

Joon Lee

Business Address:

Department of Community Health Sciences
Cumming School of Medicine
University of Calgary
3280 Hospital Drive NW, TRW 3D38
Calgary, Alberta T2N 4Z6
Canada

Contact:

Phone: +1-403-220-2968
Email: joonwu.lee@ucalgary.ca
Twitter: @UofCJoon

RESEARCH INTERESTS

health data science, health informatics, big data, data mining, machine learning, predictive analytics, artificial intelligence, personalized health decision support, data/information visualization, mHealth, health monitoring algorithms, natural language processing, intensive care, aging, population health surveillance, novel data sources.

ACADEMIC POSITIONS

Associate Professor. Departments of Community Health Sciences & Cardiac Sciences, Cumming School of Medicine, University of Calgary, Calgary, Alberta, Canada. September 2018 – present.

Research Affiliate. Institute for Medical Engineering and Science, Massachusetts Institute of Technology, Cambridge, Massachusetts, USA. February 2013 – present.

Adjunct Associate Professor. School of Public Health and Health Systems, Faculty of Applied Health Sciences, University of Waterloo, Waterloo, Ontario, Canada. September 2018 – present.

Associate Professor. School of Public Health and Health Systems, Faculty of Applied Health Sciences, University of Waterloo, Waterloo, Ontario, Canada. July 2018 – August 2018.

- ◇ Co-lead of the Health Data Science Lab (<http://hds1.uwaterloo.ca>)
- ◇ Cross-appointed with the Department of Electrical and Computer Engineering, Faculty of Engineering
- ◇ Cross-appointed with the Department of Statistics and Actuarial Science, Faculty of Mathematics

Assistant Professor. School of Public Health and Health Systems, Faculty of Applied Health Sciences, University of Waterloo, Waterloo, Ontario, Canada. September 2012 – June 2018.

Postdoctoral Fellow. Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, Massachusetts, USA. October 2009 – August 2012.

EDUCATION

Massachusetts Institute of Technology, Cambridge, Massachusetts, USA. October 2009 – August 2012.
Postdoctoral fellowship, Harvard-MIT Division of Health Sciences and Technology.
Intensive care research involving medical data science, medical informatics, biomedical signal processing, machine learning, and biostatistics.
Advisor: Dr. Roger G. Mark

University of Toronto, Toronto, Ontario, Canada. September 2005 – November 2009.
Ph.D., Collaborative Program between the Department of Electrical and Computer Engineering and the Institute of Biomaterials and Biomedical Engineering.
Thesis: Investigation of accelerometry, mechanomyography, and nasal airflow signals for abnormal swallow detection.
Advisors: Drs. Tom Chau and Catriona M. Steele
Committee members: Drs. Hans Kunov and Tim Bressman
External examiners: Drs. Metin Akay and Milos Popovic

University of Waterloo, Waterloo, Ontario, Canada. September 2000 – June 2005.
B.A.Sc., Department of Electrical and Computer Engineering.
Graduated with distinction, Dean's Honours List, and two-year co-operative program.

AWARDS AND RECOGNITIONS

2017	Outstanding Performance Award, University of Waterloo.
2016	Early Researcher Award, Ministry of Research, Innovation and Science, Government of Ontario, Canada.
2015	Discovery Award, Banting Research Foundation.
2011	Postdoctoral Fellowship, Natural Sciences and Engineering Research Council of Canada (NSERC).
2008	Team Excellence Award, Toronto Rehabilitation Institute.
2007	Canada Graduate Scholarship D, NSERC.
2007	Ontario Graduate Scholarship, Ministry of Training, Colleges, and Universities, Government of Ontario, Canada.
2006	Canada Graduate Scholarship M, NSERC.
2004	Savvas Chamberlain Scholarship for academic excellence in electronics courses, University of Waterloo.
2002, 2004	Faculty of Engineering Upper-Year Scholarship for being the top student in a class of over 90 students, University of Waterloo.
2002	Ontario Professional Engineers Foundation Undergraduate Scholarship, University of Waterloo.
2000-2005	Dean's Honours List, University of Waterloo.

RESEARCH FUNDING FROM EXTERNAL SOURCES¹

2018	Co-Investigator. SMART PREVENTION: Developing smart city enabled precision public health research infrastructure for disease and injury prevention. Planning and Dissemination Grant, Canadian Institutes of Health Research (CIHR). PI: Leia Minaker. Co-Investigators: Joon Lee and 10 others. \$10,000.
2018	Principal Investigator. Using a smart wearable device to track frailty in community-dwelling older adults. Aging and Retirement Grant, The Royal Bank of Canada (RBC). \$15,000.
2017 – 2018	Principal Investigator. PASS surveillance using Google Trends and Twitter. Healthy Behaviour Data Challenge Phase 1, CIHR and Public Health Agency of Canada (PHAC). \$10,000.
2017	Principal Investigator. A digital health assistant based on data-driven personal profiles. Request for Information (RFI), Korea Evaluation Institute of Industrial Technology (KEIT). \$1,000.
2017 – 2018	Principal Investigator. A digital health assistant based on data-driven personal profiles. Microsoft Azure Research Award, Microsoft. \$5,000 USD.
2016	Principal Investigator. Ontario-China Young Scientist Exchange Program. Ministry of Research, Innovation and Science, Government of Ontario, and Ministry of Science and Technology, Government of China. \$10,000.
2016 – 2021	Principal Investigator. Personalized data-driven intensive care based on electronic medical data, patient similarity metrics, and high-performance computing. Early Researcher Award, Ministry of Research, Innovation and Science, Government of Ontario. \$150,000.
2016	Principal Investigator. Undergraduate Student Research Award, NSERC. \$4,500.

¹All amounts are in Canadian Dollars unless indicated otherwise.

