ROBERT AMELARD PhD

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PERSONAL

Robert Amelard, PhD (him/his)
Postdoctoral Fellow, KITE-Toronto Rehabilitation Institute, University Health Network
Research Fellow, Division of Cardiology, Mount Sinai Hospital
Research Scientist, Schlegel-UW Research Institute for Aging
Adjunct Research Professor, Department of Medical Biophysics, Western University
550 University Ave, 12th floor, West Wing
Toronto, Ontario, M5G 2A2

EDUCATION AND RESEARCH POSITIONS

Postdoctoral Fellow   Feb 2021–Present
UNIVERSITY HEALTH NETWORK Toronto, ON
Keywords: wearable sensors, smart textiles, diuretics, pulmonary edema, heart failure

Research Fellow   July 2021–Present
MOUNT SINAI HOSPITAL Toronto, ON
Keywords: right heart catheterization, pulmonary pressures, pulmonary hypertension, exercise

Research Scientist   Sep 2019–Present
SCHLEGEL-UW RESEARCH INSTITUTE FOR AGING Waterloo, ON
Keywords: central venous pressure, biophotonics, cardiorespiratory health, wearables, intracranial pressure

Adjunct Research Professor   Sep 2018–Present
WESTERN UNIVERSITY London, ON
Keywords: biophotonics, brain health, critical care, sepsis, clinical translation

NSERC Postdoctoral Fellow   Sep 2017–Aug 2019
SCHLEGEL-UW RESEARCH INSTITUTE FOR AGING Waterloo, ON
Keywords: cardiovascular biosensors, computer vision, machine learning, physiological modeling, cerebral perfusion

Visiting Researcher   Aug 2016, Feb 2017, Jul 2018
UNIVERSITY OF CALIFORNIA IRVINE Irvine, CA
Keywords: computational biophotonics, computer vision, image processing, breast cancer, clinical translation

Visiting Researcher   Sep 2017
UNIVERSITY OF ALBERTA Edmonton, AB
Keywords: biophotonics, ischemic stroke prescreening, biomarkers, vascular collaterals, clinical translation

Doctor of Philosophy (Ph.D.) Alumni Gold Medal   2013–2017
UNIVERSITY OF WATERLOO (SYSTEMS DESIGN ENGINEERING) Waterloo, ON
Thesis: Widefield computational biophotonic imaging for spatiotemporal cardiovascular hemodynamic monitoring
Keywords: computational biophotonics, statistical modeling, biomedical image/signal processing, medical device design, machine learning
    Nominated for Millennium Technology Prize, Technology Academy Finland

Master of Applied Science (M.A.Sc.) 2011–2013
UNIVERSITY OF WATERLOO (SYSTEMS DESIGN ENGINEERING) Waterloo, ON
Thesis: High-level intuitive features (HLIFs) for melanoma detection
Keywords: machine learning, statistical classification, feature extraction, biomedical image processing

Bachelor of Software Engineering (B.SE.) with distinction 2006–2011
UNIVERSITY OF WATERLOO (SOFTWARE ENGINEERING) Waterloo, ON
Keywords: multi-tiered software systems, client/server systems, distributed systems, human-computer interaction, augmented reality

Research and Scholarship

Primary Research Interests

- Physiological monitoring | Computational biophotonics | Biosensors
- Computer vision | Image and signal processing | Machine learning
- Cerebrovascular and cardiovascular physiology | Neuromuscular biomechanics

Awards/Honours

CIHR Fellowship CIHR **ranked 53/615**		2021–2022
Alumni Gold Medal University of Waterloo **most outstanding doctoral academic achievement**		2017
NSERC Postdoctoral Fellowship NSERC **ranked 6/94**		2017-2019
Best Imaging Paper Award Conference on Computer Vision and Imaging Systems		2017
Newport Research Excellence Award SPIE/Newport		2017
Carl Pollock Postgraduate Fellowship University of Waterloo		2017
Computational Biophotonics Research Fellowship University of California Irvine		2016
Innovator's Den Runner-Up RIA		2016
3 Minute Thesis Department Heat Runner-Up University of Waterloo		2016
Graduate Award in Technology and Aging AGE-WELL Network of Centres of Excellence		2015–2017
Accelerate Graduate Research Award Mitacs		2014
Alexander Graham Bell Canadian Graduate Scholarship–Doctoral NSERC		2013–2016
President's Graduate Scholarship University of Waterloo		2013–2016
Faculty of Engineering Graduate Scholarship University of Waterloo		2013
Special Graduate Scholarship University of Waterloo		2013
Best Presentation–Graduate Research Symposium University of Waterloo		2013
Sandford Fleming Foundation Teaching Assistantship Excellence University of Waterloo		2012
Alexander Graham Bell Canadian Graduate Scholarship–Master's NSERC		2011–2012
President's Graduate Scholarship University of Waterloo		2011–2012
Best Demonstration–Capstone Design Symposium QUALCOMM		2011

*RIA–Schlegel-UW Research Institute for Aging | SPIE–International Society for Optics and Photonics | NSERC–Natural Sciences and Engineering Research Council of Canada | CIHR–Canadian Institutes of Health Research
Where applicable, these honours have been highlighted with the associated entry below. f.

Publications

My research straddles the fields of biomedical engineering and health sciences. I have published my biomedical engineering research primarily in top-tier biomedical optics and biomedical engineering journals: Biomedical Optics Express (IF_5=3.5, h_5=50), J. Biomedical Optics (IF_5=2.7, h_5=48), and IEEE Transactions on Biomedical Engineering (IF_5=3.4, h_5=64). I have published my cardiovascular physiology discovery papers in top-tier physiology journals or multidisciplinary journals: Journal of Applied Physiology (IF_5=3.5, h_5=54), Scientific Reports (IF_5=4.8, h_5=131).

