor Systems (ACM SenSys'19)*, New York, USA, November, 2019.
- [LP21] L. Chen, J. Xiong, X. Chen, **S.I. Lee**, K. Chen, D. Han, D. Fang, Z. Tang, "WideSee: Towards Wide-Area Contactless Wireless Sensing," *The 17th ACM Conference on Embedded Networked Sensor Systems (ACM SenSys'19)*, New York, USA, November, 2019 [**Best Paper Nominee**].
- [LP20] L. Chen, J. Xiong, X. Chen, **S.I. Lee**, D. Zhang, T. Yan, D. Fang, "LungTrack: Towards Contactless and Zero Dead-Zone Respiration Monitoring with Commodity RFIDs," *ACM Interactive, Mobile, Wearable and Ubiquitous Technologies (ACM IMWUT)*, vol. 3 no. 3, September, 2019.
- [LP19] P. Khaloo, B. Oubre, J. Yang, T. Rahman, **S.I. Lee**, "NOSE: Novel Odor Sensing Engine for Ambient Monitoring of the Frying Cooking Method in Kitchen Environments," *ACM Interactive, Mobile, Wearable and Ubiquitous Technologies (ACM IMWUT)*, vol. 3, no. 2, June, 2019.
- [LP18] H.T. Jung, H. Lee, K. Kim, B. Kim, S. Park, T. Ryu, Y. Kim and **S.I. Lee**, "Remote Assessment of Cognitive Impairment Level based on Serious Mobile Game Performance," *IEEE Journal of Biomedical and Health Informatics (J-BHI)*, vol. 23, no. 3, pp 1269-1277, May, 2019 [**Cover Article of the Issue**].
- [LP17] **S.I. Lee**, X. Liu, S. Rajan, N. Ramasarma, E.K. Choe, and P. Bonato, "A novel upper-limb function measure derived from finger-worn sensor data collected in a free-living setting," *Plos One*, vol. 14, no. 3, e0212484, 2019.
- [LP16] X. Liu, S. Rajan, N. Ramasarma, P. Bonato, **S.I. Lee**, "The Use of A Finger-Worn Accelerometer for Monitoring of Hand Use in Ambulatory Settings," *IEEE Journal of Biomedical and Health Informatics (J-BHI)*, vol. 23, no. 2, 2019 [**Nominated for the Cover Article of the Issue**].
- [LP15] **S.I. Lee**, C.P. Adans-Dester, M. Grimaldi, A.V. Dowling, P.C. Horak, R.M. Black-Schaffer, P. Bonato, J.T. Gwin, "Enabling Stroke Rehabilitation in Home and Community Settings: A Wearable Sensor-Based Approach for Upper-Limb Motor Training," *IEEE Journal of Translational Engineering in Health and Medicine (J-TEHM)*, vol. 6, no. 1, pp 1-11, 2018.
- [LP14] B.M. Eskofier, **S.I. Lee**, M. Baron, A. Simon, C.F. Martindale, H. Gaßner, J. KluckenAn, "Overview of Smart Shoes in the Internet of Health Things: Gait and Mobility Assessment in Health Promotion and Disease Monitoring," *Applied Sciences (Appl. Sci.)*, vol. 7, no. 986, 2017 [**Featured Article of the Issue**].
- [LP13] **S.I. Lee**, A. Champion, A. Huang, E. Park, J.H. Garst, N. Jahanforouz, M. Espinal, T. Siero, S. Pollack, M. Afridi, M. Daneshvar, S. Ghias, M. Sarrafzadeh, D.C. Lu, "Finding Predictors for Postoperative Clinical Outcome in Lumbar Spinal Stenosis Patients using Smart-shoe Technology," *Journal of NeuroEngineering and Rehabilitation (JNER)*, vol. 14, no. 77, 2017.
- [LP12] J.F. Daneault, G. Vergara-Diaz, **S.I. Lee**, "Clinical Management of Drug-Induced Dyskinesia in Parkinson's Disease: Why Current Approaches May Need to be Changed to Optimize Quality of Life", *European Medical Journal Reviews (EMJ-R)*, vol. 1, no. 4, pp 62-69, 2016.
- [LP11] **S.I. Lee**, C. Li, H.A. Hoffman, D. S. Lu, R. Getachew, B. Mortazavi, J. H. Garst, M. Espinal, M. Razaghy, N. Ghalehsari, B. H. Paak, A. A. Chavam, M. Afridi, A. Ostowari, H. Ghasemzadeh, D. C. Lu, M. Sarrafzadeh, "Quantitative Assessment of Hand Motor Function in Cervical Spinal Disorder Patients Using Target Tracking Tests," *Journal of Rehabilitation Research & Development (JRRD)*, vol. 55, no. 6, 2016.