- 2016 Principal Investigator. RBC Undergraduate Research Fellowship, RBC Retirement Research Centre. \$9,856.
- 2016 – 2017 Co-Investigator. Waterloo/Twente partnership to accelerate research in data driven persuasive health technology. University of Waterloo International Research Partnership Grants. PI: Catherine Burns, Lisette van Gemert-Pijnen, Maarten van Steen, Harri Oinas. Co-Investigators: Joon Lee and 16 others. \$55,000.
- 2015 – 2016 Principal Investigator. Personalized predictive analytics based on electronic medical data and patient similarity metrics. Discovery Award, Banting Research Foundation. \$25,000.
- 2015 – 2020 Co-Investigator. Aging gracefully across environments using technology to support wellness, engagement, and long life (AGE-WELL). Networks of Centres of Excellence (NCE). Nominated PI: Alex Mihailidis. PI: Andrew Sixsmith. Co-Investigators: Joon Lee and 48 others. \$36,605,194.
- 2015 – 2020 Principal Investigator. Data-driven decision-making in health care. AGE-WELL NCE Inc. PIs: Joon Lee, John Hirdes. \$469,091.
- 2015 – 2017 Co-Investigator. Care of frail, acutely ill older persons: Making health care work like a system. Canadian Frailty Network (CFN) NCE. PI: Paul Hebert, John Hirdes. \$900,000.
- 2014 – 2020 Principal Investigator. Personalized decision support driven by similarity metrics. Discovery Grant, NSERC. \$138,000.
- 2011 – 2013 Postdoctoral Fellowship, NSERC. \$80,000.
- 2007 – 2010 Canada Graduate Scholarship D, NSERC. \$105,000.
- 2007 Ontario Graduate Scholarship, Ministry of Training, Colleges, and Universities, Government of Ontario. Offer declined. \$15,000.
- 2006 – 2007 Canada Graduate Scholarship M, NSERC. \$17,500.

RESEARCH FUNDING FROM INTERNAL SOURCES¹

- 2018 – 2020 Start-up Funds, Cumming School of Medicine, University of Calgary. \$90,000.
- 2018 – 2020 Start-up Funds, Libin Cardiovascular Institute of Alberta, University of Calgary. \$130,000.
- 2018 – 2020 Start-up Funds, O'Brien Institute for Public Health, University of Calgary. \$80,000.
- 2014 – 2016 Undergraduate Research Internship Program, University of Waterloo. \$8,000.
- 2014 – 2015 Research Incentive Fund, University of Waterloo. \$8,000.
- 2014 New Faculty Award, University of Waterloo. \$5,500.
- 2012 – 2018 Start-up Funds, University of Waterloo. \$42,000.

PUBLICATIONS

Peer-reviewed Journal Articles

- [J52] I. E. R. Waudby-Smith², N. Tran², J. A. Dubin, and **J. Lee**. Sentiment in nursing notes as an indicator of out-of-hospital mortality in intensive care patients. *PLoS One*, 13(6):e0198687, June 2018.
- [J51] B. Y. Kim², A. Sharafoddini², N. Tran², E. Y. Wen², and **J. Lee**. Consumer mobile apps for potential drug-drug interaction check: systematic review and content analysis using the mobile app rating scale (MARS). *JMIR mHealth and uHealth*, 6(3):e74, March 2018.

¹All amounts are in Canadian Dollars unless indicated otherwise.

²Trainee under my supervision.

- [J50] K. L. Tulsieram², J. Arocha, and **J. Lee**. Readability and coherence of department/ministry of health HPV information. *Journal of Cancer Education*, 33(1):147-153, February 2018.
- [J49] D. Trtovac² and **J. Lee**. The use of technology in identifying hospital malnutrition: a scoping review. *JMIR Medical Informatics*, 6(1):e4, January 2018.
- [J48] A. Puri², B. Kim², O. Nguyen², P. Stolee, J. Tung, and **J. Lee**. User acceptance of wrist-worn activity trackers among community-dwelling older adults: mixed method study. *JMIR mHealth and uHealth*, 5(11):e173, November 2017.
- [J47] C. Chen, **J. Lee**, A. E. Johnson, R. G. Mark, L. A. Celi, and J. Danziger. Right ventricular function, peripheral edema, and acute kidney injury in critical illness. *Kidney International Reports*, 2(6):1059:1065, November 2017.
- [J46] A. Staszewska², P. Zaki², and **J. Lee**. Computerized decision aids for shared decision making in serious illness: systematic review. *JMIR Medical Informatics*, 5(4):e36, October 2017.
- [J45] A. Bhattarai², A. Zarrin², and **J. Lee**. Applications of information and communications technologies to public health: a scoping review using the MeSH term “public health informatics”. *Online Journal of Public Health Informatics*, 9(2):e192, September 2017.
- [J44] L. Fuchs, M. Feng, V. Novack, **J. Lee**, J. Taylor, D. Scott, M. Howell, L. Celi, and D. Talmor. The effect of ARDS on survival: do patients die from ARDS or with ARDS? *Journal of Intensive Care Medicine*, published online first, 2017.
- [J43] N. N. Tran² and **J. Lee**. Online reviews as health data: examining the association between availability of health care services and patient star ratings exemplified by the Yelp academic dataset. *JMIR Public Health and Surveillance*, 3(3):e43, July 2017.
- [J42] B. Kim² and **J. Lee**. Smart devices for older adults managing chronic disease: A scoping review. *JMIR mHealth and uHealth*, 5(5):e69, May 2017.
- [J41] A. Sharafoddini², J. A. Dubin, and **J. Lee**. Patient similarity in prediction models based on health data: a scoping review. *JMIR Medical Informatics*, 5(1):e7, March 2017.
- [J40] **J. Lee**. Patient-specific predictive modeling using random forests: an observational study for the critically ill. *JMIR Medical Informatics*, 5(1):e3, January 2017.
- [J39] **J. Lee** and D. M. Maslove. Customization of a severity of illness score using local electronic medical record data. *Journal of Intensive Care Medicine*, 32(1):38-47, January 2017.
- [J38] D. M. Maslove, J. A. Dubin, A. Shrivats², and **J. Lee**. Errors, omissions, and outliers in hourly vital signs measurements in intensive care. *Critical Care Medicine*, 44(11):e1021-e1030, November 2016.
- [J37] R. Ling² and **J. Lee**. Disease monitoring and health campaign evaluation using Google search activities for HIV and AIDS, stroke, colorectal cancer, and marijuana use in Canada: a retrospective observational study. *JMIR Public Health and Surveillance*, 2(2):e156, October 2016.
- [J36] **J. Lee**, R. G. Mark, L. A. Celi, and J. Danziger. Proton pump inhibitors are not associated with acute kidney injury in critical illness. *Journal of Clinical Pharmacology*, 56(12):1500-1506, September 2016.
- [J35] M. D. Boone, J. Massa, A. Mueller, S. P. Jinadasa, **J. Lee**, R. Kothari, D. J. Scott, J. Callahan, L. A. Celi, and M. R. Hacker. The organizational structure of an intensive care unit influences treatment of

