

Curriculum Vitae

Alexander Wong, P.Eng.

Canada Research Chair in Medical Imaging Systems
Associate Professor, Department of Systems Design Engineering
Cross Appointment, Department of Mechanical and Mechatronics Engineering
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1 PERSONAL DATA

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EDUCATION AND RESEARCH POSITIONS

University of Waterloo, Waterloo, ON <i>Canada Research Chair in Medical Imaging Systems (Tier II)</i>	2013-Present
Schlegel Research Institute for Aging, Waterloo, ON <i>Research Scientist</i>	2015-Present
Nvidia Deep Learning Institute, Waterloo, ON <i>University Ambassador and Certified Instructor</i>	2017-Present
University of Waterloo, Waterloo, ON <i>Associate Professor, Dept. of Systems Design Engineering (July 2016-Present)</i> <i>Assistant Professor, Dept. of Systems Design Engineering (May 2011-June 2016)</i> <i>Cross Appointment, David R. Cheriton School of Computer Science (Dec 2016-)</i> <i>Cross Appointment, Department of Mechanical and Mechatronics Engineering (June 2015-)</i>	2011-Now
Sunnybrook Health Sciences Centre, Toronto, ON <i>NSERC Postdoctoral Fellow, Dept. of Medical Biophysics</i> Focus: Computerized cancer analysis of multivariate prostate magnetic resonance imagery	2010-2011

1.1 RESEARCH INTERESTS

- Deep-structured, random graph models for real-time, operational artificial intelligence
 - Evolutionary deep intelligence for cross-generational deep architecture synthesis
 - Random deep intelligence for embedded deep learning
 - Deep-structured, randomly-connected conditional random fields for highly-efficient structured inference
- Design and development of integrative medical imaging hardware technologies such as:
 - Correlated diffusion imaging (CDI) and compensated diffusion weighted imaging (CDWI) for prostate cancer imaging
 - Coded hemodynamic imaging (CHI) for cardiorespiratory assessment and monitoring
 - Spectral light-field fusion microscopy (SLFM) for four-dimensional, ultra-wide field-of-view, label-free biological specimen tomographic imaging
 - High-resolution ocular polarimetric imaging (HOPI) for glucose monitoring
 - Parallel spectropolarimetric imaging (PSPI), cross-spectral fusion imaging (CFI), and multiplexed optical high-coherence interferometry (MOHI) for skin imaging
- Development and application of quantitative deep-structured stochastic tissue physiology modeling strategies for disease characterization and analysis using multi-parametric imaging. The main area of application is the development of intelligent radiomics-driven clinical decision support platforms for tackling challenges such as:
 - Prostate cancer analysis using ultrasound, multi-parametric magnetic resonance imaging (MP-MRI), and computed tomography (CT)
 - Dermatological cancer analysis using epi-luminescence microscopy (ELM), parallel spectropolarimetric imaging (PSPI), cross-spectral fusion imaging (CFI), multiplexed optical high-coherence interferometry (MOHI), and clinical data (e.g., family history, past medical history, blood test results, etc.)
 - Pathogen analysis using spectral light-field fusion microscopy (SFLM)
 - Hemodynamics and respiratory analysis using coded hemodynamic imaging (CHI)
- Development and application of quantitative deep-structured stochastic modeling for remote sensing data processing and analysis with applications to:
 - Sea ice and oil spill analysis using synthetic aperture radar (SAR) data
 - Underwater object analysis using synthetic aperture SONAR (SAS) data
 - Hyperspectral change analysis using LIDAR, passive optical, and LANDSAT data

2 HONORS AND AWARDS

Best Paper Award <i>NIPS Workshop on Transparent and Interpretable Machine Learning, USA</i>	Dec 2017
Millennium Technology Prize (currently nominated) <i>Technology Academy Finland, Finland</i>	2018
E.W.R Steacie Memorial Fellowship (currently nominated) <i>Natural Sciences and Engineering Research Council of Canada, Canada</i>	2017
Best Vision Paper Award <i>Conference on Vision and Imaging Systems (CVIS), Canada</i>	Oct 2017
Best Vision Paper Award (2nd place) <i>Conference on Vision and Imaging Systems (CVIS), Canada</i>	Oct 2017
Best Imaging Paper Award (2nd place) <i>Conference on Vision and Imaging Systems (CVIS), Canada</i>	Oct 2017
AquaHacking 2017 Challenge First Place Award (Cash prize) <i>de Gasp Beaubien Foundation, Canada</i>	Sept 2017
CIX Top 20 Award <i>Canadian Innovation Exchange, Canada</i> <i>Awarded as Co-founder of Elucid Labs</i>	Sept 2017
Best Student Paper Award <i>Ottawa Hockey Analytics Conference, Ottawa</i>	May 2017
Newport Research Excellence Award <i>SPIE Photonics West, San Francisco</i>	Jan 2017
Best Paper Award <i>NIPS Workshop on Efficient Methods for Deep Neural Networks, Spain</i>	Dec 2016
Synaptive Best Medical Imaging Paper Award <i>Conference on Vision and Imaging Systems (CVIS), Canada</i>	Oct 2016
Distinguished Performance Award <i>University of Waterloo, Canada</i>	2016
Magna Cum Laude Paper Awards (2) <i>Annual Meeting of the Imaging Network of Ontario, Canada</i> <i>Awarded two Magna Cum Laude Paper Awards for papers on radiomics-driven clinical decision support</i>	March 2016
Cum Laude Paper Award <i>Annual Meeting of the Imaging Network of Ontario, Canada</i> <i>Awarded a Cum Laude Paper Award for paper on lung cancer analysis</i>	March 2016
Sandford Fleming Teaching Excellence Award <i>Sandford Fleming Foundation, Canada</i>	2015

Outstanding Performance Award <i>University of Waterloo, Canada</i>	2015
Best Paper Award <i>Conference on Vision and Imaging Systems (CVIS), Canada</i>	Oct 2015
Distinguished Paper Award <i>Conference of Society of Information Display</i>	June 2015
Norman Edmund Inspiration Award <i>Edmund Optics, USA</i> with Shahid Haider <i>Awarded for research that inspires others on a daily basis, especially children, to pursue careers in science and technology by developing new devices to advance medical sciences and cure any illnesses that they may face in their lifetimes</i>	Nov 2014
Canada Research Chair Tier II <i>Natural Sciences and Engineering Research Council of Canada, Canada</i> <i>Awarded for demonstrated excellence and academic contributions to medical imaging systems</i>	2013-2018
Early Researcher Award <i>Ministry of Research and Innovation, Canada</i> <i>Awarded for demonstrated excellence and academic contributions in computer-aided prostate diagnosis using multi-parametric MRI imaging</i>	2012-2017
CIPPRS Best Paper Award <i>Conference on Computer and Robot Vision (CRV), Canada</i>	May 2014
Engineering Faculty Research Award <i>University of Waterloo, Canada</i> <i>Awarded for outstanding achievement, commitment to research excellence, and the advancement of innovation in the field of biomedical image processing and analysis</i>	2012
Outstanding Performance Award <i>University of Waterloo, Canada</i>	2012
NSERC Postdoctoral Fellowship <i>Natural Sciences and Engineering Research Council of Canada, Canada</i>	2010-2012
Alumni Gold Medal (Top Ranking Doctoral Graduate) <i>University of Waterloo, Canada</i>	Oct 2010
Best Oral Presentation Award <i>University of Waterloo Graduate Research Conference, Canada</i>	Apr 2010
Carl A. Pollock Postgraduate Fellowship <i>University of Waterloo, Canada</i>	2009-2010
CIPPRS Best Paper Award <i>Conference on Computer and Robot Vision (CRV), Canada</i>	May 2009

Annual Conference Travel Grant <i>GEOIDE (GEOmatics for Informed DEcisions) Network, Canada</i>	May 2009
NSERC Doctoral Postgraduate Scholarship <i>Natural Sciences and Engineering Research Council of Canada, Canada</i>	2007-2009
President's Graduate Scholarship <i>University of Waterloo, Canada</i>	2007-2009
NSERC Industrial Postgraduate Scholarship <i>Natural Sciences and Engineering Research Council of Canada, Canada</i>	2005-2007
Faculty of Engineering Graduate Scholarship <i>University of Waterloo, Canada</i>	Jan-Apr 2007
University of Waterloo Graduate Scholarship <i>University of Waterloo, Canada</i>	May-Aug/Sept-Dec 2006, Jan-Apr 2010
Governor General's Bronze Medal (Top Rank in Graduating Class) <i>Mary Ward C.S.S., Canada</i>	May 2000

3 RESEARCH AND SCHOLARSHIP

Publication Summary

(h-index: 30, i10-index: 97)

	Publications	IEEE	Citations
Patents	6	-	-
Patent Applications	19	-	-
Book Chapters	2	-	-
Journal papers	180	53	-
Conference papers	217	91	-
Non-refereed contributions	24	-	-
Total	448	144	4004