- [LP10] E. Park, **S.I. Lee**, J.H. Garst, A. Huang, A. Campion, N. Ghalehsariand, M. Arnell, S. Park, H.J. Chang, D.C. Lu, M. Sarrafzadeh, "Unobtrusive and continuous alcohol monitoring using a wearable device," *Methods of Information in Medicine (Methods Inf Med)*, vol. 38, no. 5, 2016.
- [LP9] **S.I. Lee**, E. Park, A. Huang, B. Mortazavi, J.H. Garst, N. Jahanforouz, M. Espinal, T. Siero, S. Pollack, M. Afridi, M. Daneshvar, S. Ghias, D. C. Lu, M. Sarrafzadeh, "Objectively Quantifying Walking Ability in Degenerative Spinal Disorder Patients using Sensor Equipped Smart Shoes," *Medical Engineering & Physics (Med Eng Phys)*, vol. 38, no. 5, pp 442-449, 2016.
- [LP8] B. Mortazavi, M. Pourhomayoun, **S.I. Lee**, S. Nyamathi, B. Wu, M. Sarrafzadeh, "User-Optimized Activity Recognition for Exergaming," *Pervasive and Mobile Computing (PMC)*, vol. 26, 2016.
- [LP7] **S.I. Lee**, B. Mortazavi, H. A. Hoffman, D. S. Lu, C. Li, B. H. Paak, J. H. Garst, M. Razaghy, M. Espinal, E.Park, D. C. Lu, M. Sarrafzadeh "A Prediction Model for Functional Outcomes in Spinal Cord Disorder Patients using Gaussian Process Regression," *IEEE Journal of Biomedical and Health Informatics (JBHI)*, vol. 22, no. 1, 2016 [**Nominated for the Cover Article of the Issue**]
- [LP6] H.A. Hoffman, **S.I. Lee**, J.H. Garst, D.S. Lu, C. Li, D.T. Nagasawa, N. Ghalehsari, N. Jahanforouz, M. Razaghy, M. Espinal, A. Ghavamrezaii, B.H. Paak, M. Sarrafzadeh, D. C. Lu, "Use of Multivariate Linear Regression and Support Vector Regression to Predict Functional Outcome After Surgery for Cervical Spondylotic Myelopathy," *Journal of Clinical Neuroscience (J Clin Neurosci)*, vol. 22, no.9, 2015
- [LP5] B. Mortazavi, M. Pourhomayoun, S. Nyamathi, B. Wu, **S. I. Lee**, M. Sarrafzadeh, "Multiple Model Recognition for Near-Realistic Exergaming," *IEEE International Conference on Pervasive Computing and Communications (IEEE PerCom'15)*, St. Louis, USA, March, 2015
- [LP4] R. Getachew, **S.I. Lee**, A. Yew, J. Kimball, D.S. Lu, J.H. Garst, N. Ghalehsari, B. H. Paak, M. Razaghy, M. Espinal, A. Ostowari, A. Ghavamrezaii, S. Pourtaheri, M. Sarrafzadeh, Daniel C. Lu, "Utilization of A Novel Digital Measurement Tool for Quantitative Assessment of Upper Extremity Motor Dexterity: A Controlled Pilot Study," *Journal of NeuroEngineering and Rehabilitation (JNER)*, vol .11, no. 121, 2014.
- [LP3] B. Mortazavi, S. Nyamathy, **S.I. Lee**, T. Wilkerson, H. Ghasemzadeh, M. Sarrafzadeh, "Near-Realistic Mobile Exergames with Wireless Wearable Sensors," *IEEE Journal of Biomedical and Health Informatics (JBHI)*, vol 18, no. 2, pp. 449-456, 2014. [**Featured Article of the Issue**]
- [LP2] T. Park, I. Hwan, U. Lee, **S.I. Lee**, C. Yoo, H. Jang, S. Choe, S. Park, J. Song, "ExerLink: Enabling Pervasive Social Exergames with Heterogeneous Exercise Devices" *ACM MobiSys 2012* , Lake District, UK, June, 2012
- [LP1] **S.I. Lee**, H. Ghasemzadeh, B.J. Mortazavi, M. Sarrafzadeh, "Pervasive Assessment of Motor Function: A Lightweight Grip Strength Tracking System," *IEEE Journal of Biomedical and Health Informatics (JBHI)*, vol. 17, no. 6, pp. 1023-1030, 2013

Short Publications – Peer-reviewed Conference / Workshop Proceedings

- [SP21] Y. Lee, X. Liu, J. Gummeson, **S.I. Lee**, "A Wearable RFID System to Monitor Hand Use for Individuals with Upper Limb Paresis," *The 16th IEEE International Conference on Wearable and Implantable Body Sensor Networks (IEEE BSN'19)*, Chicago, USA, May, 2019.
- [SP20] H.T. Jung, H. Lee, K. Kim, B. Kim, S. Park, T. Ryu, Y. Kim, J-F. Daneault, **S.I. Lee**, "Predicting Cognitive Impairment Level after a Serious Game-based Therapy in Chronic Stroke Survivors," *IEEE International Conference on Biomedical and Health Informatics (IEEE BHI'19)*, Chicago, USA, May, 2019.
- [SP19] **S.I. Lee**, H.T. Jung, J. Park, J. Jeong, T. Ryu, Y. Kim, V.S. dos Santos, J.G.V. Miranda, J-F. Daneault, "Towards the Ambulatory Assessment of Movement Quality in Stroke Survivors using a Wrist-worn Inertial

Sensor," 2018 IEEE Engineering in Medicine and Biology Conference (IEEE EMBC'18), Hawaii, USA, August, 2018.