²Trainee under my supervision.

hypotension among critically ill patients: a retrospective cohort study. *Journal of Critical Care*, 33:14-18, June 2016.

[J34] J. Danziger, K. Chen, S. Cavender, **J. Lee**, M. Feng, R. G. Mark, K. J. Mukamal, and L. A. Celi. Admission peripheral edema, central venous pressure, and survival in critically ill patients. *Annals of the American Thoracic Society*, 13(5):705-711, May 2016.

[J33] A. Moskowitz, **J. Lee**, M. Donnino, R. Mark, L. A. Celi, and J. Danziger. The Association between admission magnesium concentrations and lactic acidosis in critical illness. *Journal of Intensive Care Medicine*, 31(3):187-192, March 2016.

[J32] J. Danziger, K. Chen, **J. Lee**, M. Feng, R. G. Mark, L. Celi, and K. J. Mukamal. Obesity, acute kidney injury, and mortality in critical illness. *Critical Care Medicine*, 44(2):328-334, February 2016.

[J31] **J. Lee**, E. Ribey², and J. R. Wallace. A web-based data visualization tool for the MIMIC-II database. *BMC Medical Informatics and Decision Making*, 16:15, February 2016.

[J30] K. Chen, S. Cavender, **J. Lee**, M. Feng, R. G. Mark, L. A. Celi, K. J. Mukamal, and J. Danziger. Peripheral edema, central venous pressure, and risk of acute kidney injury in critical illness. *Clinical Journal of the American Society of Nephrology*, published online first, DOI: 10.2215/CJN.08080715, January 2016.

[J29] M. G. Shrimel, B. S. Ferket, D. J. Scott, **J. Lee**, D. Bradford, T. Pollard, Y. M. Arabi, H. M. Al-Dorzi, R. M. Baron, M. G. Myriam Hunink, L. A. Celi, and P. S. Lai. How long is long enough? Time-limited trials for critically-ill patients with cancer. *JAMA Oncology*, 2(1):76-83, January 2016.

[J28] K. P. Chen, **J. Lee**, R. G. Mark, M. Feng, L. A. Celi, B. E. Malley, and J. Danziger. Proton pump inhibitor use is not associated with cardiac arrhythmia in critically ill patients. *The Journal of Clinical Pharmacology*, 55(7):774-779, July 2015

[J27] **J. Lee** and D. M. Maslove. Using information theory to identify redundancy in common laboratory tests. *BMC Medical Informatics and Decision Making*, 15:59, July 2015.

[J26] E. J. de Louw, P. O. Sun, **J. Lee**, M. Feng, R. G. Mark, L. A. Celi, K. J. Mukamal, and J. Danziger. Increased incidence of diuretic use in critically ill obese patients. *Journal of Critical Care*, 30(3):619-623, June 2015

[J25] **J. Lee**, D. M. Maslove, and J. A. Dubin. Personalized mortality prediction driven by electronic medical data and a patient similarity metric. *PLoS One*, 10(5):e0127428, May 2015.

[J24] **J. Lee**, M. Niemi, R. Nelson, R. G. Mark, L. A. Celi, K. J. Mukamal, and J. Danziger. Association between fluid balance and survival in critically ill patients. *Journal of Internal Medicine*, 277(4):468-477, April 2015.

[J23] X. Walker, **J. Lee**, L. Koval, A. Kirkwood, J. Taylor, J. Gibbs, S. Ning, L. Steele, P. Thompson, and L. Celi. Predicting ICU admissions from attempted suicide presentations at an emergency department in Central Queensland, Australia. *Australasian Medical Journal*, 6(11):536-541, November 2013.

[J22] L. A. Celi, D. J. Scott, **J. Lee**, S. L. Alper, K. J. Mukamal, R. G. Mark, and J. Danziger. Association of hypermagnesemia and blood pressure in the critically ill. *Journal of Hypertension*, 31(11):2136-2141, November 2013.

[J21] S. Nemati, B. A. Edwards, **J. Lee**, B. Pittman-Polletta, J. P. Butler, and A. Malhotra. Respiration and heart rate complexity: effects of age and gender assessed by band-limited transfer entropy. *Respiratory*

²Trainee under my supervision.

Physiology & Neurobiology, 189(1):27-33, October 2013.