3.1 REFEREED JOURNAL CONTRIBUTIONS

- J1 F. Li*, L. Xu**, A. Wong, and D. Clausi, "ST-IRGS: A Region-Based Self-Training Algorithm applied to Hyperspectral Image Classification and Segmentation", IEEE Transactions on Geoscience and Remote Sensing, 2018.
- J2 F. Khalvati**, J. Zhang, A. Chung, M. Shafiee**, A. Wong, and M. Haider, "MPCaD: A Multi-Scale Radiomics-Driven Framework for Automated Prostate Cancer Localization and Detection", BMC Medical Imaging, 2018.
- J3 R. Medeiros, A. Wong, and J. Scharcanski, "Scalable Image Segmentation via Decoupled Sub-graph Compression Pattern Recognition", Pattern Recognition, 2018.
- J4 M. Shafiee**, A. Mishra, and A. Wong, "Deep Learning with Darwin: Evolutionary Synthesis of Deep Neural Networks", Neural Processing Letters, 2018.
- J5 K. Pfisterer, R. Amelard, A. Chung, and A. Wong, "A new take on measuring relative nutritional density: The feasibility of using a deep neural network to assess commercially-prepared pureed food concentrations", Journal of Food Engineering, 2018.
- J6 M. Fani*, M. Yazdi, D. Clausi, and A. Wong, "Soccer Video Structure Analysis by Parallel Feature Fusion Network and Hidden-to-Observable Transferring Markov Model", IEEE Access Journal, 2017.
- J7 M. Shafiee**, A. Chung*, F. Khalvati**, M. Haider, and A. Wong, "Discovery Radiomics via Evolutionary Deep Radiomic Sequencer Discovery for Pathologically-Proven Lung Cancer Detection", Journal of Medical Imaging, 2017.
- J8 T. Clark, J. Zhang, S. Baig, A. Wong, M. Haider, and F. Khalvati**, "Fully Automated Segmentation of Prostate Whole Gland and Transition Zone in Diffusion-weighted MRI using Convolutional Networks", Journal of Medical Imaging, 2017.
- J9 J. Arlette, A. Wong, I. Khodadad, and F. Kazemzadeh, "Deep tissue sequencing using augmented intelligence to probe melanocytic lesions", Journal of Cutaneous Medicine and Surgery, 2017.
- J10 I. Ben Daya*, A. Chen, J. Yeow, and A. Wong, "Compensated Row-Column Ultrasound Imaging System Using Multilayered Edge Guided Stochastically Fully Connected Random Fields", Nature Scientific Reports, 2017.
- J11 M. Shafiee*, P. Siva, P. Fieguth, and A. Wong, "Real-Time Embedded Motion Detection via Neural Response Mixture Modeling", Journal of Signal Processing Systems, 2017.
- J12 L. Xu**, A. Wong, and D. Clausi, "A Novel Bayesian Spatial-Temporal Random Field Model Applied

- to Cloud Detection from Remotely Sensed Imagery”, IEEE Transactions on Geoscience and Remote Sensing, 2017.
- J13 T. Beltrame, R. Amelard*, A. Wong, and R. Hughson, “Extracting aerobic system dynamics during unsupervised activities of daily living using wearable sensor machine learning models”, Journal of Applied Physiology, 2017.
- J14 Y. Zhang, A. Oikonomou, M. Haider, A. Wong, and F. Khalvati**, “Radiomics-based Prognosis Analysis for Non-Small Cell Lung Cancer”, Nature Scientific Reports, 2017.
- J15 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”, Nature Scientific Reports, 2017.
- J16 F. Li*, H. Sekkati**, J. Deglint*, C. Scharfenberger**, M. Lamm, D. Clausi, J. Zelek, and A. Wong, “Simultaneous Projector-Camera Self-Calibration for 3D Reconstruction and Projection Mapping”, IEEE Transactions on Computational Imaging, 2017.
- J17 A. Chung*, P. Fieguth, and A. Wong, “Polyploidism in Deep Neural Networks: m-Parent Evolutionary Synthesis of Deep Neural Networks in Varying Population Sizes”, Journal of Computational Vision and Imaging Systems, 2017.
- J18 A. Karimi*, M. Javad Shafiee**, A. Ghodsi, and A. Wong, “Ensembles of Random Projections for Nonlinear Dimensionality Reduction”, Journal of Computational Vision and Imaging Systems, 2017.
- J19 K. Kasiri**, M. Javad Shafiee**, F. Li, A. Wong, and J. Eichel, “Efficient Deep Network Architecture for Vision-Based Vehicle Detection”, Journal of Computational Vision and Imaging Systems, 2017.
- J20 M. Tran*, R. Amelard**, and A. Wong, “Integrating Multispectral Hemodynamic Imaging for Bulk Tissue Oxygenation Analysis”, Journal of Computational Vision and Imaging Systems, 2017.
- J21 I. Ben Daya*, A. Chen*, M. Javad Shafiee**, J. Yeow, and A. Wong, “Compensated Row-Column Ultrasound Imaging System Using Edge-Guided Three Dimensional Random Fields”, Journal of Computational Vision and Imaging Systems, 2017.
- J22 S. Gurm*, O. Badawy, and A. Wong, “A Multi-layer Perceptron Approach to Automatically Detect Tissue via NIR Multispectral Imaging”, Journal of Computational Vision and Imaging Systems, 2017.
- J23 M. Javad Shafiee** and A. Wong, “Discovery Radiomics via Deep Multi-Column Radiomic Sequencers for Skin Cancer Detection”, Journal of Computational Vision and Imaging Systems, 2017.
- J24 D. Kumar*, G. Taylor, and A. Wong, “Opening the Black Box of Financial AI with CLEAR-Trade: A Class-Enhanced Attentive Response Approach for Explaining and Visualizing Deep Learning-Driven Stock Market Prediction”, Journal of Computational Vision and Imaging Systems, 2017.
- J25 A. Ma*, A. Wong, and D. Clausi, “Depth from Defocus via Active Multispectral Quasi-random Point Projections using Deep Learning”, Journal of Computational Vision and Imaging Systems, 2017.
- J26 M. Javad Shafiee**, B. Chwyl*, F. Li*, and A. Wong, “Fast YOLO: A Fast You Only Look Once System for Real-time Embedded Object Detection in Video”, Journal of Computational Vision and Imaging Systems, 2017.
- J27 A. MacLean*, K. Pfisterer*, D. Kumar*, R. Amelard*, and A. Wong, “Goldilocks and the Three Parameters: Empirically Finding the Just Right for Segmenting Food Images”, Journal of Computational Vision and Imaging Systems, 2017.
- J28 J. Deglint*, C. Jin*, and A. Wong, “Automatic Identification of Cyanobacteria Genera Using Multi-band Epifluorescence Microscopy and Machine Learning”, Journal of Computational Vision and Imaging Systems, 2017.
- J29 R. Amelard*, R. Hughson, D. Greaves, K. Pfisterer, J. Leung, D. Clausi, and A. Wong, “Non-contact hemodynamic imaging reveals the jugular venous pulse waveform”, Nature Scientific Reports, 2016.
- J30 L. Xu**, A. Wong, and D. Clausi, “An Enhanced Probabilistic Posterior Sampling Approach for