Journal Manuscripts Submitted/In Progress (5)

[1] K. J. Pfisterer, **R. Amelard**, A. G. Chung, B. Syrnyk, A. MacLean, and A. Wong, "When segmentation is not enough: rectifying visual-volume discordance through multisensor depth-refined semantic segmentation for food intake tracking in long-term care," *Scientific Reports* (submitted)

[2] C. A. Patterson, **R. Amelard**, E. Saarikoski, H. Heigold, R. L. Hughson, and A. D. Robertson, "Sex-dependent jugular vein distension during head-down tilt and lower body negative pressure," *Journal of Applied Physiology* (submitted (JAPPL-00572-2021))

[3] K. J. Pfisterer, **R. Amelard**, J. Boger, H. H. Keller, and A. Wong, "Enhancing food intake tracking in long-term care with the automated food imaging and nutrient intake tracking (AFINI-T) system," *Nature Aging* (manuscript in progress)

[4] E. T. Hedge, **R. Amelard**, and R. L. Hughson, "Evaluation of random forest regression model to predict oxygen uptake kinetics during moderate and heavy exercise from wearable sensor data," *Journal of Applied Physiology* (manuscript in progress)

[5] J. S. Au, B. Y. Yiu, H. Nahas, **R. Amelard**, R. L. Hughson, and A. C. Yu, "Distal arterial occlusion induces complex blood flow and recirculation at the femoral bifurcation," *Journal of Applied Physiology* (manuscript in progress)

Journal Publications Published/Accepted (16)

[J1] **R. Amelard**, E. T. Hedge, and R. L. Hughson, "Temporal convolutional networks predict dynamic oxygen uptake response from wearable sensors across exercise intensities," *npj Digital Medicine* (accepted)

[J2] J. H. Lam, B. Hill, T. Quang, **R. Amelard**, S. Kim, H. Yazdi, R. Warren, K. Cutler, and B. J. Tromberg, "Multi-modal diffuse optical spectroscopy for high-speed monitoring and wide-area mapping of tissue optical properties and hemodynamics," *Journal of Biomedical Optics* **26**(8), 085002 (2021)

[J3] **R. Amelard**, A. D. Robertson, C. Patterson, H. Heigold, E. Saarikoski, and R. L. Hughson, "Optical hemodynamic imaging of jugular venous dynamics during altered central venous pressure," *IEEE Transactions on Biomedical Engineering* **68**(8), 2582–2591 (2021)

[J4] M. B. Applegate, **R. Amelard**, C. Gomez, and D. Roblyer, "Real-time handheld probe tracking and image formation using digital frequency-domain diffuse optical spectroscopy," *IEEE Transactions on Biomedical Engineering* **68**(11), 3399–3409 (2021)

[J5] **R. Amelard**, K. R. Murray, E. T. Hedge, T. W. Cleworth, M. Noguchi, A. C. Laing, and R. L. Hughson, "Monocular 3D sway tracking for assessing postural instability in cerebral hypoperfusion during quiet standing," *IEEE Transactions on Neural Systems and Rehabilitation Engineering* **28**(3), 720–729 (2020). arXiv:1907.05376

[J6] **R. Amelard**, J. H. Lam, B. Hill, A. Durkin, K. Cutler, and B. J. Tromberg, "Monocular 3D probe tracking for generating sub-surface optical property maps from diffuse optical spectroscopic imaging," *IEEE Transactions on Biomedical Engineering* **67**(7), 1872–1881 (2020) **Feature Article**

[J7] K. J. Pfisterer, **R. Amelard**, A. G. Chung, and A. Wong, "A new take on measuring relative nutritional density: The feasibility of using a deep neural network to assess commercially-prepared puréed food concentrations," *Journal of Food Engineering* **223**, 220–235 (2018). arXiv:1707.07312

[J8] T. Beltrame, **R. Amelard**, A. Wong, and R. L. Hughson, "Extracting aerobic system dynamics during unsupervised activities of daily living using wearable sensor machine learning models," *Journal of Applied Physiology* **124**(2), 473–481 (2018) **Altmetric: 108 (97th percentile)**

[J9] T. Beltrame, **R. Amelard**, A. Wong, and R. Hughson, "Prediction of oxygen uptake dynamics by machine learning analysis of wearable sensors during activities of daily living," *Scientific Reports* **7**, 45738 (2017)

[J10] **R. Amelard**, R. L. Hughson, D. K. Greaves, K. J. Pfisterer, J. Leung, D. A. Clausi, and A. Wong, "Non-contact hemodynamic imaging reveals the jugular venous pulse waveform," *Scientific Reports* **7**, 40150 (2017). arXiv:1604.05213

[J11] **R. Amelard**, D. A. Clausi, and A. Wong, "Spatial probabilistic pulsatility model for enhancing photoplethysmographic imaging systems," *Journal of Biomedical Optics* **21**(11), 116010 (2016). arXiv:1606.09118

[J12] T. Beltrame, **R. Amelard**, R. Villar, M. J. Shafiee, A. Wong, and R. L. Hughson, "Estimating oxygen uptake and energy expenditure during treadmill walking by neural network analysis of easy-to-obtain inputs," *Journal of Applied Physiology* **121**(5), 1226–1233 (2016)

[J13] **R. Amelard**, D. A. Clausi, and A. Wong, "Spectral-spatial fusion model for robust blood pulse waveform extraction in photoplethysmographic imaging," *Biomedical Optics Express* **7**(12), 4874–4885 (2016)

[J14] **R. Amelard**, C. Scharfenberger, F. Kazemzadeh, K. J. Pfisterer, B. S. Lin, D. A. Clausi, and A. Wong, "Feasibility of long-distance heart rate monitoring using transmittance photoplethysmographic imaging (PPGI)," *Scientific Reports* **5**, 14637 (2015). arXiv:1503.06775 **Altmetric: 160 (99th percentile)**

[J15] **R. Amelard**, J. Glaister, A. Wong, and D. A. Clausi, "High-level intuitive features (HLIFs) for intuitive skin lesion description," *IEEE Transactions on Biomedical Engineering* **62**(3), 820–831 (2015)

[J16] J. Glaister, **R. Amelard**, A. Wong, and D. A. Clausi, "MSIM: Multistage illumination modeling of dermatological photographs for illumination-corrected skin lesion analysis," *IEEE Transactions on Biomedical Engineering* **60**(7), 1873–1883 (2013)

Refereed Conference Publications (48)

[C1] C. A. Patterson, A. D. Robertson, **R. Amelard**, and R. L. Hughson, "Non-contact optical hemodynamic imaging tracks changes in jugular vein pulsatility and compliance during venous filling," *NASA Human Research Program Investigator's Workshop*, Texas, USA (2022). (Abstract)

[C2] H. Heigold, A. Robertson, C. A. Patterson, R. L. Hughson, and **R. Amelard**, "Monte Carlo photon migration modeling for assessing external jugular venous dynamics," *European Conferences on Biomedical Optics*, (virtual) (2021) **Student Paper Poster Award**

[C3] D. K. Mastrandrea, Carmelo J adn Greaves, E. T. Hedge, **R. Amelard**, and R. L. Hughson, "Non-intrusive cardiorespiratory and activity assessment for Lunar Gateway missions using the Bio-Monitor sensor shirt," *Canada Space Agency 1st Canadian Lunar Workshop*, (virtual) (2021). (Abstract)