- [SP18] X. Liu, S. Rajan, N. Ramasarma, P. Bonato, **S.I. Lee**, "Finger-Worn Sensors for Accurate Functional Assessment of the Upper Limbs in Real-World Setting," 2018 IEEE Engineering in Medicine and Biology Conference (IEEE EMBC'18), Hawaii, USA, August, 2018.
- [SP17] H.T. Jung, H. Lee, K. Kim, B. Kim, S. Park, T. Ryu, Y. Kim, **S.I. Lee**, "Estimating Mini Mental State Examination Scores using Game-Specific Performance Values: A Preliminary Study," 2018 IEEE Engineering in Medicine and Biology Conference (IEEE EMBC'18), Hawaii, USA, August, 2018.
- [SP16] J. Park, H.T. Jung, J-F. Daneault, S. Park, T. Ryu, Y. Kim, **S.I. Lee**, "Feasibility of Using the RAPAEL Smart Board for Upper Limb Therapy in Stroke Survivors: A Randomized Controlled Trial," 2018 IEEE Engineering in Medicine and Biology Conference (IEEE EMBC'18), Hawaii, USA, August, 2018.
- [SP15] H.T. Jung, J.W. Park, J.G. Jeong, T.K. Ryu, Y.S. Kim, **S.I. Lee**, "A Wearable Monitoring System for At-Home Stroke Rehabilitation Exercises: A Preliminary Study," 2018 IEEE International Conference on Biomedical and Health Informatics (IEEE BHI'18), Las Vegas, March, 2018 [**NSF Student Traveling Award for H.T. Jung**, acceptance rate: 14%].
- [SP14] B.M. Eskofier, **S.I. Lee**, J-F Daneault, F.N. Golabchi, G. Ferreira-Carvalho, G. Vergara-Diaz, S. Sapienza, G. Costante, T. Kautz, J. Klucken, P. Bonato, "Recent Machine Learning Advancements in Sensor-based Mobility Analysis: Deep learning for Parkinson's Disease Assessment," 2016 IEEE Engineering in Medicine and Biology Conference (IEEE EMBC'16), Orlando, USA, August, 2016.
- [SP13] **S.I. Lee**, J-F Daneault, L. Weydert, P. Bonato, "A Novel Flexible Wearable Sensor for Estimating Joint-Angles," 2016 IEEE Body Sensor Network Conference (IEEE BSN'16), San Francisco, USA, June, 2016.
- [SP12] **S.I. Lee**, J-F Daneault, F.N. Golabchi, S. Patel, L. Shih, P. Bonato, "A Novel Technique for Assessing the Level of Drug-induced Dyskinesia using Wearable Sensors," 2015 IEEE Engineering in Medicine and Biology Conference (IEEE EMBC'15), Milano, Italy, August, 2015.
- [SP11] **S.I. Lee**, M.Y. Ozsecen, L.D. Toffola, J-F Daneault, A. Puiatti, S. Patel, P. Bonato, "Activity Detection in Uncontrolled Free-living Conditions Using a Single Accelerometer," 2015 IEEE Body Sensor Network Conference (IEEE BSN'15), Cambridge, USA, June, 2015.
- [SP10] B. Mortazavi, M. Pourhomayoun, N. Alshurafa, M. Chronley, **S. I. Lee**, C. Roberts, M. Sarrafzadeh, "Support Vector Regression for METs of Exergaming Actions," IEEE Healthcare Innovation Point-of-Care Technologies Conference (HIC-POCT'14), Seattle, USA, October, 2014
- [SP9] B. Mortazavi, **S. I. Lee**, M. Sarrafzadeh, "User-centric exergaming with fine-grain activity recognition: a dynamic optimization approach," ACM UbiComp International Workshop on Smart Health Systems and Applications (SmartHealthSys'14), Seattle, USA, September, 2014
- [SP8] B. Mortazavi, M. Pourhomayoun, G. Alsheikh, N. Alshurafa, **S.I. Lee**, M. Sarrafzadeh, "Determining the Single Best Axis for Exercise Repetition Recognition and Counting with Smart Watches," 2014 IEEE Body Sensor Network Conference (IEEE BSN'14), Zurich, Switzerland, June, 2014
- [SP7] **S.I. Lee**, H. Ghasemzadeh, B.J. Mortazavi, M. Lan, M. Ong, M. Sarrafzadeh, "Remote Patient Monitoring: What Impact Can Data Analytics Have on Cost?," ACM Wireless Health 2013 (WH2013), Baltimore, USA, November, 2013
- [SP6] **S.I. Lee**, H. Ghasemzadeh, B.J. Mortazavi, A. Yew, R. Getachew, M. Razaghy, N. Ghalehsari, B.H. Paak, J.H. Garst, M. Espinal, J. Kimball, D. C. Lu, M. Sarrafzadeh, "Objective Assessment of Overexcited Hand Movements using a Lightweight Sensory Device," 2013 IEEE Body Sensor Network Conference (IEEE BSN'13), MIT, USA, May, 2013