- Synthesizing SAR Imagery with Sea Ice and Oil Spills”, IEEE Geoscience and Remote Sensing Letters, 2016.
- J31 F. Kazemzadeh* and A. Wong, “Laser Light-field Fusion for Wide-field Lensfree On-chip Phase Contrast Microscopy of Nanoparticles”, Nature Scientific Reports, 2016.
- J32 R. Amelard*, D. Clausi, and A. Wong, “Spatial probabilistic pulsatility model for enhancing photoplethysmographic imaging systems”, Journal of Biomedical Optics, 2016.
- J33 T. Beltrame, R. Amelard*, R. Villar, M. Shafiee*, A. Wong, and R. Hughson, “Estimating oxygen uptake and energy expenditure during treadmill walking by neural network analysis of easy-to-obtain inputs”, Journal of Applied Physiology, 2016.
- J34 R. Amelard*, D. Clausi, and A. Wong, “A spectral-spatial fusion model for robust blood pulse waveform extraction in photoplethysmographic imaging”, Biomedical Optics Express, 2016.
- J35 F. Kazemzadeh* and A. Wong, “Resolution- and throughput-enhanced spectroscopy using high-throughput computational slit”, Optics Letters, 2016.
- J36 M. Shafiee*, P. Fieguth, and A. Wong, “Deep Randomly-connected Conditional Random Fields For Image Segmentation”, IEEE Access Journal, 2016.
- J37 M. Shafiee*, P. Siva**, C. Scharfenberger, P. Fieguth, and A. Wong, “NeRD: a Neural Response Divergence Approach to Visual saliency detection”, IEEE Signal Processing Letters, 2016.
- J38 E. Li*, F. Khalvati**, M. Shafiee*, M. Haider, and A. Wong, “Sparse Reconstruction of Compressive Sensing MRI using Cross-Domain Stochastically Fully Connected Conditional Random Fields”, BMC Medical Imaging, 2016.
- J39 A. Boroomand*, M. Shafiee*, F. Khalvati**, M. Haider, and A. Wong, “Noise-Compensated, Bias-Corrected Diffusion Weighted Endorectal Magnetic Resonance Imaging via a Stochastically Fully-Connected Joint Conditional Random Field Model”, IEEE Transactions on Medical Imaging, 2016.
- J40 E. Li*, M. Shafiee*, F. Kazemzadeh*, and A. Wong, “Sparse Reconstruction of Compressive Sensing Multi-spectral Data using an Inter-Spectral Multi-layered Conditional Random Field Model”, IEEE Access Journal, 2016.
- J41 J. Deglint*, F. Kazemzadeh*, D. Cho*, D. Clausi, and A. Wong, “Numerical Demultiplexing of Color Image Sensor Measurements via Non-linear Random Forest Modeling”, Nature Scientific Reports, 2016.
- J42 M. Shafiee*, P. Siva**, and A. Wong, “StochasticNet: Forming Deep Neural Networks via Stochastic Connectivity”, IEEE Access Journal, 2016.
- J43 L. Xu**, M. Shafiee*, A. Wong, and D. Clausi, “Fully-Connected Continuous Conditional Random Field With Stochastic Cliques for Dark Spot Detection In SAR Imagery”, IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, 2016.
- J44 S. Haider*, A. Cameron*, P. Siva**, N. Haider, A. Boroomand*, D. Lui*, M. Shafiee*, and A. Wong, “Noise-compensated fluoroscopy imaging using a stochastically-connected random field model”, Nature Scientific Reports, 2016.
- J45 M. Shafiee*, P. Fieguth, and A. Wong, “StochasticNet in StochasticNet”, Journal of Computational Vision and Imaging Systems, 2016.
- J46 C. Jin**, M. Mesqutia, M. Emelko, and A. Wong, “Automated enumeration and size distribution analysis of *Microcystis aeruginosa* via fluorescence imaging”, Journal of Computational Vision and Imaging Systems, 2016.
- J47 J. Zhang, S. Baig, A. Wong M. Haider, and F. Khalvati**, “A Local ROI-specific Atlas-based Segmentation of Prostate Gland and Transitional Zone in Diffusion MRI”, Journal of Computational Vision and Imaging Systems, 2016.
- J48 C. Jin**, M. Mesqutia, M. Emelko, A. Wong, “Computerized Enumeration and Bio-volume Estimation

- of the Cyanobacteria *Anabaena flos-aquae*", *Journal of Computational Vision and Imaging Systems*, 2016.
- J49 J. Deglint*, K. Schoneveld*, F. Kazemzadeh*, and A. Wong, "A Compact Field-portable Computational Multispectral Microscope using Integrated Raspberry Pi", *Journal of Computational Vision and Imaging Systems*, 2016.
- J50 A. Ma*, F. Li*, and A. Wong, "Depth from Defocus via Active Quasi-random Point Projections", *Journal of Computational Vision and Imaging Systems*, 2016.
- J51 E. Kuang*, F. Kazemzadeh*, and A. Wong, "Enhanced Smartphone Spectroscopy via High-throughput Computational Slit", *Journal of Computational Vision and Imaging Systems*, 2016.
- J52 A. Boroomand*, J. Deglint*, and A. Wong, "Bayesian Compensated Microscopy", *Journal of Computational Vision and Imaging Systems*, 2016.
- J53 S. Haider*, F. Kazemzadeh*, and A. Wong, "Compact, Field-Portable Smartphone Chiral Molecule Concentration Estimation System via Multi-sensor Computational Polarimetry", *Journal of Computational Vision and Imaging Systems*, 2016.
- J54 S. Greenberg* and A. Wong, "Art from Algorithms: Saliency-Guided Digital Projections", *Journal of Computational Vision and Imaging Systems*, 2016.
- J55 P. Dash, A. Mishra, and A. Wong, "Deep Quality: A Deep No-reference Quality Assessment System", *Journal of Computational Vision and Imaging Systems*, 2016.
- J56 I. Ben Daya*, M. Noguchi, J. Callaghan, and A. Wong, "Automated Histological Analysis System for Quantifying Microstructural Damage Accumulation to the Annulus Fibrosus", *Journal of Computational Vision and Imaging Systems*, 2016.
- J57 A. Chung* and A. Wong, "Noise Suppression and Contrast Enhancement via Bayesian Residual Transform (BRT) in Low-Light Conditions", *Journal of Computational Vision and Imaging Systems*, 2016.
- J58 S. Greenberg*, A. Wong, and J. McPhee, "Quasi-Monte and Data-Driven Monte Carlo Methods for Efficient Human Joint Model Fitting", *Journal of Computational Vision and Imaging Systems*, 2016.
- J59 A. Gawish, L. Haines, S. Marschall, A. Wong, L. Sorbara, K. Bizheva, P. Fieguth, "Improved OCT Human Corneal segmentation Using Bayesian Residual Transform", *Journal of Computational Vision and Imaging Systems*, 2016.
- J60 B. Chwyl*, R. Amelard*, D. Clausi, and A. Wong, "A Bayesian Multi-Scale Framework for Photoplethysmogram Imaging Waveform Processing", *Journal of Computational Vision and Imaging Systems*, 2016.
- J61 M. Wilson*, R. Amelard*, D. Clausi, A. Wong, "Co-integrating thermal and hemodynamic imaging for physiological monitoring", *Journal of Computational Vision and Imaging Systems*, 2016.
- J62 F. Khalvati**, J. Zhang, S. Baig, M. Haider, and A. Wong, "Sparse Correlated Diffusion Imaging: A New Computational Diffusion MRI Modality for Prostate Cancer Detection", *Journal of Computational Vision and Imaging Systems*, 2016.
- J63 F. Kazemzadeh*, E. Kuang*, and A. Wong, "Compact, Field-Portable Lens-free Microscope using Superresolution Spatio-Spectral Light-field Fusion", *Journal of Computational Vision and Imaging Systems*, 2016.
- J64 A. Chung*, F. Khalvati**, M. Shafiee*, M. Haider, and A. Wong, "Prostate Cancer Detection via a Quantitative Radiomics-Driven Conditional Random Field Framework", *IEEE Access Journal*, 2015.
- J65 I. Ben Daya*, A. Chen, J. Yeow, and A. Wong, "Compensated Row-Column Ultrasound Imaging System Using Fisher Tippett Multilayered Conditional Random Field Model", *PLoS ONE*, 2015.
- J66 A. Cameron*, F. Khalvati**, A. Wong, and M. Haider, "MAPS: A Quantitative Radiomics Approach for Prostate Cancer Detection", *IEEE Transactions on Biomedical Engineering*, 2015.