[J20] **J. Lee**, S. Govindan, L. A. Celi, K. R. Khabbaz, and B. Subramaniam. Customized prediction of short length of stay following elective cardiac surgery in elderly patients using a genetic algorithm. *World Journal of Cardiovascular Surgery*, 3(5):163-170, September 2013.

[J19] L. Fuchs, **J. Lee**, V. Novack, Y. Baumfeld, D. J. Scott, L. Celi, T. Mandelbaum, M. Howell, and D. Talmor. Severity of acute kidney injury and two-year outcomes in critically ill patients. *Chest*, 144(3):866-875, September 2013.

[J18] S. M. Nair, P. Mishra, S. McLennan, **J. Lee**, C. Tsao, and L. A. Celi. Alcohol related injuries requiring surgery. *New Zealand Medical Journal*, 126(1374):92-95, May 2013.

[J17] J. Danziger, J. H. William, D. J. Scott, **J. Lee**, L. Lehman, R. G. Mark, M. D. Howell, L. A. Celi, and K. J. Mukamal. Proton-pump inhibitor use is associated with low serum magnesium concentrations. *Kidney International*, 83(4):692-699, April 2013.

[J16] (Shared First Authorship) T. Mandelbaum, **J. Lee**, D. J. Scott, R. G. Mark, A. Malhotra, M. D. Howell, and D. Talmor. Empirical relationships among oliguria, creatinine, mortality, and renal replacement therapy in the critically ill. *Intensive Care Medicine*, 39(3):414-419, March 2013.

[J15] D. J. Scott, **J. Lee**, I. Silva, S. Park², G. B. Moody, L. A. Celi, and R. G. Mark. Accessing the public MIMIC-II intensive care relational database for clinical research. *BMC Medical Informatics and Decision Making*, 13:9, January 2013.

[J14] L. A. Celi, S. Galvin, G. Davidzon, **J. Lee**, D. Scott, and R. Mark. A database-driven decision support system: customized mortality prediction. *Journal of Personalized Medicine*, 2(4):138-148, September 2012.

[J13] I. Silva, **J. Lee**, and R. G. Mark. Signal quality estimation with multichannel adaptive filtering in intensive care settings. *IEEE Transactions on Biomedical Engineering*, 59(9):2476-2485, September 2012.

[J12] **J. Lee**, R. Kothari, J. A. Ladapo, D. J. Scott, and L. A. Celi. Interrogating a clinical database to study treatment of hypotension in the critically ill. *BMJ Open*, 2(3):e000916, June 2012.

[J11] (Shared First Authorship) S. Hunziker, L. Celi, **J. Lee**, and M. D. Howell. Red cell distribution width improves the SAPS score for risk prediction in unselected critically ill patients. *Critical Care*, 16(3):R89, May 2012.

[J10] **J. Lee**, S. Nemati, I. Silva, B. A. Edwards, J. P. Butler, and A. Malhotra. Transfer entropy estimation and directional coupling change detection in biomedical time series. *BioMedical Engineering OnLine*, 11:19, April 2012.

[J9] L. A. Celi, **J. Lee**, D. J. Scott, T. Panch, and R. G. Mark. Collective experience: a database-fuelled, inter-disciplinary team-led learning system. *Journal of Computing Science and Engineering*, 6(1):51-59, March 2012.

[J8] T. Mandelbaum, D. J. Scott, **J. Lee**, R. G. Mark, A. Malhotra, S. S. Waikar, M. D. Howell, and D. Talmor. Outcome of critically ill patients with acute kidney injury using the Acute Kidney Injury Network criteria. *Critical Care Medicine*, 39(12):2659-2664, December 2011.

[J7] **J. Lee**, C. M. Steele, and T. Chau. Classification of healthy and abnormal swallows based on accelerometry and nasal airflow signals. *Artificial Intelligence in Medicine*, 52(1):17-25, May 2011.

²Trainee under my supervision.

[J6] **J. Lee** and R. G. Mark. An investigation of patterns in hemodynamic data indicative of impending hypotension in intensive care. *BioMedical Engineering OnLine*, 9:62, October 2010.

[J5] **J. Lee**, E. Sejdić, C. M. Steele, and T. Chau. Effects of liquid stimuli on dual-axis swallowing accelerometry signals in a healthy population. *BioMedical Engineering OnLine*, 9:7, February 2010.

[J4] **J. Lee**, C. M. Steele, and T. Chau. Swallow segmentation with artificial neural networks and multi-sensor fusion. *Medical Engineering & Physics*, 31(9):1049–1055, November 2009.

[J3] **J. Lee**, T. Chau, and C. M. Steele. Effects of age and stimulus on submental mechanomyography signals during swallowing. *Dysphagia*, 24(3):265–273, September 2009.

[J2] **J. Lee**, C. M. Steele, and T. Chau. Time and time-frequency characterization of dual-axis swallowing accelerometry signals. *Physiological Measurement*, 29(9):1105–1120, September 2008.

[J1] **J. Lee**, S. Blain, M. Casas, D. Kenny, G. Berall, and T. Chau. A radial basis classifier for the automatic detection of aspiration in children with dysphagia. *Journal of NeuroEngineering and Rehabilitation*, 3:14, July 2006.

Book Chapters

[B2] **J. Lee**, J. A. Dubin, and D. M. Maslove. Mortality prediction in the ICU. In: *Secondary Analysis of Electronic Health Records*, MIT Critical Data (editor), Chapter 21, pp. 315–324. Springer Open. ISBN 978-3-319-43742-2. September 2016.

[B1] M. Nikjoo, A. Kushki, **J. Lee**, C. Steele, and T. Chau. Reputation-based neural network combinations. In: *Artificial Neural Networks - Methodological Advances and Biomedical Applications*, K. Suzuki (editor), Chapter 8, pp. 151–170. InTech Publishing. ISBN 978-953-307-243-2. April 2011.