- [SP5] B. Mortazavi, N. Alsharufa, **S.I. Lee**, M. Lan, M. Chronley, C.K. Roberts, M. Sarrafzadeh, "MET Calculations from On-Body Accelerometers for Exergaming Movements," 2013 IEEE Body Sensor Network Conference (IEEE BSN'13), MIT, USA, May, 2013.
- [SP4] H. Kalantarian, **S.I. Lee**, A. Mishra, H. Ghasemzadeh, M. Sarrafzadeh, "Multimodal Energy Expenditure Calculation for Pervasive Health: A Data Fusion Model using Wearable Sensors," Proceedings of IEEE PerCom Workshop on Smart Environment and Ambient Intelligence, San Diego, California, March, 2013
- [SP3] **S.I. Lee**, J. Woodbridge, A. Nahapetian, M. Sarrafzadeh, "MARHS: Mobility Assessment System with Remote Healthcare Functionality for Movement Disorders," ACM SIGHT IHI 2012, Miami, USA, January, 2012
- [SP2] **S.I. Lee**, C. Ling, A. Nahapetian, M. Sarrafzadeh, "A Mechanism for Data Quality Estimation of On-Body Cardiac Sensor Networks," inProc. IEEE CCNC 2012, Las Vegas, Nevada, USA, January 2012
- [SP1] **S.I. Lee**, H. Park, and M. van der Schaar, "Foresighted Joint Resource Reciprocation and Scheduling Strategies for Real-time Video Streaming over Peer-to-Peer Networks," Int. Packet Video Workshop 2009 (PV 2009), May 2009

Abstracts, Posters, and Demos

- [A29] R. Shukla, N. Kiran, R. Wang, J. Gummeson, **S.I. Lee**, "SkinnyPower: Enabling Battery-less Wearable Sensors via Intra-Body Power Transfer," The 17th ACM Conference on Embedded Networked Sensor Systems (ACM SenSys'19), New York, USA, November, 2019.
- [A28] K. Chen, L. Chen, D. Han, J. Xiong, **S.I. Lee**, X. Chen, Z. Tang, D. Fang, F. Wang, Z. Wang, "WideSee: Towards Wide-Area Contactless Wireless Sensing," The 17th ACM Conference on Embedded Networked Sensor Systems (ACM SenSys'19), New York, USA, November, 2019.
- [A27] N. Williams, E. Steiner, T. Nanglo, M. Jasim, J. Kim, J.-F. Daneault, K. Boyer, **S.I. Lee**, "A Low-Cost Wearable System to Estimate Free-Living 3D Ground Reaction Force," The 16th IEEE International Conference on Wearable and Implantable Body Sensor Networks (IEEE BSN'19), Chicago, USA, May, 2019
- [A26] J. Yang, A. Varga, K. Tung, A. Chandra, B. Oubre, N. Ramasarma, E.K. Choe, P. Bonato, **S.I. Lee**, "A Finger-Worn Sensor Network for Monitoring the Real-World Performance of Stroke Survivors," The 16th IEEE International Conference on Wearable and Implantable Body Sensor Networks (IEEE BSN'19), Chicago, USA, May, 2019
- [A25] A. Chandra, R. Zabounidis, K. Tung, H.T. Jung, J.-F. Daneault, and **S.I. Lee**, "SmartDiagnostics: A Mobile Application for the Monitoring and Management of Movement Disorders," IEEE International Conference on Biomedical and Health Informatics (IEEE BHI'19), Chicago, USA, May, 2019.
- [A24] **S.I. Lee**, J.F. Daneault, K. Boyer, "Estimating Ground Reaction Force and Center of Pressure During Gait Using a Low-Cost, Body-Networked Wearable System," 2018 IEEE International Conference on Biomedical and Health Informatics (IEEE BHI'18), Las Vegas, March, 2018.
- [A23] X. Liu, S. Rajan, G. Hollander, N. Ramasarma, P. Bonato, **S.I. Lee**, "A Novel Finger-Worn Sensor for Ambulatory Monitoring of Hand Use," The 2nd IEEE/ACM Conference on Connected Health: Applications, Systems, and Engineering Technologies (IEEE/ACM CHASE 2017), Philadelphia, July, 2017 [**NSF Student Traveling Award for X. Liu**].
- [A22] J.F. Daneault, **S.I. Lee**, F.N. Golabchi, S. Patel, L. Shih, S. Pagnoni, P. Bonato, "Estimating Bradykinesia in Parkinson's Disease with a Minimum Number of Wearable Sensors," The 2nd IEEE/ACM Conference on Connected Health: Applications, Systems, and Engineering Technologies (IEEE/ACM CHASE 2017), Philadelphia, July, 2017.