- J67 D. Lui*, A. Modhafar*, A. Wong, and M.A. Haider, "Monte Carlo-based Noise Compensation in Coil Intensity Corrected Endorectal MRI", BMC Medical Imaging, 2015.
- J68 R. Amelard*, C. Scharfenberger**, F. Kazemzadeh*, K.J. Pfisterer, B. Lin*, D. Clausi, and A. Wong, "Feasibility of long-distance heart rate monitoring using transmittance photoplethysmographic imaging (PPGI)", Nature Scientific Reports, 2015. **[In the top 5% of all research outputs scored by Altmetric with a score of 160]**
- J69 F. Kazemzadeh*, C. Jin, S. Molladavoodi, M. Emelko, M. Gorbet, and A. Wong, "Lensfree Spectral Light-field Fusion Microscopy for Contrast- and Resolution-enhanced Imaging of Biological Specimens", Optics Letters, 2015.
- J70 M. Shafiee*, Z. Azimifar, and A. Wong, "A Deep-structured Conditional Random Field Model for Object Silhouette Tracking", PLoS ONE, 2015.
- J71 F. Li*, L. Xu**, A. Wong, and D. Clausi, "Feature Extraction for Hyperspectral Imagery via Ensemble Localized Manifold Learning", IEEE Geosciences and Remote Sensing Letters, 2015.
- J72 L. Xu**, F. Li*, A. Wong, and D. Clausi, "Intrinsic Representation of Hyperspectral Imagery For Unsupervised Feature Extraction", IEEE Transactions on Geoscience and Remote Sensing, 2015.
- J73 L. Xu**, F. Li*, A. Wong, and D. Clausi, "Extraction of Endmembers From Hyperspectral Images Using A Weighted Fuzzy Purified-Means Clustering Model", IEEE Journal on Special Topics in Remote Sensing, 2015.
- J74 R. Sachett Medeiros, J. Scharcanski, and A. Wong, "Image Segmentation via Stochastic Regional Texture Appearance Models", Computer Vision and Image Understanding, 2015.
- J75 F. Khalvati**, A. Wong, and M. Haider, "Automated Prostate Cancer Detection via Comprehensive Multi-Parametric Magnetic Resonance Imaging Texture Feature Models", BMC Medical Imaging, 2015.
- J76 S. Schwartz*, A. Wong, and D.A. Clausi, "Optimized sampling distribution based on learning for improved compressive sensing performance", Visual Communication and Image Representation, 2015.
- J77 A. Wong and X. Wang, "Bayesian Residual Transform for Signal Processing", IEEE Access Journal, 2015.
- J78 A. Wong, X. Wang, and M. Gorbet, "Bayesian-based deconvolution fluorescence microscopy using dynamically updated nonparametric nonstationary expectation estimates", Nature Scientific Reports, 2015.
- J79 A. Wong, F. Kazemzadeh*, C. Jin, and X. Wang, "Bayesian-based aberration correction and numerical diffraction for improved lensfree on-chip microscopy of biological specimens", Optics Letters, 2015.
- J80 A. Wong, M. Shafiee*, P. Siva, and X. Wang, "A deep-structured fully-connected random field model for structured inference", IEEE Access Journal, 2015.
- J81 F. Li*, L. Xu**, P. Siva, A. Wong, and D. Clausi, "Hyperspectral Image Classification with Limited Labeled Training Samples using Enhanced Ensemble Learning and Conditional Random Fields", IEEE Journal on Special Topics in Remote Sensing, 2015.
- J82 F. Li*, L. Xu**, A. Wong, and D.A. Clausi, "QMCTLS: Quasi Monte Carlo Texture Likelihood Sampling for Despeckling of Polarimetric SAR Images", IEEE Geosciences and Remote Sensing Letters, 2015.
- J83 A. Wong, C. Liu*, X. Wang, P. Fieguth, and H. Bie, "Homotopic Non-local Regularized Reconstruction from Sparse Positron Emission Tomography Measurements", BMC Medical Imaging, 2015.
- J84 F. Li*, A. Wong, and D.A. Clausi, "Classification of surficial material in the Umiujalik Lake region using RADARSAT-2 polarimetric and LANDSAT-7 images, and DEM data", Canadian Journal of Remote Sensing, 2015.
- J85 L. Xu**, F. Li, A. Wong, and D.A. Clausi, "Hyperspectral Image Denoising Using a Spatial-Spectral Monte Carlo Sampling Approach", IEEE Journal on Special Topics in Remote Sensing, 2015.
- J86 F. Kazemzadeh*, A. Wong, B. Behr, and A. Hajian, "Depth Profilometry via Multiplexed Optical

- High-coherence Interferometry”, PLoS ONE, 2015.
- J87 C. Scharfenberger**, A. Wong, and D.A. Clausi, “Structure-Guided Statistical Textural Distinctiveness for Salient Region Detection in Natural Images”, IEEE Transactions on Image Processing, 2015.
- J88 M. Shafiee*, D. Lui*, S. Haider*, A. Cameron*, A. Wong, A. Modhafar*, P. Fieguth, and M.A. Haider, “Apparent Ultra-High b-value Diffusion-Weighted Image Reconstruction via Hidden Conditional Random Fields”, IEEE Transactions on Medical Imaging, 2015.
- J89 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, 2015. .
- J90 A. Wong, A. Chung*, D. Kumar*, M. Shafiee*, F. Khalvati**, and M. Haider, “Discovery Radiomics for Imaging-driven Quantitative Personalized Cancer Decision Support”, Journal of Computational Vision and Imaging Systems, 2015.
- J91 C. Wang, L. Xu, D. Clausi, and A. Wong, “A Bayesian Joint Decorrelation and Despeckling Approach for Speckle Reduction of SAR Images”, Journal of Computational Vision and Imaging Systems, 2015.
- J92 E. Barshan, P. Fieguth, and A. Wong, “Multi-neighborhood Convolutional Networks”, Journal of Computational Vision and Imaging Systems, 2015.
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- C13 M. Shafiee**, F. Li*, and A. Wong, "Exploring the Imposition of Synaptic Precision Restrictions for Evolutionary Synthesis of Deep Neural Networks", the proceedings of Conference on Cognitive Computational Neuroscience, 2017.
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- C15 S. Greenberg*, A. Chung*, and A. Wong, "Nebula: Live Dynamic Projection Mapping via Object Saliency", the proceedings of Bridges 2017 conference, 2017.
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- C31 A. Boroomand*, M. Shafiee*, L. Wang*, E. Kuang*, F. Kazemzadeh*, and A. Wong, "Compensated lens-free light field spectroscopy", Proc. International Conference on Inverse Problems in Engineering (ICIPE), 2017.

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- C38 T. Hesham, H. Zhao, and A. Wong, "Unsupervised Domain Adaptation with a Relaxed Covariate Shift Assumption", the proceedings of AAAI Conference on Artificial Intelligence, 2017.
- C39 M. Shafiee** and A. Wong, "Evolutionary Synthesis of Deep Neural Networks via Synaptic Clusterdriven Genetic Encoding", the proceedings of Annual Conference on Neural Information Processing Systems (NIPS) Workshop on Efficient Methods for Deep Neural Networks, 2016. **Won Best Paper Award.**
- C40 F. Khalvati**, J. Zhang, A. Wong, and M. Haider, "Bag of Bags: Nested Multi Instance Classification for Prostate Cancer Detection", the proceedings of the IEEE International Conference on Machine Learning and Applications, 2016.
- C41 K. Zuj, J. Deglint*, A. Gawish, A. Wong, D. Clausi, and R. Hughson, "A new software for determining changes in arterial diameter over time", the proceedings of the Annual Meeting of North American Artery, 2016.
- C42 M. Schulze, A. Wong, S. Haider*, E. Kingsley, Z. Fadli, C. Coles-Brennan, and L. Jones, "Blink rate in silicone hydrogel contact lens wearers during digital device use", the proceedings of Annual Meeting of the American Academy of Optometry (Academy 2016), 2016.
- C43 A. Boroomand*, E. Li*, M. Shafiee*, F. Khalvati**, M. Haider, and A. Wong, "A Unified Bayesian-based Compensated Magnetic Resonance Imaging", the proceedings of Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC), 2016.
- C44 F. Khalvati**, J. Zhang, M. Haider, and A. Wong, "Enhanced Dual-Stage Correlated Diffusion Imaging", the proceedings of Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC), 2016.
- C45 A. Karimi*, M. Shafiee*, C. Scharfenberger**, I. Ben Daya*, S. Haider*, N. Talkudar*, D. Clausi, and A. Wong, "Spatio-temporal saliency detection using abstracted fully-connected graphical models", the proceedings of IEEE Conference on Image Processing (IEEE ICIP), 2016.
- C46 A. Chung*, M. Shafiee*, and A. Wong, "Random feature maps via a layered random projection (LaRP) framework for object classification", the proceedings of IEEE Conference on Image Processing (IEEE ICIP), 2016.
- C47 B. Chwyl*, A. Chung*, R. Amelard*, J. Deglint*, D. Clausi, and A. Wong, "SAPPHIRE: Stochastically Acquired Photoplethysogram for Heart Rate Inference in Realistic Environments", the proceedings of IEEE Conference on Image Processing (IEEE ICIP), 2016.
- C48 A. Boroomand*, H. Sekkati**, M. Lamm, D. Clausi, and A. Wong, "Saliency-guided projection geometric correction using a projector-camera system", the proceedings of IEEE Conference on Image Processing (IEEE ICIP), 2016.
- C49 M. Shafiee*, P. Siva**, P. Fieguth, and A. Wong, "Embedded Motion Detection via Neural Response Mixture