[C4] A. D. Robertson, C. A. Patterson, **R. A. Amelard**, G. Shaker, and R. L. Hughson, "Non-contact health monitoring on Lunar Gateway," *Canada Space Agency 1st Canadian Lunar Workshop*, (virtual) (2021). (Abstract)

[C5] D. K. Greaves, A. D. Robertson, **R. Amelard**, K. Wood, C. A. Patterson, P. Arbeille, and R. L. Hughson, "Central and peripheral pulse wave velocity changes in astronauts on ISS and up to one-year post-landing follow-up," *International Society for Gravitational Physiology*, (virtual) (2021). (Abstract)

[C6] A. D. Robertson, N. Mourad, C. A. Patterson, H. Heigold, E. Saarikoski, R. L. Hughson, and **R. Amelard**, "Internal jugular vein hemodynamics are direct predictors of critical closing pressure during a progressive Valsalva maneuver," *International Meeting on Cerebral Haemodynamic Regulation*, (virtual) (2021). (Abstract) **Best Oral Presentation**

[C7] A. D. Robertson, **R. Amelard**, C. Patterson, and R. L. Hughson, "Internal jugular vein volume pulsatility during head-down tilt and lower body negative pressure," *Experimental Physiology*, (virtual) (2021). (Abstract)

[C8] E. T. Hedge, R. L. Hughson, and **R. Amelard**, "Deep learning models predict dynamic oxygen uptake responses from wearable sensor data during moderate- and heavy-intensity exercise," *Experimental Physiology*, (virtual) (2021). (Abstract)

[C9] E. T. Hedge, **R. Amelard**, and R. L. Hughson, "Random forest regression model fails to predict oxygen uptake kinetics during moderate and heavy intensity cycling from wearable sensor data," *APS Integrative Physiology of Exercise*, (virtual) (2021). (Abstract)

[C10] M. B. Applegate, C. Gomez, **R. Amelard**, and D. Roblyer, "Frequency-domain diffuse optical spectroscopy with real-time data visualization for monitoring of breast neoplasms," *Proc. SPIE*, San Francisco, USA (2021)

[C11] C. A. Patterson, A. D. Robertson, **R. Amelard**, E. Saarikoski, and R. L. Hughson, "Coded hemodynamic imaging tracks beat-by-beat changes in internal jugular vein cross-sectional area following release of lower-body negative pressure," *NASA Human Research Program Investigator's Workshop*, Texas, USA (2021). (Abstract)

[C12] C. A. Patterson, A. D. Robertson, **R. Amelard**, and R. L. Hughson, "Optic hemodynamic imaging of the jugular vein during manipulations of intracranial pressure via head-down tilt," *American Society for Gravitational and Space Research*, (virtual) (2020). (Abstract)

[C13] C. A. Patterson, R. L. Hughson, **R. Amelard**, E. Saarikoski, and A. D. Robertson, "Infrared visualization by coded hemodynamic imaging tracks changes in central venous pressure and jugular vein cross-sectional area during head-down tilt and lower body negative pressure," *International Society for Gravitational Physiology*, Texas, USA (2020). (Abstract)

[C14] E. T. Hedge, **R. Amelard**, and R. L. Hughson, "Evaluation of pulse arrival time model to estimate systolic blood pressure during exercise," *American Physiological Society Annual Meeting*, San Diego (2020). (Abstract)

[C15] E. T. Hedge, D. K. Greaves, K. N. Wood, T. Beltrame, **R. Amelard**, and R. L. Hughson, "Bio-monitor on ISS for non-intrusive smart monitoring of crewmember cardiorespiratory fitness and health," *NASA Human Research Program Investigator's Workshop*, Texas, USA (2020). (Abstract)

[C16] C. A. Patterson, A. D. Robertson, **R. Amelard**, E. Saarikoski, and R. L. Hughson, "Use of coded hemodynamic imaging to track changes in jugular vein cross sectional area and central venous pressure during head down tilt," *NASA Human Research Program Investigator's Workshop*, Texas, USA (2020). (Abstract) **Best Poster Presentation**

[C17] J. S. Au, **R. Amelard**, B. Y. Yiu, H. Nahas, R. L. Hughson, and A. C. H. Yu, "A femoral stealing effect: Presence of collateral retrograde blood flow redistribution in the femoral bifurcation during reactive hyperemia," *ARTERY19 Scientific Meeting*, Hungary, Budapest (2019)

[C18] K. J. Pfisterer, **R. Amelard**, B. Syrnyk, and A. Wong, "Towards computer vision powered color-nutrient assessment of pureed food," in *Proc. IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, *Women in Computer Vision Workshop*, Long Beach, USA (2019). arXiv:1905.00310

[C19] **R. Amelard**, B. Hill, J. H. Lam, A. Durkin, and B. J. Tromberg, "Generating dense 2D tissue maps from non-gridded diffuse optical spectroscopic imaging measurements using image-based probe tracking," in *Optical Tomography and Spectroscopy of Tissue XIII*, *Proc. SPIE*, San Francisco, USA (2019). (Abstract)

[C20] **R. Amelard**, J. S. Au, K. Murray, D. Greaves, and R. L. Hughson, "Non-contact biophotonic assessment of changes in central venous pressure using photoplethysmographic imaging," in *Optical Diagnostics and Sensing XIX: Toward Point-of-Care Diagnostics*, *Proc. SPIE*, San Francisco, USA (2019). (Abstract)

[C21] K. Pfisterer, **R. Amelard**, and A. Wong, "Intuitive data-driven visualization of food relatedness via t-distributed stochastic neighbor embedding," in *Proc. Conference on Computational Vision and Imaging Systems*, **4**(1) (2018) **Best Poster Presentation**

[C22] **R. Amelard**, K. J. Pfisterer, S. Jagani, D. A. Clausi, and A. Wong, "Non-contact assessment of obstructive sleep apnea cardiovascular biomarkers using photoplethysmography imaging," in *Optical Diagnostics and Sensing XVIII: Toward Point-of-Care Diagnostics*, *Proc. SPIE*, San Francisco, USA (2018)

[C23] K. J. Pfisterer, **R. Amelard**, and A. Wong, "Differential color space analysis for investigating nutrient content in a pureed food dilution-flavor matrix: a step toward objective malnutrition risk assessment," in *Optical Diagnostics and Sensing XVIII: Toward Point-of-Care Diagnostics*, *Proc. SPIE*, San Francisco, USA (2018)