Dissertation

[D1] **J. Lee**. Investigation of accelerometry, mechanomyography, and nasal airflow signals for abnormal swallow detection. PhD Thesis, University of Toronto, Toronto, Ontario, Canada. March 2011.

Peer-reviewed Conference Articles

[CP11] A. Sharafoddini², J. A. Dubin, and **J. Lee**. Finding similar patient subpopulations in the ICU using laboratory test ordering patterns. In: *Proceedings of the 2018 7th International Conference on Bioinformatics and Biomedical Science (ICBBS)*, in press.

[CP10] M. A. H. Zahid² and **J. Lee**. Mortality prediction with self normalizing neural networks in intensive care unit patients. In: *Proceedings of the 2018 IEEE-EMBS International Conference on Biomedical and Health Informatics*, 226-229, 2018.

[CP9] N. Tran² and **J. Lee**. Using multiple sentiment dimensions of nursing notes to predict mortality in the intensive care unit. In: *Proceedings of the 2018 IEEE-EMBS International Conference on Biomedical and Health Informatics*, 283-286, 2018.

[CP8] **J. Lee**. Personalized mortality prediction for the critically ill using a patient similarity metric and bagging. In: *Proceedings of the 2016 IEEE-EMBS International Conference on Biomedical and Health Informatics*, 332-335, 2016.

[CP7] (Shared First Authorship) Z. Zhang, **J. Lee**, D. J. Scott, L. Lehman, and R. G. Mark. A research infrastructure for real-time evaluation of predictive algorithms for intensive care units. *ICME International Conference on Complex Medical Engineering*, 109–114, 2013.

²Trainee under my supervision.

- [CP6] L. Lehman, M. Saeed, W. Long, **J. Lee**, and R. Mark. Risk stratification of ICU patients using topic models inferred from unstructured progress notes. In: *Proceedings of the American Medical Informatics Association 2012 Annual Symposium*, 505–511, 2012.
- [CP5] **J. Lee**, D. J. Scott, M. Villarroel, G. D. Clifford, M. Saeed, and R. G. Mark. Open-access MIMIC-II database for intensive care research. In: *Proceedings of the 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, 8315–8318, 2011.
- [CP4] I. Silva, **J. Lee**, and R. Mark. Photoplethysmograph quality estimation through multichannel filtering. In: *Proceedings of the 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, 4361–4364, 2011.
- [CP3] **J. Lee**, and R. G. Mark. A hypotensive episode predictor for intensive care based on heart rate and blood pressure time series. *Computing in Cardiology*, 37:81–84, 2010.
- [CP2] **J. Lee**, M. Takeuchi, C. M. Steele, and T. Chau. Investigation of discriminatory potential in accelerometry signal for abnormal swallow detection. In: *Proceedings of the Festival of International Conferences on Caregiving, Disability, Aging and Technology*, M0099, 2007.
- [CP1] **J. Lee**, S. Blain, M. Casas, D. Kenny, G. Berall, and T. Chau. A radial basis function classifier for pediatric aspiration detection. In: *Proceedings of the 28th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, 3553–3556, 2006.

Peer-reviewed Conference Abstracts

- [CA10] P. Driezen, I. McKillop, R. Feick, and **J. Lee**. The concordance correlation coefficient: A novel approach to assess the validity of spatial microsimulation models. *Proceedings of the 2017 Annual Conference and Meetings of the Canadian Association of Geographers*, In press.
- [CA9] P. Driezen, I. McKillop, R. Feick, and **J. Lee**. Does neighbourhood prevalence of type 2 diabetes match availability of diabetes education programs? An exploratory analysis within metropolitan Toronto. *Proceedings of the 2017 Annual Conference and Meetings of the Canadian Association of Geographers*, In press.
- [CA8] M. G. Shrimme, B. S. Ferket, D. J. Scott, **J. Lee**, L. A. Celi, M. Hunink, and P. S. Lai. Using Markov models to determine the optimal duration for a trial of intensive care in patients with active cancer and septic shock. *American Journal of Respiratory and Critical Care Medicine*, 185:A3998, 2012.
- [CA7] B. Subramaniam, L. Celi, **J. Lee**, S. Govindan, D. Talmor, R. Mark, K. Khabbaz, and A. Lerner. Short and long length of stay prediction models based on a genetic algorithm for geriatric cardiac surgery patients. *Anesthesia and Analgesia*, 114(Suppl):1-94, 2012.
- [CA6] S. Govindan, **J. Lee**, K. Khabbaz, L. Celi, A. Lerner, and B. Subramaniam. Performance of STS mortality risk over a decade in geriatric patients undergoing cardiac surgery. *Anesthesia and Analgesia*, 114(Suppl):1-94, 2012.
- [CA5] **J. Lee**, R. Kothari, J. A. Ladapo, D. J. Scott, and L. A. Celi. What matters during a hypotensive episode: fluids, vasopressors, or both? *Critical Care*, 16(Suppl 1):P199, March 2012.
- [CA4] D. Scott, F. Cismondi, **J. Lee**, T. Mandelbaum, L. A. Celi, R. G. Mark, and D. Talmor. Long-term survival for ICU patients with acute kidney injury. *Critical Care*, 16(Suppl 1):P376, March 2012.
- [CA3] T. Mandelbaum, D. J. Scott, **J. Lee**, R. G. Mark, M. D. Howell, A. Malhotra, and D. Talmor. Validation of the AKIN criteria definition using high-resolution ICU data from the MIMIC-II database. *Critical Care*, 15(Suppl 1):P105, March 2011.