- [A21] S. Sapienza, C.P. Adans-Dester, A. O'Brien, G.V. Diaz, **S.I. Lee**, S. Patel, R. Black-Schaffer, R. Zafonte, P. Bonato, C. MEagher, A.M. Hughes, J. Burrige, D. Demarchi, "Using a Minimum Set of Wearable Sensors to Assess Quality of Movement in Stroke Survivors," The 2nd IEEE/ACM Conference on Connected Health: Applications, Systems, and Engineering Technologies (IEEE/ACM CHASE 2017), Philadelphia, July, 2017.
- [A20] S. Rajan, X. Liu, G. Hollander, N. Ramasarma, P. Bonato, **S.I. Lee**, "A Finger-Worn Ring Sensor to Capture Hand Movements in an Ambulatory Setting," 94th Annual Conference of American Congress of Rehabilitation Medicine (ACRM), Atlanta, USA, Oct, 2017.
- [A19] C.P. Adans-Dester, P. Bonato, A. Dowling, J. Gwin, **S.I. Lee**, A. O'Brian, "Wrist-Worn Sensors for Tele-Rehabilitation of the Hemiparetic Upper-Extremity: Stakeholder Interviews for Feedback and Usability," 94th Annual Conference of American Congress of Rehabilitation Medicine (ACRM), Atlanta, USA, Oct, 2017.
- [A18] G. Costante, E. Bonizzoni, A. Puiatti, **S.I. Lee**, P. Bonato, "MercuryLive 4.0 - A Web Platform to Enable Remote Monitoring of Patients with Parkinson's Disease Using Wearable Sensors," 2017 IEEE Body Sensor Network Conference (IEEE BSN'17), Eindhoven, The Netherlands, May, 2017.
- [A17] J.F. Daneault, C. Kanzler, S.I. Lee, F. Golabchi, G. Vergara-Diaz, G.F. Carvalho, E. Fabara, S. Sapienza, L. Sudarsky, J. Growdon, P. Bonato, "Exploring the Use of Wearable Sensors to Monitor Drug Response of Patients with Parkinson's Disease in the Home Setting," vol. 88, no. 16-Supplement, Neurology, April, 2017.
- [A16] X. Liu, S. Rajan, G. Hollander, M. Radensky, S.I. Lee, "A Novel Method for Quantifying Fine Hand Movements in Stroke Survivors," 23rd Annual Massachusetts Statewide Undergraduate Research Conference, Amherst, April, 2017
- [A15] C.M. Kanzler, **S.I. Lee**, J.F. Daneault, F.N. Golachi, J. Hannink, C. Pasluosta, B.M. Eskofier, P. Bonato, "Home monitoring of drug response in patients with Parkinson's disease using wearable sensors," IEEE Wireless Health 2016 (IEEE WH'15), Bethesda, MD, October, 2016.
- [A14] **S.I. Lee**, C. Adans-Dester, A. O'Brien, G. Vergara-Diaz, R.D. Zafonte, R.M. Black-Schaffer, P. Bonato, "Using Wearable Motion Sensors to Estimate Longitudinal Changes in Movement Quality in Stroke and Traumatic Brain Injury Survivors Undergoing Rehabilitation", 93rd Annual Conference of American Congress of Rehabilitation Medicine (ACRM), Chicago, USA, Oct, 2016 [**Best Poster Nomination**].
- [A13] J.F. Daneault, F.N. Golachi, **S.I. Lee**, G. Vergara-Diaz, G.F. Carvalho, E. Fabara, S. Sapienza, P. Bonato, "Monitoring dyskinesia severity using wearable sensor data," the 20th International Congress of Parkinson's Disease and Movement Disorders, Berlin, Germany, June, 2016
- [A12] **S.I. Lee**, C.P. Adans-Dester, G.V. Diaz, G. Mascia, S. Patel, R. Black-Schaffer, R. Zafonte, P. Bonato, "Using Wearable Motion Sensors to Estimate Longitudinal Changes in Movement Quality in Stroke Survivors Undergoing Rehabilitation," Wireless Health 2015 (WH2015), Bethesda, MD, October, 2015
- [A11] M. Arnell, E. Park, **S.I. Lee**, C. Lee, A. Campion, R. Getachew, D.C. Lu, "Wireless technology to assess neuromotor function during substance use," Congress of Neurological Surgeons, Boston, MA, October, 2015
- [A10] **S.I. Lee**, N. Menard, B. Chen, M.Y. Ozsecen, P. Bonato, "MercuryLive+: Towards Robust Remote Monitoring of Patients with Neuromotor Deficits Using Wearable Sensor Networks," Mobile Health in Rehabilitation, Boston, MA, October, 2014
- [A9] M.Y. Ozsecen, **S.I. Lee**, N. Menard, N. Chen, P. Bonato, "Assessing the Usability of a Knee Range of Motion Monitoring Device (KROMM) for Long-term Home with OA Patients," Mobile Health in Rehabilitation, Boston, MA, October, 2014
- [A8] H. Hoffman, C.H. Li, S.I. Lee, J. Garst, M. Espinal, N. Jahanforouz, A.A. Ghavamrezaii, M. Sarrafzadeh, D. C. Lu, "Use of Multivariate Linear Regression Models and Support Vector Regression Models to Predict

Outcome in Patients Undergoing Surgery for Cervical Spondylotic Myelopathy," Congress of Neurological Surgeons 2014 Annual Meeting (CNS 2014), Boston, MA, October, 2014