[C24] M. Y. Tran, **R. Amelard**, and A. Wong, "Integrating multispectral hemodynamic imaging for bulk tissue oxygenation analysis," in *Proc. Conference on Computational Vision and Imaging Systems*, **3**(1) (2017) **Best Imaging Paper Award**

[C25] A. MacLean, K. Pfisterer, **R. Amelard**, A. G. Chung, D. Kumar, and A. Wong, "Goldilocks and the three parameters: empirically finding the "just right" for segmenting food images for the AFINI-T system," *Proc. Conference on Computational Vision and Imaging Systems* **3**(1) (2017)

[C26] **R. Amelard**, R. L. Hughson, D. A. Clausi, and A. Wong, "Non-contact arrhythmia assessment in natural settings: a step toward preventive cardiac care," in *Diagnostic and Therapeutic Applications of Light in Cardiology*, *Proc. SPIE* **10042**, 1004205, San Francisco, USA (2017)

[C27] **R. Amelard**, R. L. Hughson, D. K. Greaves, D. A. Clausi, and A. Wong, "Assessing photoplethysmographic imaging performance beyond facial perfusion analysis," in *Optical Diagnostics and Sensing XVII*, *Proc. SPIE*, 100720Q, San Francisco, USA (2017) **Student Paper Award**

[C28] M. Wilson, **R. Amelard**, D. Clausi, and A. Wong, "Co-integrating thermal and hemodynamic imaging for physiological monitoring," *Proc. Conference on Computational Vision and Imaging Systems* **2**(1), Waterloo, Canada (2016)

[C29] B. Chwyl, **R. Amelard**, D. Clausi, and A. Wong, "A Bayesian multi-scale framework for photoplethysmogram imaging waveform processing," in *Proc. Conference on Computational Vision and Imaging Systems*, **2**(1), Waterloo, Canada (2016)

[C30] B. Chwyl, A. G. Chung, **R. Amelard**, J. Deglint, D. A. Clausi, and A. Wong, "SAPPHIRE: Stochastically acquired photoplethysmogram for heart rate inference in realistic environments," in *Proc. IEEE International Conference on Image Processing*, 1230–1234 (2016)

[C31] B. Chwyl, A. G. Chung, **R. Amelard**, J. Deglint, D. A. Clausi, and A. Wong, "Time-frequency domain analysis via pulselets for non-contact heart rate estimation from remotely acquired photoplethysmograms," in *Proc. Conference on Computer and Robot Vision*, 201–207, Victoria, Canada (2016)

[C32] **R. Amelard**, D. A. Clausi, and A. Wong, "Coded hemodynamic imaging for non-contact detection of abnormal blood pulse waveforms," in *Proc. Imaging Network Ontario*, Toronto, Canada (2016)

[C33] **R. Amelard**, D. A. Clausi, and A. Wong, "Spectral photoplethysmographic imaging sensor fusion for enhanced heart rate detection," in *Proc. SPIE*, **9701**, 970113, San Francisco, USA (2016)

[C34] **R. Amelard**, K. J. Pfisterer, D. A. Clausi, and A. Wong, "Non-contact hematoma damage and healing assessment using reflectance photoplethysmographic imaging," in *Multimodal Biomedical Imaging XI*, *Proc. SPIE* **9701**, 970112, San Francisco, USA (2016)

[C35] J. Deglint, A. G. Chung, B. Chwyl, **R. Amelard**, F. Kazemzadeh, X. Y. Wang, D. A. Clausi, and A. Wong, "Photoplethysmographic imaging via spectrally demultiplexed erythema fluctuation analysis for remote heart rate monitoring," in *Multimodal Biomedical Imaging XI*, *Proc. SPIE* **9701**, 970111, San Francisco, USA (2016)

[C36] **R. Amelard**, J. Leung, D. A. Clausi, and A. Wong, "A portable plug-and-play imaging system for physiological monitoring," in *Proc. Conference on Computational Vision and Imaging Systems*, **1**, Waterloo, Canada (2015)

[C37] F. Kazemzadeh, C. Jin, M. Yu, **R. Amelard**, S. Haider, S. Saini, M. Emelko, D. A. Clausi, and A. Wong, "Multispectral digital holographic microscopy with applications in water quality assessment," in *Novel Optical Systems Design and Optimization XVIII*, *Proc. SPIE* **9579**, 957906, San Diego, USA (2015)

[C38] D. S. Cho, S. Haider, **R. Amelard**, A. Wong, and D. A. Clausi, "Quantitative features for computer-aided melanoma classification using spatial heterogeneity of eumelanin and pheomelanin concentrations," in *Proc. IEEE International Symposium on Biomedical Imaging*, 59–62, New York, USA (2015)

[C39] **R. Amelard**, C. Scharfenberger, A. Wong, and D. A. Clausi, "Illumination-compensated non-contact imaging photoplethysmography via dual-mode temporally-coded illumination," in *Multimodal Biomedical Imaging X*, *Proc. SPIE* **9316**, 931607, San Francisco, USA (2015)

[C40] **R. Amelard**, C. Scharfenberger, A. Wong, and D. A. Clausi, "Non-contact assessment of melanin distribution via multispectral temporal illumination coding," in *Multimodal Biomedical Imaging X*, *Proc. SPIE* **9316**, 93160N, San Francisco, USA (2015)

[C41] A. Chung, X. Y. Wang, **R. Amelard**, C. Scharfenberger, J. Leong, J. Kulinski, A. Wong, and D. A. Clausi, "High-resolution motion-compensated photoplethysmographic imaging for remote heart rate monitoring," in *Multimodal Biomedical Imaging X*, *Proc. SPIE* **9316**, 93160A, San Francisco, USA (2015)

[C42] D. S. Cho, S. Haider, **R. Amelard**, A. Wong, and D. Clausi, "Physiological characterization of skin lesion using non-linear random forest regression model," in *Proc. Conference of the IEEE Engineering in Medicine and Biology Society*, 3349–3352, Chicago, USA (2014)

[C43] S. Haider, D. Cho, **R. Amelard**, A. Wong, and D. A. Clausi, "Enhanced classification of malignant melanoma lesions via the integration of physiological features from dermatological photographs," in *Proc. Conference of the IEEE Engineering in Medicine and Biology Society*, 6455–6458, Chicago, USA (2014)