[CA2] **J. Lee**, R. Cliffe, T. Chau, and C. M. Steele. A timing comparison between mechanomyography and nasal airflow signals. *Dysphagia*, 23(4):437–438, December 2008.

[CA1] **J. Lee**, C. M. Steele, and T. Chau. Discrimination between swallows with and without aspiration based on stroke accelerometric signals. *Dysphagia*, 22(4):384, October 2007.

PODIUM PRESENTATIONS

Research Seminar. “Opportunities and challenges in health data science.” Cumming School of Medicine, University of Calgary, Calgary, Alberta, Canada. December 2017.

Ontario-China Young Scientist Exchange Program Research Seminar. “Opportunities and challenges in health data science.” Beijing Sport University, Beijing, China. August 2016.

Ontario-China Young Scientist Exchange Program Research Seminar. “Opportunities and challenges in health data science.” Fudan University, Shanghai, China. August 2016.

Ontario-China Young Scientist Exchange Program Research Seminar. “Opportunities and challenges in health data science.” Soochow University, Suzhou, Jiangsu, China. August 2016.

Joint Statistical Meetings. “Personalized time-to-event prediction in intensive care.” Chicago, Illinois, USA. July 2016.

Statistical Society of Canada Meeting. “Personalized time-to-event prediction in intensive care.” St. Catharines, Ontario, Canada. June 2016.

IEEE International Conference on Biomedical and Health Informatics. “Personalized mortality prediction for the critically ill using a patient similarity metric and bagging.” Las Vegas, Nevada, USA. February 2016.

Departmental Research Seminar. “Opportunities and challenges in health data science.” Department of Statistics and Actuarial Science, University of Waterloo, Waterloo, Ontario, Canada. June 2015.

Graduate Student Seminar Series. “Mortality prediction for the critically ill using local electronic medical data.” School of Public Health and Health Systems, University of Waterloo, Waterloo, Ontario, Canada. November 2014.

Departmental Research Seminar. “Data-driven healthcare.” School of Public Health and Health Systems, University of Waterloo, Waterloo, Ontario, Canada. February 2014.

IEEE Engineering in Medicine and Biology Society Conference. “Open-access MIMIC-II database for intensive care research.” Boston, Massachusetts, USA. September 2011.

NIH R01 Grant External Advisory Committee Meeting. “Prediction of impending hypotension.” Massachusetts Institute of Technology, Cambridge, Massachusetts, USA. January 2011. External advisors: Drs. Michael Shabot, James Bassingthwaite, Jeffrey Drazen, Reed M. Gardner, Isaac Kohane, Clement McDonald.

Computing in Cardiology Conference. “A hypotensive episode predictor for intensive care based on heart rate and blood pressure time series.” Belfast, Northern Ireland, United Kingdom. September 2010.

Institute of Biomaterials and Biomedical Engineering Student Seminar Series. “Classification of healthy and abnormal swallows based on accelerometry and nasal airflow signals.” University of Toronto, Toronto, Ontario, Canada. April 2009.

Institute of Biomaterials and Biomedical Engineering Student Seminar Series. “Investigation of accelerometry, mechanomyography, and nasal airflow signals for abnormal swallow detection.” University of Toronto, Toronto, Ontario, Canada. October 2007.

Canadian Medical and Biological Engineering Conference. “Investigation of discriminatory potential in accelerometry signal for abnormal swallow detection.” Toronto, Ontario, Canada. June 2007.

IEEE Engineering in Medicine and Biology Society Conference. “A radial basis function classifier for pediatric aspiration detection.” New York City, New York, USA. August 2006.

POSTER PRESENTATIONS

IEEE International Conference on Biomedical and Health Informatics. B Kim, O Nguyen, A Puri, and J Lee. “Smart activity tracker adherence and acceptance by older adults.” Las Vegas, Nevada, USA. March 2018.

IEEE International Conference on Biomedical and Health Informatics. N Tran and J Lee. “Using multiple sentiment dimensions of nursing notes to predict mortality in the intensive care unit.” Las Vegas, Nevada, USA. March 2018.

AGE-WELL Annual Conference. B Kim, A Puri, O Nguyen, J Hirdes, and J Lee. “Data-driven decision making in health care.” Winnipeg, Manitoba, Canada. October 2017.

AGE-WELL Annual Conference. Y Yang, B Kim, A Puri, K Marasinghe, J Hirdes, and J Lee. “Data-driven decision making in health care.” Montreal, Quebec, Canada. October 2016.

World interRAI Conference. K Marasinghe, L Eckel, J Hirdes, and J Lee. “Use of interRAI assessment systems for decision making in home and community care.” Toronto, Ontario, Canada. April 2016.

AGE-WELL Annual Conference. A Puri, K Marasinghe, Y Yang, J Hirdes, and J Lee. “Data-driven decision making in health care.” Calgary, Alberta, Canada. October 2015.

AMIA 2015 Joint Summits on Translational Science. D Maslove, S Montague, T Podchiyska, N Downing, C Longhurst, and J Lee. “Investigating rare clinical events using EMR data: Turning case reports into case series.” San Francisco, California, USA, March 2015.

Critical Care Canada Forum. D Maslove, Y Bombard, M Dumontier, J Lee, C McGregor, J Russell, A Seely, A Slutsky, and J Marshall. “Combining novel datasets to understand illness trajectory: the CONDUIT database project.” Toronto, Ontario, Canada, November 2013.

Annual Meeting of the Society for Medical Decision Making. M Shrimel, P Lai, B Ferket, D Scott, J Lee, L Celi, and M Myriam Hunink. “Decision-making at the end of life: stochastic modeling to determine optimal length of a trial of intensive care for poor-prognosis patients.” Baltimore, Maryland, USA, October 2013.