- Background Modeling”, the proceedings of IEEE Computer Vision and Pattern Recognition Workshops (IEEE CVPR), 2016.
- C50 P. Siva**, M. Shafiee*, M. Jamieson, and A. Wong, “Scene Invariant Crowd Segmentation and Counting Using Scale-Normalized Histogram of Moving Gradients (HoMG)”, the proceedings of IEEE Computer Vision and Pattern Recognition Workshops (IEEE CVPR), 2016. (Participated in the design for algorithm).
- C51 M. Shafiee*, P. Siva**, P. Fieguth, and A. Wong, “Efficient Feature Learning and Extraction via StochasticNets”, the proceedings of IEEE Computer Vision and Pattern Recognition Workshops (IEEE CVPR), 2016.
- C52 A. Chung*, M. Shafiee*, and A. Wong, “Image Restoration via Deep-Structured Stochastically Fully-Connected Conditional Random Fields (DSFCRFs) for Very Low-Light Conditions”, in the proceedings of the Conference on Computer and Robot Vision (CRV), 2016.
- C53 B. Chywł*, A. Chung*, R. Amelard*, J. Deglint*, D. Clausi, and A. Wong, “Time-Frequency Domain Analysis via Pulselets for Non-Contact Heart Rate Estimation from Remotely Acquired Photoplethysmograms”, in the proceedings of the Conference on Computer and Robot Vision (CRV), 2016.
- C54 S. Greenberg*, A. Chung*, B. Chywł*, and A. Wong, “TIGGER: A Texture-Illumination Guided Global Energy Response Model for Illumination Robust Object Saliency”, in the proceedings of the Conference on Computer and Robot Vision (CRV), 2016.
- C55 F. Li*, J. Zelek, and A. Wong, “Hierarchical Grouping Approach for Fast Approximate RGB-D Scene Flow”, in the proceedings of the Conference on Computer and Robot Vision (CRV), 2016.
- C56 A. Gawish, C. Scharfenberger, H. Bi, A. Wong, P. Fieguth, and D. Clausi, “Robust non-saliency guided watermarking”, in the proceedings of the Conference on Computer and Robot Vision (CRV), 2016.
- C57 A. Chung*, M. Shafiee*, D. Kumar*, F. Khalvati**, M.A. Haider, and A. Wong “Discovery Radiomics via Layered Random Projection (LaRP) Sequencers for Prostate Cancer Classification”, Proc. Annual Meeting of the Imaging Network of Ontario, 2016. **Won Magna Cum Laude Paper Award.**
- C58 D. Kumar*, M. Shafiee*, A. Chung*, F. Khalvati**, M.A. Haider, and A. Wong “Discovery Radiomics for Lung Cancer Classification”, Proc. Annual Meeting of the Imaging Network of Ontario, 2016.
- C59 A. Eilaghi, S. Baig, J. Zhang**, A. Wong, P. Karanicolas, S. Gallinger, F. Khalvati**, and M.A. Haider, “Radiomics Features Analysis for Tumor Characterization in Pancreatic Ductal Adenocarcinoma”, Proc. Annual Meeting of the Imaging Network of Ontario, 2016. **Won Magna Cum Laude Paper Award.**
- C60 J. Zhang**, A. Eilaghi, M.A. Haider, A. Wong, and F. Khalvati** “Optimized Correlated Diffusion Imaging for Prostate Cancer Detection”, Proc. Annual Meeting of the Imaging Network of Ontario, 2016.
- C61 J. Zhang**, A. Eilaghi, A. Wong, M.A. Haider, and F. Khalvati** “Radiomics Feature Clusters and Prognostic Signatures Specific for Lung Cancer”, Proc. Annual Meeting of the Imaging Network of Ontario, 2016.
- C62 F. Kazemzadeh* and A. Wong “Whole-Slide Digital Pathology via Lens-free Spectral Light-field Fusion Microscopy”, Proc. Annual Meeting of the Imaging Network of Ontario, 2016.
- C63 A. Boroomand*, E. Li*, M. Shafiee*, F. Khalvati**, M.A. Haider, and A. Wong “A Unified Reconstruction Framework for Compensated Magnetic Resonance Imaging”, Proc. Annual Meeting of the Imaging Network of Ontario, 2016. (Co-design of system)
- C64 D. Cho*, D. Clausi, and A. Wong “Accuracy of Melanoma Classification using Dermal Radiomic Sequences”, Proc. Annual Meeting of the Imaging Network of Ontario, 2016.
- C65 S. Haider*, A. Chung*, M. Shafiee*, H. Grewal*, F. Khalvati**, A. Oikonomou, M.A. Haider, and A. Wong “Single-Click Lung Nodule Contouring Method Using a Hierarchical Conditional Random Field (HCRF)”, Proc. Annual Meeting of the Imaging Network of Ontario, 2016. **Won Cum Laude Paper Award.**
- C66 K. Bizheva, B. Tan, E. Mason, B. MacLellan, L. Haines, A. Boroomand*, A. Wong, and L. Sorbara, “Structure and vasculature of the human corneo-scleral limbus as imaged in-vivo with sub-micrometer axial resolution OCT”, Proc. ARVO Imaging in the Eye Conference, 2016.
- C67 M. Shafiee*, A. Chung*, D. Kumar, F. Khalvati, M. Haider, and A. Wong, “Discovery Radiomics via StochasticNet Sequencers for Cancer Detection”, the proceedings of Annual Conference on Neural

Information Processing Systems (NIPS) Workshop on Machine Learning for Healthcare, 2015.

- C68 R. Amelard*, D.A. Clausi, and A. Wong, "Spectral photoplethysmographic imaging sensor fusion for enhanced heart rate detection", the proceedings of SPIE Photonics West, 2015.
- C69 J. Deglint*, A. Chung*, B. Chywł*, R. Amelard*, F. Kazemzadeh*, X. Wang, D.A. Clausi, and A. Wong, "Photoplethysmographic imaging via spectrally demultiplexed erythema fluctuation analysis for remote heart rate monitoring", the proceedings of SPIE Photonics West, 2015.
- C70 R. Amelard*, K. Pfisterer, D.A. Clausi, and A. Wong, "Non-contact hematoma damage and healing assessment using reflectance photoplethysmographic imaging", the proceedings of SPIE Photonics West, 2015.
- C71 F. Khalvati**, A. Wong, and M.A. Haider, "A Radiomics-based Approach for Prostate Cancer Detection via Incorporating Interpatient Variation in ADC Map", Proc. Canadian Cancer Research Conference, 2015.
- C72 E. Barshan, A. Wong, and P. Fieguth, "Scalable Multi-Neighborhood Learning for Convolutional Networks", the proceedings of IEEE International Workshop on Machine Learning for Signal Processing, 2015.
- C73 K. Fewster, M. Noguchi, C. Gooyers, A. Wong, and J. Callaghan, "Exploring the regional response of the intervertebral disc under postural varying loads", the proceedings of Annual Meeting of the American Society of Biomechanics, 2015.
- C74 M. Noguchi, A. Wong, I. Ben Daya*, T. Campbell, J. Quadrilatero, and J. Callaghan, "Quantifying microstructural damage accumulation in the annulus fibrosus during induced intervertebral disc herniation", the proceedings of Annual Meeting of the American Society of Biomechanics, 2015.
- C75 F. Li*, M. Shafiee*, A. Chung*, B. Chywł*, F. Kazemzedah*, A. Wong, and J. Zelek, "High dynamic range map estimation via fully connected random fields with stochastic cliques", the proceedings of IEEE Conference on Image Processing, 2015.
- C76 A. Mishra, C. Scharfenberger**, P. Siva, F. Li*, A. Wong, and D. Clausi, "DESIRe: discontinuous energy seam carving for image retargeting via structural and textural energy functionals", the proceedings of IEEE Conference on Image Processing, 2015.
- C77 M. Shafiee*, A. Chung*, A. Wong, and P. Fieguth, "Improved fine structure modeling via guided stochastic clique formation in fully connected conditional random fields", the proceedings of IEEE Conference on Image Processing, 2015.
- C78 P. Siva, C. Scharfenberger**, I. Ben Daya*, A. Mishra, and A. Wong, "Return of Grid Seams: A Superpixel Algorithm Using Discontinuous Multi-functional Energy Seam Carving", the proceedings of IEEE Conference on Image Processing, 2015.
- C79 P. Siva, M. Shafiee*, F. Li*, and A. Wong, "PIRM: fast background subtraction under sudden, local illumination changes via probabilistic illumination range modeling", the proceedings of IEEE Conference on Image Processing, 2015.
- C80 B. Chywł*, A. Chung*, F. Li*, A. Wong, and D. Clausi, "TIGER: A Texture-Illumination Guided Energy Response Model for Illumination Robust Local Saliency", the proceedings of IEEE Conference on Image Processing, 2015.
- C81 L. Xu**, M. Shafiee*, A. Wong, F. Li*, L. Wang, and D.A. Clausi, "Oil Spill Candidate Detection from SAR Imagery Using a Thresholding-Guided Stochastic Fully-Connected Conditional Random Field Model", the proceedings of IEEE Computer Vision and Pattern Recognition Workshops (IEEE CVPR), 2015.
- C82 B. Chywł*, A. Wong, and D.A. Clausi, "Illumination Robust Facial Feature Detection via Bayesian Minimization", the proceedings of International Conference on Image Analysis and Recognition (ICIAR), 2015.
- C83 B. Chywł*, A. Chung*, A. Wong, and D.A. Clausi, "Specular Reflectance Suppression in Endoscopic Imagery via Stochastic Bayesian Estimation", the proceedings of International Conference on Image Analysis and Recognition (ICIAR), 2015.
- C84 A. Chung*, C. Scharfenberger**, F. Khalvati**, A. Wong, M. Haider, "Multiparametric texture distinctiveness approach to identifying tumor candidates using prostate MP-MRI", the proceedings of International Conference on Image Analysis and Recognition (ICIAR), 2015.