[C44] A. Wong, K. A. Scott, E. Li, and **R. Amelard**, "Continuous sea ice thickness estimation using a joint modis and amsr-e guided variational model," in *Proc. IEEE International Geoscience and Remote Sensing Symposium*, 4106–4109, Melbourne, Australia (2013)

[C45] **R. Amelard**, A. Wong, F. Li, and D. A. Clausi, "Unsupervised classification of sea-ice and water using synthetic aperture radar via an adaptive texture sparsification transform," in *Proc. IEEE International Geoscience and Remote Sensing Symposium*, 3958–3961, Melbourne, Australia (2013)

[C46] **R. Amelard**, A. Wong, and D. A. Clausi, "Unsupervised classification of agricultural land cover using polarimetric synthetic aperture radar via a sparse texture dictionary model," in *Proc. IEEE International Geoscience and Remote Sensing Symposium*, 4383–4386, Melbourne, Australia (2013)

[C47] **R. Amelard**, A. Wong, and D. A. Clausi, "Extracting morphological high-level intuitive features (HLIF) for enhancing skin lesion classification," in *Proc. Conference of IEEE Engineering in Medicine and Biology Society*, 4458–4461, San Diego, USA (2012)

[C48] **R. Amelard**, A. Wong, and D. A. Clausi, "Extracting high-level intuitive features (HLIF) for classifying skin lesions using standard camera images," in *Proc. Conference on Computer and Robot Vision*, 396–403, Toronto, Canada (2012)

Patents (2)

[P1] **R. A. Amelard** and A. S. L. Wong, "System and method for spatial cardiovascular monitoring," *U.S. Patent 10,709,342* **Issued** (Dec 21 2016)
  Also filed as: Canada Patent 2,952,485

[P2] G. Valsan, S. Z. Mahmoodabadi, R. B. Wagner, D. Priest, and **R. Amelard**, "Multispectral medical imaging devices and methods thereof," *US Patent 9,968,285* **Issued** (Jul 25 2014)
  Also issued as: Europe Patent EP2977003, Japan Patent JP2016030214, China Patent CN105286785, Hong Kong Patent HK1215142

Books (1)

[B1] A. Wong, J. R. Wallace, E. A. Lee, X. Wang, V. Cheung, A. Kumar, **R. Amelard**, and I. Ivkovic, *Data Structures and Algorithms in a Nutshell*, University of Waterloo (2015)

Book Chapters (2)

[BC1] **R. Amelard** and A. Wong, "Hemodynamic imaging," in *Encyclopedia of Biomedical Engineering*, R. Narayan, Ed., 545–550, Elsevier, 1st ed. (2018)

[BC2] **R. Amelard**, J. Glaister, A. Wong, and D. A. Clausi, "Melanoma decision support using lighting-corrected intuitive feature models," in *Computer Vision Techniques for the Diagnosis of Skin Cancer*, J. Scharcanski and M. E. Celebi, Eds., *Series in BioEngineering*, 192–219, Springer, Heidelberg (2013)

Theses (2)

[T1] **R. Amelard**, "Widefield Computational Biophotonic Imaging for Spatiotemporal Cardiovascular Hemodynamic Monitoring," *PhD Thesis, University of Waterloo* (2017). http://hdl.handle.net/10012/12066

[T2] **R. Amelard**, "High-Level Intuitive Features (HLIFs) for Melanoma Detection," *Master's Thesis, University of Waterloo* (2013). http://hdl.handle.net/10012/7761

Industry R&D Publications (3)

[I1] **R. Amelard**, "Feasibility assessment of non-invasive heart rate monitoring system for clinical use." for Hill-Rom Inc. (2016)

[I2] **R. Amelard**, "A real-time multispectral melanin compensation algorithm for tissue oxygen imaging." for Christie Medical Holdings (2013)

[I3] **R. Amelard**, C. Scharfenberger, A. Wong, and D. A. Clausi, "An image processing system for determining parcel dimensions." for Rogue Specialty Transportation (2013)

Presentations

*I have delivered **37 presentations** in **3 countries** (Canada, USA, Australia), including **6 invited seminar talks**, and have received **3 honours**.*

Invited Seminar Talks

[P1] "Opportunities for bridging biosensor technologies and cardiology for enhanced heart failure monitoring." Ted Rogers Centre for Heart Research – Heart Failure Research Rounds (University Health Network, Toronto, Mar 10 2021)

[P2] "Optical hemodynamic imaging for assessing vascular dynamics." Biomedical Optics Research Seminar (Boston University, Boston, Nov 20 2020 (virtual))

[P3] "Detecting atrial fibrillation in blood pulse signals using generated datasets." Machine Learning Research Group Seminar (University of Guelph, Guelph, Aug 2018)

[P4] "Co-integrating biophotonics, wearable sensors, signal processing and artificial intelligence for assessing age-related biomarkers." Laser Microbeam and Medical Program Seminar (University of California Irvine, Irvine, Jul 2018)

[P5] "Assessing widefield hemodynamic pulsatility using computational biophotonic imaging: a co-integration of biomedical optics, electronic control, image processing and machine learning." Alberta Machine Intelligence Institute Seminar (University of Alberta, Edmonton, Sep 2017)

[P6] "Non-contact hemodynamic monitoring." Laser Microbeam and Medical Program Seminar (University of California Irvine, Irvine, Aug 2016)

Academic Presentations

[P7] "Developments in cardiovascular & cerebrovascular health monitoring." RIA Research Seminar (Schlegel-UW Research Institute for Aging, Waterloo, Mar 2020)

[P8] "Non-contact biophotonic assessment of changes in central venous pressure using photoplethysmographic imaging." Optical Diagnostics and Sensing XIX (SPIE Photonics West, San Francisco, Jan 2019)

[P9] "Coded Hemodynamic Imaging: an infrared eye into the body." Cerebral Hypoperfusion Summit (Schlegel-UW Research Institute for Aging, Waterloo, Apr 2018)

[P10] "Engineering meets cardiovascular physiology: Non-contact blood pulse imaging for new ways of monitoring cardiovascular health." Research Seminar (Schlegel-UW Research Institute for Aging, Waterloo, Feb 2018)

[P11] "Non-contact assessment of obstructive sleep apnea cardiovascular biomarkers using photoplethysmography imaging." Optical Diagnostics and Sensing XVIII (SPIE Photonics West, San Francisco, Jan 2018)

[P12] "Non-contact arrhythmia assessment in natural settings: a step toward preventive cardiac care." Diagnostic and Therapeutic Applications of Light in Cardiology (SPIE Photonics West, San Francisco, Jan 2017)