Society of Cardiovascular Anesthesiologists Annual Meeting and Workshops. J Lee, L Celi, A Lerner, K Khabbaz, R Mark, S Govindan, and B Subramaniam. “Short and long length of stay prediction models based on a genetic algorithm for geriatric cardiac surgery patients.” Boston, Massachusetts, USA, April 2012.

Society of Cardiovascular Anesthesiologists Annual Meeting and Workshops. S Govindan, J Lee, L Celi, A Lerner, K Khabbaz, and B Subramaniam. “Performance of STS mortality risk over a decade in geriatric patients undergoing cardiac surgery.” Boston, Massachusetts, USA, April 2012.

International Symposium on Intensive Care and Emergency Medicine. J Lee, R Kothari, JA Ladapo, DJ Scott, and LA Celi. “What matters during a hypotensive episode: uids, vasopressors, or both?” Brussels, Belgium, March 2012.

International Symposium on Intensive Care and Emergency Medicine. D Scott, F Cismondi, J Lee, T Mandelbaum, LA Celi, RG Mark, and D Talmor. “Long-term survival for ICU patients with acute kidney injury.” Brussels, Belgium, March 2012.

International Symposium on Intensive Care and Emergency Medicine. T Mandelbaum, DJ Scott, J Lee, RG Mark, MD Howell, A Malhotra, and D Talmor. “Validation of the AKIN criteria definition using high-resolution ICU data from the MIMIC-II database.” Brussels, Belgium, March 2011.

Institute of Biomaterials and Biomedical Engineering Scientific Day. J Lee, R Cliffe, T Chau, and CM Steele. “A timing comparison between mechanomyography and nasal airflow Signals.” University of Toronto, Toronto, Ontario, Canada. May 2008.

Annual Dysphagia Research Society Meeting. J Lee, R Cliffe, T Chau, and CM Steele. “A timing comparison between mechanomyography and nasal airflow signals.” Isle of Palms, South Carolina, USA. March 2008.

Toronto Rehabilitation Institute Research Day. J Lee, R Cliffe, T Chau, and CM Steele. “Investigation of accelerometry, mechanomyography, and nasal airflow signals for abnormal swallow detection.” Toronto, Ontario, Canada. November 2007.

Bloorview Research Institute Symposium. J Lee, R Cliffe, T Chau, and CM Steele. “Investigation of accelerometry, mechanomyography, and nasal airflow signals for abnormal swallow detection.” Toronto, Ontario, Canada. November 2007.

Annual Dysphagia Research Society Meeting. J Lee, M Takeuchi, CM Steele, and T Chau. “Discrimination between swallows with and without aspiration based on stroke accelerometric signals.” Vancouver, British Columbia, Canada. March 2007.

Toronto Rehabilitation Institute Research Day. J Lee, M Takeuchi, CM Steele, and T Chau. “Validation of a non-invasive device to detect aspiration in adults with dysphagia.” Toronto, Ontario, Canada. November 2006.

MEDIA COVERAGE

Waterloo Magazine. “Living longer, living better - five innovations shaping the medical landscape.” May 16, 2017.

<https://uwaterloo.ca/magazine/spring-2017/feature/living-longer-living-better>

University of Waterloo - Waterloo News. “Ontario government awards \$2.3 million for early career researchers and infrastructure.” August 31, 2016.

<https://uwaterloo.ca/news/news/ontario-government-awards-23-million-early-career>

University of Waterloo - State of the University. “Using data to drive decisions about health care.” October 28, 2015.

<https://uwaterloo.ca/state-of-the-university/2015/research/improving-lives>

CBC Radio the Morning Edition - Kitchener-Waterloo. “Waterloo researchers making smart pyjamas for the elderly.” January 21, 2015.

<http://www.cbc.ca/player/AudioMobile/The+Morning+Edition++K-W/ID/2649149982>

The Record. “UW researchers benefit from \$37M federal grant.” January 20, 2015.

<http://www.therecord.com/news-story/5268736-uw-researchers-benefit-from-37m-federal-grant>

Waterloo Stories. “Using data to treat patients right.” March 28, 2013.

<https://uwaterloo.ca/stories/using-data-treat-patients-right>

TEACHING EXPERIENCE

Instructor. HLTH 473/619 Fundamental Research Methods in Health Informatics (on-campus undergraduate/graduate course), University of Waterloo, Waterloo, Ontario, Canada. September 2016 – December 2017.

Instructor. HLTH 230 Introduction to Health Informatics (on-campus undergraduate course), University of Waterloo, Waterloo, Ontario, Canada. January 2014 – April 2018.

Instructor. PHS 616 Decision Making and Systems Thinking in Health Informatics (online graduate course), University of Waterloo, Waterloo, Ontario, Canada. January 2014 – December 2016.

Instructor. PHS 615 Requirements Specification and Analysis in Health Systems (online graduate course), University of Waterloo, Waterloo, Ontario, Canada. September 2013 – April 2016.

Guest Lecturer. PHS 631 Public Health Surveillance (online graduate course), University of Waterloo, Waterloo, Ontario, Canada. January 2014.
“Health and Information Technology”

Guest Lecturer. CS 793 Health Informatics II - Applications Domains (on-campus graduate course), University of Waterloo, Waterloo, Ontario, Canada. February 2013.
“Health Informatics: Beyond the Electronic Health Record”

Guest Lecturer. CS 792 Health Informatics I - Data Structures and Standards (on-campus graduate course), University of Waterloo, Waterloo, Ontario, Canada. October 2012.
“Granular Health Informatics”

Instructor. HST.582J/6.555J/16.456J Biomedical Signal and Image Processing (on-campus undergraduate/graduate course), Massachusetts Institute of Technology, Cambridge, Massachusetts, USA. February 2012 – May 2012.
Adaptive filtering including the Wiener filter, least mean squares (LMS) algorithm, recursive least squares (RLS) algorithm, and Kalman filter.