- [A7] C. H. Li, **S. I. Lee**, D. S. Lu, P. Culmer, D. C. Lu, I. Wu, "Novel Mobile Devices for Assessing Efficacy of Cervical Epidural Steroid Injection," Western Regional Anesthesia Conference, Century City, USA, May, 2014.
- [A6] M. Arnell, **S. I. Lee**, E. Park, C. Li, R. Getachew, D. C. Lu, "Wireless Technology for Motor Assessment in Patients with Lumbar Spine Injury," 82nd American Association of Neurological Surgeons (AANS) Annual Scientific Meeting, San Francisco, USA, April, 2014.
- [A5] N. Au Yong, **S. I. Lee**, R. Getachew, J. Kimball, M. Sarrafzadeh, D. D. Lu, "Characterizing Transient Activation Hypertonia during a Handgrip Force Tracking Task in Cervical Myelopathy," Neuroscience, San Diego, California, USA, November, 2013.
- [A4] **S.I. Lee**, H. Ghasemzadeh, A. Yew, R. Getachew, J. Kimball, N. Ghalehsari, B.H. Paak, J.H. Garst, M. Razaghy, D.C. Lu, M. Sarrafzadeh, "Objective Assessment of Spastic Hand Hypertonia using a Novel Digital Device," The 20th IAGG World Congress of Gerontology and Geriatrics, Seoul, Korea, June, 2013
- [A3] R. Getachew, **S.I. Lee**, J. Kimball, A. Yew, N. Ghalehasari, B.H. Paak, D.C. Lu, M. Sarrafzadeh, "Utilization of a Novel Digital Measurement Tool for Quantitative Assessment of Upper Extremity Motor Dexterity in Cervical Spondylotic Myelopathy," (Abstract) 29th Annual Meeting of the AANS/CNS Disorders of the Spine and Peripheral Nerves, Phoenix, Arizona, USA, March, 2013
- [A2] **S.I. Lee**, R. Getachew, J. Kimball, A. Yew, N. Ghalehasari, B.H. Paak, J.H. Garst, D.C. Lu, M. Sarrafzadeh, "Utilization of a Novel Digital Device and an Analytic Method for Accurate Measurement of Upper Extremity Motor Function," (Abstract) 81st American Association of Neurological Surgeons (AANS) Annual Scientific Meeting, New Orleans, Louisiana, USA, April, 2013
- [A1] T. Park, I. Hwan, U. Lee, **S.I. Lee**, C. Yoo, H. Jang, S. Choe, S. Park, J. Song, "ExerLink: Enabling Pervasive Social Exergames with Heterogeneous Exercise Devices," ACM MobiSys 2012 Demonstration, Lake District, UK, June, 2012. [**Best Demo Award**] Also demonstrated at IEEE SECON 2012 [**Best Demo Honorable Mention**]

Patents

- [P1] **S.I. Lee**, B.J. Mortazavi, M. Sarrafzadeh, "Method and Apparatus for Mobile Rehabilitation Exergaming" U.S. and International Patent (WO 2013/165557).

AWARDS / HONORS

- **Cover Article of the Issue**, the IEEE Journal of Biomedical and Health Informatics, May 2019.
- Brandon Oubre (PhD advisee) received the **NSF Student Travel Award** to attend The 2019 IEEE International Conference on Biomedical and Health Informatics, and Body Sensor Networks (IEEE BHI/BSN'19), Chicago, May 2019.
- Brandon Oubre (PhD advisee) received an **Honorable Mention** from the **NSF Graduate Research Fellowship Program**, April 2019.
- S.I. Lee received the **NIH Trailblazer Award** for Early Career Investigators, September 2018
- S.I. Lee received the **NSF CRII Award** for Early Career Investigators, July 2018
- Xin Liu (BS advisee) received the **21st Century Leaders Award** at 2018 UMass Amherst Commencement, (*Awarded to 10 most exceptional graduating seniors out of 5500.*)
- Xin Liu (BS advisee) received the **2018 Outstanding Undergraduate Achievement Awards** from the UMass Amherst College of Information and Computer Sciences (CICS), April 2018. (*Awarded to 5 most outstanding seniors in computer science each year.*)
- H.T. Jung (PhD advisee) received the **NSF Student Travel Award** to attend The 2018 IEEE International Conference on Biomedical and Health Informatics, and Body Sensor Networks (IEEE BHI/BSN'18), Las Vegas, March 2018.

- X. Liu (BS advisee) received the **UMass Rising Researcher Award**, UMass Amherst, November 2017. (*The highest honor for an undergraduate researcher across the university.*)
- X. Liu (BS advisee) received **Commonwealth Honors College Research Assistant Fellowship**, UMass Amherst, 2017
- X. Liu (BS advisee) received the **NSF Student Travel Award** to attend The 2nd IEEE/ACM Conference on Connected Health: Applications, Systems, and Engineering Technologies (IEEE/ACM CHASE 2017), Philadelphia, July, 2017
- S.I. Lee received **Northrup-Grumman Outstanding Research Student Award**, UCLA, June 2014
- **Featured Article of the Issue**, IEEE Journal of Biomedical and Health Informatics, March 2014
- **Best Demo Award**, ACM MobiSys, June 2012
- **Best Demo Honorable Mention**, IEEE SECON, June 2012
- S.I. Lee received the **St. Basil Student Scholarship**, August 2011
- S.I. Lee received his B.A.Sc. in Computer Engineering with **Honors**, Simon Fraser University, June 2008
- S.I. Lee received the **Golden Key International Honor Society** lifetime membership, August 2003. (*Golden Key International Honor Society is an academic association that distinguishes the top fifteen percent of students in all universities within North America.*)

STUDENTS

- Hee-Tae Jung (PhD'19 in Computer Science) – Currently a Postdoctoral Researcher at UMass Amherst.
- Xin Liu (BS'18 in Computer Science) – Currently a PhD student at University of Washington.
- Youngkyun Kim (BS'18 in Computer Science) – Currently a software engineer at Amazon, Seattle.
- Smita Rajan (BS'18 in Microbiology) – Currently a MD student at the St. George's University.