[P13] "Assessing photoplethysmographic imaging performance beyond facial perfusion analysis." Optical Diagnostics and Sensing XVII (SPIE Photonics West, San Francisco, Jan 2017)

[P14] "Photoplethysmographic imaging for non-contact blood pulse detection." Systems Design Engineering Seminar (University of Waterloo, Waterloo, Sep 2015)

[P15] "Intelligent clinical decision support system for melanoma cancer management." Agfa Healthcare (Waterloo, Jul 2015)

[P16] "Illumination-compensated non-contact imaging photoplethysmography via dual-mode temporally-coded illumination." Multimodal Biomedical Imaging X (SPIE Photonics West, San Francisco, Feb 2015)

[P17] "Skin lesion classification system: image processing summary." Agfa Healthcare (Waterloo, Apr 2014)

[P18] "Unsupervised classification of agricultural land cover using SAR via a sparse texture dictionary model." IEEE International Geoscience and Remote Sensing Symposium (Melbourne, Australia, Jul 2013)

[P19] "Unsupervised classification of sea-ice using SAR via an adaptive texture sparsifying transform." IEEE International Geoscience and Remote Sensing Symposium (Melbourne, Australia, Jul 2013)

[P20] "Continuous sea ice thickness estimation using a joint MODIS/AMSR-E guided variational model." IEEE International Geoscience and Remote Sensing Symposium (Melbourne, Australia, Jul 2013)

[P21] "Importance of intuitive features in clinical decision support systems." University of Waterloo Research Symposium (Waterloo, Mar 2013) **Best Oral Presentation**

[P22] "Progress on a clinical decision support system for detecting melanoma." Agfa Healthcare (Waterloo, Sep 2012)

[P23] "Perceptual structure distortion ratio: an image quality metric based on robust measures of complex phase order." Conference on Computer and Robot Vision (Toronto, May 2012)

[P24] "Extracting high-level intuitive features (hlif) for classifying skin lesions using standard camera images." Conference on Computer and Robot Vision (Toronto, May 2012)

[P25] "Extracting high-level intuitive features to enhance skin cancer detection." Graduate Student Research Conference (Waterloo, Apr 2012)

[P26] "A computational framework for recognizing handwritten matrices." Symbolic Computation Research Seminar (Waterloo, Apr 2010)

[P27] "A system for tracking and managing a managed assets program." TD Asset Management (Toronto, Aug 2009)

Non-Academic Presentations

[P28] "New technologies for health monitoring." Lunch With Residents Research Seminar (Schlegel-UW Research Institute for Aging, Waterloo, Oct 2018)

[P29] "How can a computer see your blood?." Curiosity Fair (Schlegel-UW Research Institute for Aging, Waterloo, May 2018)

[P30] "Blood flow imaging and demystifying academic research." Biomedical Engineering Undergraduate Seminar (Waterloo, May 2017)

[P31] "Improving quality of care through touchless vitals monitoring." Innovator's Den (Schlegel Villages Innovation Summit, Toronto, Jun 2016) **Runner-Up**

[P32] "Revolutionizing baby monitoring with cutting-edge imaging research." Velocity Fund Finals (Waterloo, Mar 2016)

[P33] "Touchless vitals monitoring: pushing toward preventive healthcare." 3 Minute Thesis Competition (Waterloo, Mar 2016) **Runner-Up, Department Heat**

[P34] "Inventing an imaging system and how to get people excited about your research." Vision and Image Processing Research Seminar (Waterloo, Feb 2016)

[P35] "Graduate School–What I wish I knew in 3rd year." Software Engineering Undergraduate Symposium (Waterloo, Oct 2015)

[P36] "The cardiovascular system: a primer for biomedical engineering applications." Vision and Image Processing Research Seminar (Waterloo, Jan 2014)

[P37] "Making an academic poster." Rockway Mennonite Collegiate (Kitchener, Jan 2013)

Research Funding

Development of a textile-based sensor for measuring body fluid 2021
Collaborator | Mitacs Accelerate
$200,000 CAD

Understanding user acceptability requirements for remote heart failure monitoring in at-home environments 2021
Principal Investigator | TRANSFORM-Heart Failure Strategic Initiative
$10,000 CAD

Enhanced detection of the jugular venous pressure: A home monitoring solution for congestive heart failure 2020
Co-Applicant | National Research Council of Canada Industrial Research Assistance Program (NRC IRAP)
$50,000 CAD

Internal jugular vein hemodynamics during rest and exercise at different gravitational stresses 2019
Co-investigator | Canada Space Agency
$200,000 CAD (approved by ESA pending funding by CSA)

Bed rest in older adults accelerates aging-like changes 2019
Co-Applicant | Canadian Institutes of Health Research
$200,000 CAD

Coded hemodynamic imaging to advance astronaut health 2018–2020
Co-Applicant | Canada Space Agency Flights and Fieldwork for the Advancement of Science and Technology
$400,000 CAD

MAchine Learning and Computer Vision to Enhance the Detection of STROke (MAESTRO): Pilot and Feasibility Study 2017–2019
Co-Applicant | Quality Improvement & Clinical Research Alberta Stroke Program
$24,900 CAD

Smart heart rate and breath rate monitoring framework using cameras 2017
Co-Applicant | Hill-Rom Inc.
$30,000 USD

Advanced aging ResearCH (ARCH) to transform health and well-being of older adults 2015
Collaborator | Canadian Foundation for Innovation
$1,387,023 CAD

A mixing model for inferring oxygen status from multispectral imaging 2013
Collaborator | Mitacs
$15,000 CAD

Public Media Attention

*My research received international public media attention following my 2015 Scientific Reports paper, including being featured on Discovery Channel's **Daily Planet**, **OmniTV**, and various newspaper, radio, and online media outlets. Consequently, my article received 160 Altmetric social impact score, top 5% of all ranked journal publications.*

Could wearable technology save your life?	The Globe and Mail	Aug 2019
Reseacher Profile: Robert Amelard	Biotechnology and Bioengineering Conference	Aug 2019
Canadian scientists investigate effects of space travel on human body [VIDEO]	The National	Jul 2019
The Americas' most innovative universities for AI and robotics	Current	Jan 2019
Curiosity of the Ages on Display at RIA	RIA Research Highlights	Jun 2018
Smart clothing aims to predict failing health	Waterloo Stories	May 2018
Curiosity Fair unites inquisitive minds of all ages	The Record	May 2018
UW unveils new artificial intelligence lab [VIDEO]	CTV News	Apr 2018
Waterloo Launches AI Institute [VIDEO]	University of Waterloo	Apr 2018
Waterloo Artificial Intelligence Institute–A Message from the Co-Directors [VIDEO]	UWaterloo	Apr 2018
Impact of emerging technologies on healthcare	Cyber Psychology	Aug 2016
Cultivating and spreading innovation	Research Matters	Jul 2016
It takes a village: Lab Profile	LAB Business Magazine	Feb 2016
Preventing medical emergencies through vascular imaging	University of Waterloo's Student Success Office Blog	Feb 2016
Getting under your skin: A video camera that tracks blood flow	Waterloo Stories	Jan 2016
New touchless device makes earlier detection of heart problems possible	Waterloo News	Jan 2016

Featured on: Discovery Channel's **The Daily Planet** and **OmniTV News**.