- C85 M. Zhu*, C. Scharfenberger, A. Wong, and D.A. Clausi, "Simultaneous Scene Reconstruction and Auto-calibration using Constrained Iterative Closest Point for 3D Depth Sensor Array", in the proceedings of the Conference on Computer and Robot Vision (CRV), 2015.
- C86 D. Kumar, A. Wong, and D.A. Clausi, "Lung Nodule Classification Using Deep Features in CT Images", in the proceedings of the Conference on Computer and Robot Vision (CRV), 2015.
- C87 F. Li*, E. Li*, M. Shafiee*, A. Wong, and J. Zelek, "Dense depth map reconstruction from sparse measurements using a multilayer conditional random field model", in the proceedings of the Conference on Computer and Robot Vision (CRV), 2015.
- C88 F. Kazemzadeh*, I. Khodadadzadeh, C. Jin, S. Haider*, A. Wong, S. Saini, D. Clausi, and M. Emelko, "Multispectral Digital Holographic Microscopy with Applications in Water Quality Assessment", in the proceedings of SPIE Photonics and Optics, 2015.
- C89 F. Kazemzadeh*, M. Shafiee*, J. Deglint*, E. Li*, A. Wong, I. Khodadadzadeh, and S. Saini, "In-Situ Virtual Spectral Multiplexing Imaging Microscopy of Transient Phenomena", in the proceedings of SPIE Photonics and Optics, 2015.
- C90 E. Li*, M. Shafiee*, F. Kazemzadeh*, and A. Wong, "Sparse Reconstruction of Compressed Sensing Multispectral Data Using A Cross-spectral Multilayered Conditional Random Field Model", in the proceedings of SPIE Optics and Photonics, 2015.
- C91 S. Haider*, F. Kazemzadeh*, A. Wong, and D.A. Clausi, "Integrated Computational Imaging System for Enhanced Polarimetric Measurements", in the proceedings of SPIE Optics and Photonics, 2015.
- C92 J. Deglint*, F. Kazemzadeh*, A. Wong, and D.A. Clausi, "Inference of Dense Spectral Reflectance Images from Sparse Reflectance Measurement Using Non-Linear Regression Modeling", in the proceedings of SPIE Optics and Photonics, 2015.
- C93 F. Kazemzadeh*, C. Jin, and A. Wong, "A wide field-of-view 3D holographic microscope for in-situ microbial detection and analysis", in the proceedings of Annual Meeting of the Biophysical Society of Canada, 2015.
- C94 K. Bizheva, M. Hajjalamdari, L. Haines, A. Boroomand*, A. Wong, and L. Sorbara, "Sub-micrometer axial resolution, fiber-optic SD-OCT for in-vivo corneal imaging ", Proc. ARVO Imaging in the Eye Conference, 2015.
- C95 C. Scharfenberger**, D. Lui*, F. Khalvati**, A. Wong, and M.A. Haider, "Semi-Automatic Prostate Segmentation via a Hidden Markov Model with Anatomical and Textural Priors", Proc. Annual Meeting and Exhibition of the International Society for Magnetic Resonance in Medicine (ISMRM), 2015.
- C96 D. Cho*, F. Khalvati**, A. Wong, D.A. Clausi, and M.A. Haider, "Prostate DWI co-registration via maximization of hybrid statistical likelihood and cross-correlation for improved ADC and computed ultra-high b-value DWI calculation", Proc. Annual Meeting and Exhibition of the International Society for Magnetic Resonance in Medicine (ISMRM), 2015.
- C97 A. Boroomand*, M. Shafiee*, F. Khalvati**, A. Wong, and M.A. Haider, "Noise-compensated bias correction of MRI via a stochastically fully-connected conditional random field model", Proc. Annual Meeting and Exhibition of the International Society for Magnetic Resonance in Medicine (ISMRM), 2015.
- C98 E. Li*, M. Shafiee*, A. Chung*, F. Khalvati**, A. Wong, and M.A. Haider, "Enhanced reconstruction of compressive sensing MRI via cross-domain stochastically fully-connected random field model", Proc. Annual Meeting and Exhibition of the International Society for Magnetic Resonance in Medicine (ISMRM), 2015.
- C99 J. Deglint*, A. Cameron*, C. Scharfenberger**, M. Lamm, A. Wong, and D.A. Clausi, "Auto-Calibration for Screen Correction and Point Cloud Generation", the proceedings of Conference of Society of Information Display, 2015. **Won Distinguished Paper Award.**
- C100 D. 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", the proceedings of IEEE International Symposium on Biomedical Imaging, 2015.
- C101 S. Haider*, M. Shafiee*, A. Chung*, F. Khalvati**, A. Oikonomou, A. Wong, and M.A. Haider, "Single-click, semi-automatic lung nodule contouring using hierarchical conditional random fields", the proceedings of IEEE

- International Symposium on Biomedical Imaging, 2015.
- C102 F. Khalvati**, A. Wong, and M.A. Haider, "Dual-stage correlated diffusion imaging", the proceedings of IEEE International Symposium on Biomedical Imaging, 2015.
- C103 D. Vasquez, J. Scharcanski, A. Wong, "Color Image Segmentation Using Spatial Constraints", the proceedings of the IEEE International Instrumentation and Measurement Technology Conference, 2015.
- C104 T. Hesham and A. Wong, "A Probabilistic Covariate Shift Assumption for Domain Adaptation", the proceedings of AAAI Conference on Artificial Intelligence, 2015.
- C105 A. Broomand*, M. Shafiee*, A. Wong, and K. Bizheva, "Lateral Resolution Enhancement via Imbricated Optical Coherence Tomography in a Maximum-A-Posterior Reconstruction Framework", the proceedings of SPIE Photonics West, 2015.
- C106 A. Broomand*, B. Tan, A. Wong, and K. Bizheva, "Axial resolution improvement in spectral domain optical coherence tomography using a depth-adaptive Maximum-A-Posterior Framework", the proceedings of SPIE Photonics West, 2015.
- C107 R. Amelard*, C. Scharfenberger**, A. Wong, D.A. Clausi, "Non-contact transillumination melanin imaging via multispectral temporal illumination coding", the proceedings of SPIE Photonics West, 2015.
- C108 R. Amelard*, C. Scharfenberger*, A. Wong, D.A. Clausi, "Illumination-compensated, non-contact photoplethysmographic imaging via temporally-coded illumination", the proceedings of SPIE Photonics West, 2015.
- C109 A. Chung*, X. Wang, R. Amelard*, C. Scharfenberger**, J. Leong*, J. Kulinski*, A. Wong, D.A. Clausi, "High-resolution motion-compensated photoplethysmographic imaging for remote heart rate monitoring", the proceedings of SPIE Photonics West, 2015.
- C110 J. Glaister*, S. Haider*, A. Wong, and D.A. Clausi, "Restoration of block-transform compressed images via homotopic, regularized sparse reconstruction", the proceedings of SPIE Electronic Imaging, 2014.
- C111 S. Haider*, C. Scharfenberger**, F. Kazemzadeh*, A. Wong, D.A. Clausi, "Multipolarimetric textural distinctiveness for outdoor robotic saliency detection", the proceedings of SPIE Electronic Imaging, 2014.
- C112 F. Khalvati, A. Modhafar, A. Cameron, A. Wong, and M.A. Haider "A Multi-Parametric Diffusion Magnetic Resonance Imaging Texture Feature Model for Prostate Cancer Analysis", the proceedings of MICCAI Workshop on Computational Diffusion MRI, 2014.
- C113 F. Khalvati, A. Wong, G. Bjarnason, and M.A. Haider, "Semi-automatic Normalized Entropy Characterization of Metastatic Renal Cell Cancer via Spatio-Textural Tumour Classification", the proceedings of Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC), 2014.
- C114 D. Lui*, C. Scharfenberger**, D. Carvalho, J. Callaghan, and A. Wong, "Semi-automatic Fisher-Tippett Guided Active Contour for Lumbar Multifidus Muscle Segmentation", the proceedings of Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC), 2014.
- C115 D. Cho*, R. Amelard*, S. Haider*, A. Wong, and D.A. Clausi, "Random Forest Nonlinear Regression Model for Diagnostic Biomarker inference from Dermatological Photographs", the proceedings of Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC), 2014.
- C116 A. Cameron*, A. Modhafar*, F. Khalvati, D. Lui*, M. Shafiee*, A. Wong, and M.A. Haider, "Multiparametric MRI Prostate Cancer Analysis via a Hybrid Morphological-Textural Model", the proceedings of Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC), 2014.
- C117 S. Haider*, D. Cho*, R. Amelard*, A. Wong, and D.A. Clausi, "Enhanced classification of malignant melanocytic lesions via the integration of physiological features from dermatological photographs", the proceedings of Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC), 2014.
- C118 C. Scharfenberger**, A. Jain*, A. Wong, and P. Fieguth, "Image saliency detection via multi-scale statistical non-redundancy modeling", in the proceedings of the IEEE International Conference on Image Processing, 2014.
- C119 M. Shafiee*, A. Wong, P. Siva**, and P. Fieguth, "Efficient Bayesian inference using fully connected