TEACHING EXPERIENCES

UMass CS 691WM	Wearable and Mobile Sensors in Clinical Sciences	Fall'17, Fall'19
UMass CS 240	Reasoning Under Uncertainty	Fall'17, Fall'18, Fall'19
UMass CS 390N	Internet of Things	Spring'17, Spring'18
UCLA CS 259	Wireless Health	Spring'13
UCLA CS 152A	Introductory Digital Design Laboratory	Fall'09, Winter'10, Fall'10, Winter'11, Spring'11, Fall'11, Winter'12, Spring'12, Fall'12, Winter'13, Spring'13, Fall'13, Winter'14, Spring'14
UCLA CS 152B	Advanced Digital Design Logic Laboratory	Summer'10, Summer'12
UCLA CS 31	Introduction to Computer Science	Summer'11

INVITED TALKS

- “The use of mobile sensors and systems in brain injury rehabilitation,” Using mHealth Technology to Enable the Clinical Trial of the Future Workshop at the 2019 IEEE Body Sensor Network Conference (IEEE BSN'19), Chicago, USA, May, 2019.
- “The Use of Wearable Sensors and Systems in Stroke Rehabilitation,” Boston University, Boston, USA, March, 2018
- “The Use of Wearable Sensors and Systems in Stroke Rehabilitation,” Northwestern University, Evanston, USA, October, 2018
- “The Use of Wearable Sensors and Systems in Stroke Rehabilitation,” Dartmouth College, Hanover, USA, September, 2018
- “Towards Optimal Motor Function in Stroke Survivors using Wearable and mHealth Technologies,” Inha University, Incheon, Korea, June, 2018
- “Towards Optimal Motor Function in Stroke Survivors using Wearable and mHealth Technologies,” Ehwa Women University, Seoul, Korea, June, 2018
- “Towards Optimal Motor Function in Stroke Survivors using Wearable and mHealth Technologies,” The 4th Aslla Symposium, Gangneung, Korea, June, 2018

- “The use of wearable sensors and systems in brain injury rehabilitations,” The 5th International Symposium on Automated Sensor Based Mobility Analysis for Disease Prevention and Treatment *in conjunction with* The 2018 IEEE Biomedical and Health Informatics, and Body Sensor Network Conference (IEEE BHI/BSN'18), Las Vegas, USA, March, 2018
- “The use of wearable sensors and systems in rehabilitation medicine,” University of Hokkaido – Graduate School of Information Science and Technology, Sapporo, Hokkaido, Japan, March 2017.
- “The use of wearable sensors and systems in rehabilitation medicine,” Worcester Polytechnic Institute (WPI) – Department of Electrical and Computer Engineering, Worcester, USA, December 2016.
- “The use of wearable sensors and systems in rehabilitation medicine,” University of Massachusetts – Department of Kinesiology, Amherst, USA, September 2016.
- “The use of wearable sensors and systems in rehabilitation medicine,” Emerging Information & Technology Conference (EITC 2016), MIT, Cambridge, USA, August 2016.
- “Mobile and Connected Health: Towards a Proactive, Preventive, and Patient-centered Healthcare System using Wearable Sensors and Networks,” Texas A&M University, College Station, USA, April 2016.
- “Mobile and Connected Health: Towards a Proactive, Preventive, and Patient-centered Healthcare System using Wearable Sensors and Networks,” University of Massachusetts (CISC), Amherst, USA, March 2016.
- “Mobile and Connected Health: Towards a Proactive, Preventive, and Patient-centered Healthcare System using Wearable Sensors and Networks,” The Penn State University, State College, USA, March 2016.
- “Mobile and Connected Health: Towards a Proactive, Preventive, and Patient-centered Healthcare System using Wearable Sensors and Networks,” University of Massachusetts (Engineering & Nursing), Amherst, USA, February 2016.
- “Mobile and Connected Health: Towards a Proactive, Preventive, and Patient-centered Healthcare System using Wearable Sensors and Networks,” University of Minnesota, Twin Cities, USA, February 2016.
- “Mobile and Connected Health: Towards a Proactive, Preventive, and Patient-centered Healthcare System,” University of Georgia, Athens, USA, November 2015.
- “Mobile and Connected Health: Towards a Proactive, Preventive, and Patient-centered Healthcare System,” MSU-Catalyst Talks, College of Communication Arts and Sciences, Michigan State University, East Lansing, USA, October 2015.
- “The use of wearable sensors and systems in rehabilitation medicine,” 2015 IEEE Body Sensor Network Conference (IEEE BSN'15), Cambridge, USA, June 2015.

ACADEMIC ACTIVITIES AND SERVICES

- **Ad-hoc Panel Member** for the Biomedical Computing and Health Informatics study section at the National Institutes of Health (NIH), 2018 - present
- **Panel Member** for the National Science Foundation (NSF), 2016 - 2018
- **Elected Technical Committee Member** on Wearable Biomedical Sensors and System of the IEEE Engineering in Medicine and Biology Society, 2018 – present
- **Associate Editor** of PLOS ONE, 2018 – present
- **Associate Editor** of the IEEE Open Journal of Engineering in Medicine and Biology, 2019 – present.
- **Guest Editor** of the Special issue of PLOS ONE on “Digital Health Technology”
- **Guest Editor** of the Special Issue of MDPI Applied Sciences (ISSN 2076-3417) on “Wearable Computing and Machine Learning for Applications in Sports, Health, and Medical Engineering”
- **Guest Editor** of the Special Issue of MDPI Information Journal (ISSN 2078-2489) on “Smart Health”
- **Website Chair** for the 2019 IEEE Joint Conference on Biomedical and Health Informatics & Body Sensor Networks (IEEE BHI-BSN'19)
- **TPC Member** for the 2018 IEEE/ACM Conference on Connected Health: Applications, Systems and Engineering Technologies (IEEE/ACM CHASE'18)
- **TPC Member** for the 1st ACM MobiHoc Workshop on Mobile IoT Sensing, Security, and Privacy, Los Angeles, June, 2018