Selected appearances: Yahoo! News, The Engineer, Science Daily, Phys.org, Gizmag, Sina, Exchange Magazine, Design Engineering, United Press International, International Business Times, Big News Network, NDTV, Seattle Bulletin, 570 news, Imprint Newspaper

Translated to: French, German, Russian, Chinese, Spanish, Arabic, Indonesian

Building collaborative internships with a win-win mentality	AGE-WELL Blog	Nov 2015

Teaching

Course Instructor

Teaching evaluation summary:

MTE 140 Data Structures and Algorithms University of Waterloo (117 students)		Jan–Apr 2019
MTE 140 Data Structures and Algorithms University of Waterloo (117 students)		Jan–Apr 2018

Teaching Assistantships

TA evaluation (mean,std)=(9.75,0.38) (out of 10, n=4 submitted)

BME 122 Data Structures and Algorithms 54 students (no evaluation submitted)		Jan–Apr 2017
BME 122 Data Structures and Algorithms 54 students (no evaluation submitted)		Jan–Apr 2016
BME 122 Data Structures and Algorithms 41 students, 10/10 evaluation		Jan–Apr 2015
SYDE 575 Image Processing 50 students, 9.2 evaluation		Sep–Dec 2014
MTE 140 Data Structures and Algorithms 142 students, 9.8/10 evaluation		May–Aug 2014
MTE 140 Data Structures and Algorithms 121 students (no evaluation submitted)		May–Aug 2012
SYDE 121 Digital Computation 97 students, 10/10 evalation		Sep–Dec 2011
Sandford Fleming Foundation Teaching Assistantship Excellence Award		

Course Development

Data Structures and Algorithms in a Nutshell: MTE140/BME122 Course Textbook, A Wong, JR Wallace, EA Lee, X Wang, V Cheung, A Kumar, **R Amelard**, I Ivkovic, University of Waterloo, 2016.

Guest Lectures

Trees and Heaps MTE 140 Data Structures and Algorithms		Mar 2015
C++ Memory and Classes BME 122 Data Structures and Algorithms		Feb 2015
Colour Image Processing SYDE 575 Image Processing		Nov 2014
Scaling Software Systems using Data Structures and Algorithms MTE 140 Data Structures and Algorithms		Jul 2014
Pattern Recognition in Biomedical Applications SYDE 372 Pattern Recognition		Apr 2014
Insertions/Deletions in Linked and Array Lists MTE 140 Data Structures and Algorithms		Mar 2013

Teaching Certifications

Certificate in Fundamentals of University Teaching   Centre of Teaching Excellence   May 2014
Course for developing teaching strategies, knowledge and skills. Consisted of 6 workshops, 3 microteaching session evaluations, and 2 full guest lectures evaluation.

Supervisory Activities

Ari Fialkov Biomedical Engiinering   May–Aug 2021
"Bioimpedance fluid monitoring during right heart catheterization"

Nyan Flannigan Biomedical Engiinering   May 2021–Present
"Hemodynamic imaging developments for parabolic flight"

Stephanie Meler, Serene Abu-Sardanah, Hana Raffoul, Nyan Flannigan Biomedical Eng Sep 2020–Apr 2021
"Non-intrusive artery detection for guiding laproscopic surgery (Capstone Project)"
Baylis Medical Design Award

Haarini Suntharalingam Markham District High School   Sep 2019–Jun 2020
"Autofluorescence imaging of lipofuscin as a biomarker for melanoma and neurodegenerative disease"
Youth Science Canada Regional, National, and Disease & Illness Challenge Ribbons
Make: Projects Virtual Science Fair Presentation

Shaelynn Hsu Kinesiology   Sep 2019–Apr 2020
"Transfer function analysis of sway and arterial blood pressure."

Hannah Heigold Biomedical Engineering   (**NSERC USRA**)   May–Dec 2019, May–Aug 2020
"Biophotonic imaging for assessing intracranial pressure effects on brain blood flow."

Hetal Dawda Mechatronics Engineering   May–Dec 2019
"3D stereoscopic imaging for jugular venous pulse assessment."

Braeden Syrnyk Mechatronics Engineering   (**NSERC USRA**)   May 2018–Apr 2019
"(1) Recurrent neural networks and dataset generation for arrhythmia detection."
"(2) Deep semantic segmentation for food segmentation and nutrient estimation."

Monica Hanna Biomedical Sciences   Sep–Dec 2018
"Design and development of tunable optical tissue phantom models for biophotonic calibration"

Lucille Huang Mechatronics Engineering   Sep–Dec 2018
"Integrating physiological data repositories for cardiovascular artificial intelligence modeling"

Alex Tobias Mechatronics Engineering   Jan–Apr 2018
"Arrhythmia dataset generation and cleaning"

Francois Barnard Mechatronics Engineering   Jan–Apr 2018
"Biomedical imaging calibration and tracking for cerebrovascular monitoring"

Milind Paliath Systems Design Engineering   Jan–Apr 2018
"Medical device data extraction and integration with clinical patient monitors"

Yanyan Tran Biomedical Engineering   May–Dec 2017
"Multispectral biophotonic imaging system design and development"

Alexander Maclean Biomedical Engineering   May–Aug 2017
"RGB-D imaging analysis for widefield nutrient quantification at the plate level"

Mujtaba Tirmizi Mechatronics Engineering   Jan–Apr 2017
"Multimodal physiological monitoring system development"

Jordan Guerten Biomedical Engineering   Jan–Apr 2017
"Multispectral optical system development"

Shubh Jagani Systems Design Engineering   Sep 2016–Apr 2017
"Non-intrusive sleep apnea detection using wavelet-based machine learning"

Mikaela MacMahon Biomedical Engineering   Sep–Dec 2016
"Embedded thermal imaging calibration and integration"