- conditional random fields with stochastic cliques”, in the proceedings of the IEEE International Conference on Image Processing, 2014.
- C120 F. Kazemzadeh*, M. Shafiee*, A. Wong, and D.A. Clausi, “Reconstruction of compressive multispectral sensing data using a multilayered conditional random field approach”, in the proceedings of SPIE Photonics and Optics, 2014.
- C121 F. Kazemzadeh*, S. Haider*, C. Scharfenberger**, A. Wong, and D.A. Clausi, “Concurrent multi-view discrete spectral imaging device from the VIS to the NIR”, in the proceedings of SPIE Photonics and Optics, 2014.
- C122 F. Li*, A. Wong, and D.A. Clausi, “A modified rotation forest algorithm for hyperspectral imagery classification with limited training samples”, the proceedings of IEEE Geosciences and Remote Sensing Symposium, 2014.
- C123 F. Li*, A. Wong, and D.A. Clausi, “Comparison of unsupervised surficial materials mapping in Nunavut, Canada using RADARSAT-2 Polarimetric, LANDSAT-7, and DEM data”, the proceedings of IEEE Geosciences and Remote Sensing Symposium, 2014.
- C124 F. Li*, A. Wong, D.A. Clausi, “Comparative Study of Feature Space Projection Methods for Hyperspectral Image Classification”, the proceedings of IEEE Geosciences and Remote Sensing Symposium, 2014.
- C125 P. Siva** and A. Wong, “URC: Unsupervised clustering of remote sensing imagery”, the proceedings of IEEE Geosciences and Remote Sensing Symposium, 2014.
- C126 P. Siva** and A. Wong, “Grid Seams: A fast superpixel algorithm for real-time applications”, the proceedings of Conference on Computer and Robot Vision, 2014. **Won CIPPRS Conference Best Paper Award.**
- C127 A. Boroomand*, D. Cho*, B. Ni*, E. Li*, A. Wong, and K. Bizheva, “Super-resolved reconstruction of optical coherence tomography images by use of multi-penalty conditional random field algorithm”, the proceedings of SPIE Photonics West (BiOS), 2014.
- C128 B. Tan, M. Tam, K. Carter, A. Boroomand*, A. Wong, and K. Bizheva, “In vivo recording of intrinsic optical signals in light-stimulated rat retina with a combined functional OCT and ERG system”, the proceedings of SPIE Photonics West (BiOS), 2014.
- C129 C. Scharfenberger**, A. Wong, K. Fergani*, J. Zelek, and D.A. Clausi, “Statistical textural distinctiveness for salient region detection in natural images”, the proceedings of IEEE Conference on Computer Vision and Pattern Recognition (IEEE CVPR), 2013.
- C130 R. Sachett Medeiros, J. Scharcanski, A. Wong, “Skin Detection for Hand Gesture Segmentation using Multi-scale Stochastic Color Texture Models”, the proceedings of the IEEE International Conference on Multimedia & Expo (IEEE ICME), 2013.
- C131 F. Tung and A. Wong, “Polynomial self-similarity for object classification”, the proceedings of the IEEE International Conference on Multimedia & Expo (IEEE ICME), 2013.
- C132 A. Wong, A. Scott, E. Li*, and R. Amelard*, “Continuous sea ice thickness estimation using a joint MODIS and AMSR-E guided variational model”, in the proceedings of IEEE International Geoscience and Remote Sensing Symposium (IEEE IGARSS), 2013.
- C133 R. Amelard*, A. Wong, and D.A. Clausi, “Unsupervised classification of agricultural land cover using polarimetric synthetic aperture radar via a dictionary-based, multi-dimensional global texture model”, in the proceedings of IEEE International Geoscience and Remote Sensing Symposium (IEEE IGARSS), 2013.
- C134 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 the proceedings of IEEE International Geoscience and Remote Sensing Symposium (IEEE IGARSS), 2013.
- C135 R. Sachett Medeiros, J. Scharcanski, A. Wong, “Outdoor scene segmentation based on a stochastic texture region merging approach”, the proceedings of IEEE ICASSP 2013, 2013.
- C136 D. Vasquez, J. Scharcanski, A. Wong, and S. Crestana, “A novel 3D approach for extraction of the wetting front in CT images of soil profiles”, the proceedings of IEEE International Instrumentation and Measurement Technology Conference (I2MTC 2013), 2013.
- C137 F. Li*, A. Wong, D.A. Clausi, “Separability measure and classification of surficial materials in the Umiujalik

- Lake area using RADARSAT-2 polarimetric and LANDSAT-7 images, and DEM data”, the proceedings of Canadian Remote Sensing Symposium, 2013.
- C138 C. Liu*, A. Wong, and K. Bizheva, “Automatic algorithm for measuring visually evoked pupil size changes from OCT images”, the proceedings of SPIE Photonics West (BiOS), 2013.
- C139 S. Schwartz*, A. Wong, and D.A. Clausi, “Saliency-guided compressive fluorescence microscopy”, the proceedings of Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC), 2012.
- C140 R. Amelard*, A. Wong, and D.A. Clausi, “Extracting Morphological High-Level Intuitive Features (HLIF) for Enhancing Skin Lesion Classification”, the proceedings of Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC), 2012.
- C141 J. Glaister*, A. Wong, and D.A. Clausi, “Illumination correction in dermatological photographs using multi-stage illumination modeling for skin lesion analysis”, the proceedings of Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC), 2012.
- C142 J. Glaister*, A. Cameron*, A. Wong, and M.A. Haider, “Quantitative Investigative Analysis of Tumour Separability in the Prostate Gland using Ultra-high b-value Computed Diffusion Imaging”, the proceedings of Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC), 2012.
- C143 A. Cameron*, J. Glaister*, A. Wong, and M.A. Haider, “Non-parametric Bayesian Estimation of Apparent Diffusion Coefficient from Diffusion-Weighted Magnetic Resonance Imaging Data”, the proceedings of Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC), 2012.
- C144 A. Jain*, A. Wong, and P. Fieguth, “Saliency Detection via Statistical Non-redundancy”, the proceedings of IEEE International Conference on Image Processing (IEEE ICIP), 2012.
- C145 A. Kumar, A. Wong, P. Fieguth, and D.A. Clausi, “Multi-scale Tensor Vector Field Based Active Contours”, the proceedings of IEEE International Conference on Image Processing (IEEE ICIP), 2012.
- C146 K. Bizheva, C. Hyun, A. Zam, C. Liu*, A. Kumar, A. Wong, N. Hutchings, and T. Simpson, “In vivo Volumetric Imaging of the Vogt Palisades with Ultrahigh Resolution Optical Coherence Tomography”, the proceedings of the Meeting of the Association for Research in Vision and Ophthalmology, 2012.
- C147 A. Moayed, S. Hariri, C. Liu*, A. Wong, P. Fieguth, V. Choh, and K. Bizheva, “Stimulus Specific, Visually-evoked Pupillary Responses In Chicken Measured With Functional Optical Coherence Tomography”, the proceedings of the ARVO/ISIE Imaging Conference, 2012.
- C148 A. Wong, “Perceptual Structure Distortion Ratio: An image quality metric based on complex phase order”, in the proceedings of the Conference on Computer and Robot Vision (CRV), 2012.
- C149 A. Hojaij, A. Fakhri, A. Wong, and J. Zelek, “Difference of Circles Feature Detector”, in the proceedings of the Conference on Computer and Robot Vision (CRV), 2012.
- C150 R. Amelard*, A. Wong, and D.A. Clausi, “Extracting High-Level Intuitive Features (HLIF) For Classifying Skin Lesions Using Standard Camera Images”, in the proceedings of the Conference on Computer and Robot Vision (CRV), 2012.
- C151 S. Schwartz*, A. Wong, and D.A. Clausi, “Multi-scale saliency-guided compressive sensing approach to efficient robotic laser range measurements”, in the proceedings of the Conference on Computer and Robot Vision (CRV), 2012.
- C152 K. Gallagher, A. Wong, and J. Callaghan, “Lumbopelvic kinematics and trunk muscle thickness during prolonged standing on a sloped surface”, the proceedings of 2012 meeting of the Canadian Society for Biomechanics, 2012.
- C153 A. Karimi*, A. Wong, and K. Bizheva, “Automated detection and counting of keratocytes in human corneal stroma from ultrahigh-resolution optical coherence tomograms”, the proceedings of SPIE Photonics West (BiOS), 2012.
- C154 C. Liu*, A. Wong, K. Bizheva, P. Fieguth, and H. Bie, “Non-local sparse reconstruction of OCT images”, the proceedings of SPIE Photonics West (BiOS), 2012.