- **Workshop Chair** of the “First International Workshop on Challenges and Opportunities in the Next Generation Body Sensors & Systems, Analytics, Applications, and Interventions” in conjunction with the 2018 IEEE Biomedical and Health Informatics, and Body Sensor Network Conference (IEEE BHI/BSN'18)
 - **TPC Member** for the 2019 IEEE Biomedical and Health Informatics, and Body Sensor Network Conference (IEEE BHI/BSN'19)
 - **TPC Member** for the 2018 IEEE Biomedical and Health Informatics, and Body Sensor Network Conference (IEEE BHI/BSN'18)
 - **TPC Member** for the 2017 IEEE/ACM Conference on Connected Health: Applications, Systems and Engineering Technologies (IEEE/ACM CHASE'17)
 - **TPC Member** for the IEEE Consumer Communications & Networking Conference (IEEE CCNC'17)
 - **TPC Member** for the ACM 6th International Conference on Digital Health (ACM DH'15)
 - **Workshop Chair** of the "Tutorial on Machine Learning and Data Mining with a Focus on Human Studies" in conjunction with the ACM Wireless Health Conference 2015
 - **TPC Member** for the International Workshop on Self-Powered Systems, Engineering Technologies and Applications (SETA'15)
 - **TPC Member** for the ACM Wireless Health Conference (WH'15)
 - **TPC Member** for the IEEE Consumer Communications & Networking Conference (IEEE CCNC'15)
 - **TPC Member** for the ACM 5th International Workshop on Pervasive Wireless Healthcare (MobileHealth'15)
 - **TPC Member** for the ACM 5th International Conference on Digital Health (ACM DH'15)
 - **TPC Member** for the ACM UbiComp Workshop on Smart Health Systems and Applications (SmartHealth'14)
-
- Reviewer for the IEEE Transactions on Biomedical Engineering (IEEE TBME)
 - Reviewer for the IEEE Journal of Biomedical and Health Informatics (IEEE JBHI)
 - Reviewer for the IEEE Journal of Translational Engineering in Health and Medicine (IEEE JTEHM)
 - Reviewer for the IEEE Sensor Journal (IEEE SJ)
 - Reviewer for the IEEE Trans. on Human-Machine Systems (IEEE THMS)
 - Reviewer for the Journal of NeuroEngineering and Rehabilitation (JNER)
 - Reviewer for the Elsevier Computers in Biology and Medicine (CBM)
 - Reviewer for the Medical Engineering & Physics (Med Eng Phys)
-
- Reviewer for the IEEE International Conference on Biomedical and Health Informatics (IEEE BHI'19)
 - Reviewer for the 16th IEEE International Conference on Wearable and Implantable Body Sensor Networks (IEEE BSN'19)
 - Reviewer for the IEEE International Conference on Biomedical and Health Informatics (IEEE BHI'18)
 - Reviewer for the 15th IEEE International Conference on Wearable and Implantable Body Sensor Networks (IEEE BSN'18)
 - Reviewer for the IEEE International Conference on Biomedical and Health Informatics (IEEE BHI'17)
 - Reviewer for the 14th IEEE International Conference on Wearable and Implantable Body Sensor Networks (IEEE BSN'17)
 - Reviewer for the IEEE International Conference on Biomedical and Health Informatics (IEEE BHI'16)
 - Reviewer for the 13th IEEE International Conference on Wearable and Implantable Body Sensor Networks (IEEE BSN'16)
 - Reviewer for the 15th IEEE Conference on Rehabilitation Robotics (IEEE ICORR 2017)
 - Reviewer for the 20th International Symposium on Wearable Computer 2016 (ISWC'16)
 - Reviewer for the ACM Intl. Joint Conf. on Pervasive and Ubiquitous Computing 2015 (ACM UbiComp'15)
 - Reviewer for the Cairo International Biomedical Engineering Conference 2014 (CIBEC'14)
 - Reviewer for the IEEE Intl. Conf. on Healthcare Informatics 2014 (IEEE ICHI'14)
 - Reviewer for the Intl. Conf. on Brain Informatics and Health 2014 (BIH'14)
 - Reviewer for the ACM Intl. Joint Conf. on Pervasive and Ubiquitous Computing 2014 (ACM UbiComp'14)
 - Reviewer for the IEEE Body Sensor Network Conference 2014 (IEEE BSN'14)
 - Reviewer for the Intl. Conf. on Mobile Computing, Applications and Services 2013 (MobiCase'13)
 - Reviewer for the IEEE Symposium on Industrial Electronics and Applications 2013 (IEEE ISIEA'13)
 - Reviewer for the IEEE Global Conference on Signal and Information Processing 2013 (IEEE GlobeSIP'13)
 - Reviewer for the ACM Wireless Health 2013 (ACM WH'13)

- Reviewer for the IEEE Body Sensor Network Conference 2013 (IEEE BSN'13)
- Reviewer for the ACM Wireless Health 2012 (ACM WH'12)
- Reviewer for the IEEE Body Sensor Network Conference 2012 (IEEE BSN'12)