Mackenzie Wilson Biomedical Engineering   Apr–Dec 2016
"Opto-electronic biomedical imaging system development"

Jason Leung Biomedical Engineering   May–Aug 2015, Sep–Dec 2017
"Development and manufacturing (3D print, machining) hardware for portable biomedical imaging"

Bill S. Lin Mechatronics Engineering   (**NSERC USRA**)   Sep 2014–Apr 2017
"Biomedical hemodynamic image analysis"

Audrey Chung Systems Design Engineering   Jan–Apr 2014
"Extracting heart rate from ambient smartphone cameras"

Eura Cho, Sara Greenberg, Sharon Leung, Michelle Pugne, Emily Sim Systems Design Eng   Jan–Apr 2013
"Real-time parking lot computer vision analytics platform (Capstone Project)"

Professional Activities

Professional Affiliations

Member, SPIE   Jan 2015–Present
Member, IEEE   Mar 2012–Present
Member, IEEE Engineering Medicine and Biology Society   Jan 2012–Present

Steering Committees

Steering Committee Member   TRANSFORM-Heart Failure Institutional Strategic Initiative   2021–2025
(University Health Network/University of Toronto)

Editorial Activities

Guest Editor   Sensors (Special Issue on Biomedical Imaging and Sensing)   2019

Conference Committee Activities

Program Committee Member   4th International Workshop on Computer Vision for Physio-   2021
logical Measurement (part of IEEE Conference on Computer Vision and Pattern Recognition)
Program Committee Member   3rd International Workshop on Computer Vision for Physio-   2020
logical Measurement (part of IEEE Conference on Computer Vision and Pattern Recognition)

Program Committee Member 2nd International Workshop on Computer Vision for Physiological Measurement (part of IEEE International Conference on Computer Vision)	2019
Conference Organization Committee Cerebral Hypoperfusion Summit	2018
Program Committee Member 1st International Workshop on Computer Vision for Physiological Measurement (part of IEEE Conference on Computer Vision and Pattern Recognition)	2018
Conference Organization Committee 3rd Annual Conference on Vision and Imaging Systems	2017
Conference Coordinator 2nd Annual Conference on Vision and Imaging Systems	2016
Conference Coordinator 1st Annual Conference on Vision and Imaging Systems	2015
Conference Organization Committee International Society for Gravitational Physiology Aging in Space Symposium	2014

Service Activities

Peer2Peer Mentorship Program (mentor) KITE-Toronto Rehabilitation Institute	2021,2022
Regional Science Fair Judge Waterloo-Wellington Science and Engineering Fair	2018, 2019, 2020
Event Volunteer Soapbox Science – Promoting Women in STEM Research	Jun 2019
Volunteer Ontario Blind Sports Association	2017, 2018
Science Fair Judge Centennial Public School	Mar 2018
Engineering Design Project Judge UWaterloo Software Engineering Capstone Design Symposium	Mar 2017
Computer Vision Elementary School Outreach Coordinator KW Bilingual School	Dec 2015
Engineering Design Project Judge UWaterloo Engineering Design Project Symposium	Nov 2014
Sectional Lead Engineering Jazz Band	Jan–Apr 2010

Professional Development

Innovators of Tomorrow Certificate AGE-WELL Network of Centres of Excellence	Nov 2016
Teaching and Learning Conference University of Waterloo	May 2014
Mitacs Team Building Excellence Workshop Mitacs	Aug 2013

Employment History

Medical Device Research Intern
Jan–Apr 2014

CHRISTIE MEDICAL HOLDINGS Kitchener, ON

Developed novel biophotonic models for a real-time multispectral biophotonic tissue assessment for use in a commercial medical device. Patent published.

Software Engineer Intern
May–Aug 2011

GOOGLE INC Kitchener, ON

Developed massively distributed ads software server serving millions of hits per hour globally. Improved load efficiency by over 10%.

NSERC Undergraduate Research Assistant–Symbolic Computation
Sep–Dec, Jan–Apr 2010

SCHOOL OF COMPUTER SCIENCE, UNIVERSITY OF WATERLOO Waterloo, ON

Developed computational method for interpreting and parsing hand-written mathematics for engineering applications.

Quantitative Finance Developer
May–Aug 2009

TD ASSET MANAGEMENT Toronto, ON

Developed data mining techniques to deliver rich financial model analysis for fund managers.

Medical Imaging Software Developer
Sep–Dec 2008

AGFA HEALTHCARE Waterloo, ON

Developed software framework for handling mammography medical images in radiology hospital imaging systems (PACS).

R&D Software Developer   Jan–Apr 2008, May–Aug 2007
UNCHARTERED SOFTWARE Toronto, ON
Integrated real-time online geographical map retrieval and rendering from open-source map servers.

REFEREE ACTIVITIES

JOURNAL REFEREEING

IEEE Transactions on Biomedical Engineering
IEEE Transactions on Medical Imaging
IEEE Transactions on Emerging Topics in Computational Intelligence
IEEE Journal of Biomedical and Health Informatics
IEEE Transactions on Systems, Man and Cybernetics
IEEE Access
Journal of Biomedical Optics
OSA Biomedical Optics Express
OSA Optics Express
OSA Continuum
OSA Applied Optics
OSA Photonics Research
Artificial Intelligence in Medicine
npj Digital Medicine
Computer Methods and Programs in Biomedicine
Medical & Biological Engineering & Computing
Biomedical Signal Processing and Control
Current Medical Imaging Reviews
The Open Biotechnology Journal
Applied Sciences
Sensors
Electronics
Journal of Ambient Intelligence and Smart Environments
International Journal of Environmental Research and Public Health
Biosystems Engineering
Symmetry
American Journal of Physiology – Heart and Circulatory Physiology
Journal of the American College of Cardiology: Asia
Journal of Sports Engineering and Technology
Scientific Reports (Nature Publishing Group)

CONFERENCE REFEREEING

IEEE International Conference on BioInformatics And BioEngineering (BIBE)
IEEE International Symposium on Biomedical Engineering (ISBI)
Conference on Computer Vision and Pattern Recognition (CVPR)
International Conference on Computer Vision
International Conference on Artificial Intelligence, Information Processing and Cloud Computing

GRANT REVIEW

Centre for Bioengineering and Biotechnology Seed Funding   2018
Ontario Research Fund, Ministry of Research Innovation and Science   2017

Additional Interests

Hockey goalie
Road cycling [Strava profile]
Reading (professional growth, hard sci-fi)
Alto saxophone