RESEARCH TRAINEE SUPERVISION

Postdoctoral Fellows

1. Abdul Hai Zahid Mohammed. School of Public Health and Health Systems, University of Waterloo. April 2017 – May 2018.

Graduate Students

1. Frank Lee, PhD in Epidemiology, Department of Community Health Sciences, University of Calgary. September 2018 – present.
2. Anis Sharafoddini. PhD in Public Health and Health Systems, School of Public Health and Health Systems, University of Waterloo. September 2014 – present.
3. Ben Kim. PhD in Public Health and Health Systems, School of Public Health and Health Systems, University of Waterloo. January 2016 – present.
4. Yingying Xu. PhD in Statistics, Department of Statistics and Actuarial Science, University of Waterloo. September 2013 – August 2018.
5. Olivier Nguyen. MASc in Electrical and Computer Engineering, Department of Electrical and Computer Engineering, University of Waterloo. September 2016 – August 2018.
6. Siyi Du. MSc in Public Health and Health Systems, School of Public Health and Health Systems, University of Waterloo. September 2016 – August 2018.
7. Ken Tran. PhD in Public Health and Health Systems, School of Public Health and Health Systems, University of Waterloo. September 2016 – March 2018.
8. Arjun Puri, “Acceptance and usage of smart wearable devices in Canadian older adults”. MSc in Public Health and Health Systems, School of Public Health and Health Systems, University of Waterloo. September 2014 – April 2017.
9. Yang Yang, “Fall risk classification in community-dwelling older adults using a smart wrist-worn device and the Resident Assessment System-Home Care (RAI-HC)”. MSc in Public Health and Health Systems, School of Public Health and Health Systems, University of Waterloo. January 2015 – March 2017.
10. Kurt Tulsieram, “Readability and coherence of Canadian provincial department/ministry of health HPV information intended for the lay population”. MSc in Health Studies and Gerontology, School of Public Health and Health Systems, University of Waterloo. January 2015 – January 2016.

11. Arjun Kumar Bhattarai, “An investigation of the public health informatics research and practice in the past fifteen years from 2000 to 2014: A scoping review in MEDLINE”. MSc in Health Studies and Gerontology, School of Public Health and Health Systems, University of Waterloo. May 2013 – December 2015.

Undergraduate Students

1. Ian Waudby-Smith. Research student, Department of Statistics and Actuarial Science, University of Waterloo. May 2016 – April 2018.
2. Maple Ong. Honours thesis student, School of Public Health and Health Systems, University of Waterloo. September 2017 – April 2018.
3. Pearl Zaki. Research student, School of Public Health and Health Systems, University of Waterloo. May 2017 – September 2017.
4. Marck Mercado. Honours thesis student, School of Public Health and Health Systems, University of Waterloo. September 2016 – April 2017.
5. Aein Zarrin. Honours thesis and co-op student, School of Public Health and Health Systems, University of Waterloo. May 2016 – April 2017.
6. Ryan Chu. Co-op student, Department of Electrical and Computer Engineering, University of Waterloo. January 2016 – April 2016.
7. Angus Kong. Research student, Department of Statistics and Actuarial Science, University of Waterloo. January 2016 – March 2016.
8. Arvind Shrivats. Research student, Department of Statistics and Actuarial Science, University of Waterloo. May 2015 – July 2015.
9. Rebecca Ling. Honours thesis student, School of Public Health and Health Systems, University of Waterloo. September 2015 – April 2016.
10. Anna Staszewska. Honours thesis student, School of Public Health and Health Systems, University of Waterloo. September 2015 – April 2016.
11. Dino Trtovac. Honours thesis student, School of Public Health and Health Systems, University of Waterloo. September 2015 – April 2016.
12. Helen Zhou. Research student, Department of Statistics and Actuarial Science, University of Waterloo. September 2014 – March 2016.
13. Evan Ribey. Co-op student, School of Public Health and Health Systems, University of Waterloo. May – August 2014 & January – August 2015.
14. Lily Zhang. Research student, Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology. June 2011 – July 2011.
15. Yasemin Gokce. Thesis student, Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology. January 2010 – September 2010.

ADVISORY BOARDS

Council Member. Heart Failure Council, Heart and Stroke Foundation. 2017 – present.

EDITORIAL BOARDS

Editorial Board Member. British Journal of Health Informatics and Monitoring. 2013 – 2016.

CONFERENCE ORGANIZATION

Program Committee Member. 26th IEEE International Symposium on Computer-Based Medical Systems, Porto, Portugal. June 2013.

Associate Editor. 25th Annual Canadian Conference on Electrical and Computer Engineering, Montreal, Quebec, Canada. April 2012.

REFEREE SERVICE

- ◇ Annual AMIA Symposium
- ◇ Annals of Biomedical Engineering
- ◇ Applied Clinical Informatics
- ◇ BioMed Research International
- ◇ Computer Methods and Programs in Biomedicine
- ◇ Critical Care Medicine
- ◇ Entropy
- ◇ Journal of Hospital Medicine
- ◇ Journal of Systems Science and Systems Engineering
- ◇ Medical Engineering & Physics
- ◇ Medical Science Monitor Basic Research
- ◇ Neurosurgery
- ◇ Physiological Measurement
- ◇ PLoS One

PROFESSIONAL MEMBERSHIP

COACH. *Member.* 2014 – present

AMIA. *Member.* 2014 – 2016

IEEE EMBS. *Senior Member.* 2013 – present

IEEE. *Senior Member.* 2006 – present

LANGUAGES

English. Fluent in oral and written communication.

Korean. Fluent in oral and written communication.

CITIZENSHIP

Canadian