- C155 J. Glaister*, C. Chan*, M. Frankovich*, A. Tang*, and A. Wong, "Hybrid Video Compression Using Selective Keyframe Identification and Patch-Based Super-Resolution", in the proceedings of IEEE International Symposium on Multimedia (IEEE ISM), 2011.
- C156 C. Chan* and A. Wong, "Shot Boundary Detection using Genetic Algorithm Optimization", the proceedings of IEEE International Symposium on Multimedia (IEEE ISM), 2011.
- C157 M. Shafiee, A. Wong, and Z. Azimifar, "A Novel Hierarchical Model-Based Frame Rate Up-Conversion via Spatio-temporal Conditional Random Fields", the proceedings of IEEE International Symposium on Multimedia (IEEE ISM), 2011.
- C158 A. Leigh*, A. Wong, D.A. Clausi, and P. Fieguth, "Comprehensive Analysis on the Effects of Noise Estimation Strategies on Image Noise Artifact Suppression Performance", the proceedings of IEEE International Symposium on Multimedia (IEEE ISM), 2011.
- C159 A. Wong, "Constrained Bayesian Streak Artifact Reduction Approach for Contrast Enhanced Computed Tomography Imaging of the Intervertebral Disc", the proceedings of Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC), 2011.
- C160 N. Bandekar, A. Wong, and D.A. Clausi, "A Novel Approach to Automated Cell Counting for Studying Human Corneal Epithelial Cells", the proceedings of Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC), 2011.
- C161 Y. Liu, A. Wong, and P. Fieguth, "A Structure-guided Conditional Sampling Model for Video Resolution Enhancement", the proceedings of IEEE International Conference on Image Processing (IEEE ICIP), 2011.
- C162 A. Mishra, A. Wong, P. Fieguth, and D.A. Clausi, "Multi-Scale 3D Representation via Volumetric Quasi-Random Scale Space", the proceedings of IEEE International Conference on Image Processing (IEEE ICIP), 2011.
- C163 A. Kumar, A. Wong, A. Mishra, P. Fieguth, and D.A. Clausi, "Tensor Vector Field Based Active Contours", the proceedings of IEEE International Conference on Image Processing (IEEE ICIP), 2011.
- C164 A. Wong, "Robust Control Point Detection for Aerial Synthetic Aperture Radar via a Logarithmic Quasi-random Scale Space Framework", the proceedings of IEEE Computer Vision and Pattern Recognition Workshops (IEEE CVPR), 2011.
- C165 J. Eichel, D. Lee, A. Wong, P. Fieguth, D.A. Clausi, and K. Bizheva, "Despeckling vs Averaging of retinal UHROCT tomograms: advantages and limitations", the proceedings of the SPIE, vol. 7889, pp. 78893C-78893C-9, 2011.
- C166 J. Eichel, D. Lee, A. Wong, P. Fieguth, D.A. Clausi, and K. Bizheva, "Quantitative Comparison of Despeckling and Frame Averaging Approaches to Processing Retinal OCT Tomograms", the proceedings of SPIE Photonics West (BiOS), 2011.
- C167 X. Wang, A. Wong, and S. Lien, "Spectral Variation Constrained Power Spectral Density Estimation for Wideband Spectrum Sensing", the proceedings of International Workshop on Cognitive Radio & Advanced Spectrum Management (CogART), 2010. **Invited Paper.**
- C168 A. Wong and P. Fieguth, "A New Bayesian Source Separation Approach to Blind Decorrelation of SAR Data", the proceedings of IEEE International Geoscience and Remote Sensing Symposium (IEEE IGARSS), 2010.
- C169 Y. Liu, A. Wong, and P. Fieguth, "Remote Sensing Image Synthesis", the proceedings of IEEE International Geoscience and Remote Sensing Symposium (IEEE IGARSS), 2010.
- C170 A. Wong, A. Mishra, D.A. Clausi, and P. Fieguth, "Quasi-Random Scale Space Approach to Robust Keypoint Extraction in High-Noise Environments", the proceedings of the Conference on Computer and Robot Vision (CRV), 2010.
- C171 A. Wong, A. Mishra, D.A. Clausi, and P. Fieguth, "Mammogram Image Superresolution Based on Statistical Moment Analysis", in the proceedings of the Conference on Computer and Robot Vision (CRV), 2010.
- C172 A. Mishra, A. Wong, D.A. Clausi, and P. Fieguth, "A Bayesian Information Flow Approach to Image Segmentation", in the proceedings of the Conference on Computer and Robot Vision (CRV), 2010.
- C173 X. Wang, A. Wong, and P. Ho, "Dynamic Markov-Chain Monte Carlo Channel Negotiation for Cognitive

- Radio", the proceedings of IEEE International Conference on Computer Communications (IEEE INFOCOM), 2010.
- C174 A. Wong, D.A. Clausi, and P. Fieguth, "Adaptive Monte Carlo Retinex Method for Illumination and Reflectance Separation and Color Image Enhancement", the proceedings of the Conference on Computer and Robot Vision (CRV), 2009. **Won CIPPRS Conference Best Paper Award.**
- C175 A. Wong, D.A. Clausi, and P. Fieguth, "SEC: Stochastic Ensemble Consensus Approach to Unsupervised SAR Sea-ice Segmentation", the proceedings of the Conference on Computer and Robot Vision (CRV), 2009.
- C176 A. Wong, W. Zhang, and D.A. Clausi, "IceSynth: An Image Synthesis System for Sea-ice Segmentation Evaluation", the proceedings of the Conference on Computer and Robot Vision (CRV), 2009.
- C177 W. Zhang, A. Wong, and D.A. Clausi, "JEDI: Joint Enhancement and Despeckling of Images", the proceedings of the Conference on Computer and Robot Vision (CRV), 2009.
- C178 X. Wang, A. Wong, and P. Ho, "Prioritized Spectrum Sensing in Cognitive Radio Based on Spatiotemporal Statistical Fusion", the proceedings of IEEE Wireless Communications and Networking Conference (IEEE WCNC), 2009.
- C179 X. Wang, A. Wong, and P. Ho, "Stochastic Channel Prioritization for Spectrum Sensing in Cooperative Cognitive Radio", the proceedings of IEEE Consumer Communications and Networking Conference (IEEE CCNC), 2009.
- C180 A. Wong, D.A. Clausi, and P. Fieguth, "Phase-Adaptive Image Signal Fusion using Complex-valued Wavelets", the proceedings of International Conference on Pattern Recognition (ICPR), 2008.
- C181 A. Wong, A. Mishra, P. Fieguth, and D.A. Clausi, "An Adaptive Monte Carlo Approach to Nonlinear Image Denoising", the proceedings of International Conference on Pattern Recognition (ICPR), 2008.
- C182 A. Wong, "Simultaneous Multi-modal Registration of Multiple Images based on Multi-Dimensional Joint Phase Moment Distributions", the proceedings of International Conference on Pattern Recognition (ICPR), 2008.
- C183 A. Wong, P. Fieguth, and D.A. Clausi, "A Perceptually-adaptive Approach to Image Denoising using Anisotropic Non-Local Means", the proceedings of IEEE International Conference on Image Processing (IEEE ICIP), 2008.
- C184 A. Wong and J. Orchard, "An Adaptive Non-local Means Approach to Exemplar-based Inpainting", the proceedings of IEEE International Conference on Image Processing (IEEE ICIP), 2008.
- C185 A. Wong, "Illumination Invariant Active Contour-based Segmentation using Complex-valued Wavelets", the proceedings of IEEE International Conference on Image Processing (IEEE ICIP), 2008.
- C186 J. Orchard, M. Ebrahimi, and A. Wong, "Efficient Nonlocal-Means Denoising using the SVD", the proceedings of IEEE International Conference on Image Processing (IEEE ICIP), 2008.
- C187 A. Wong, A. Mishra, P. Fieguth, D.A. Clausi, N. Dunk, J. Callaghan, "Shape-Guided Active Contour Based Segmentation and Tracking of Lumbar Vertebrae in Video Fluoroscopy Using Complex Wavelets", the proceedings of Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC), 2008.
- C188 A. Mishra, A. Wong, W. Zhang, P. Fieguth, and D.A. Clausi, "Improved Interactive Medical Image Segmentation using Enhanced Intelligent Scissors (EIS)", the proceedings of Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC), 2008.
- C189 A. Wong and D.A. Clausi, "Automatic Registration of Inter-band and Inter-sensor Images using Robust Complex Wavelet Feature Representations", the proceedings of IAPR Workshop on Pattern Recognition in Remote Sensing (PRRS), 2008.
- C190 A. Wong and W. Bishop, "Robust Edge Detection Based on Non-Local Contribution of Local Frequency Characteristics", the proceedings of IEEE International Symposium on Multimedia (IEEE ISM), 2008.
- C191 A. Wong and W. Bishop, "Deblocking of Block-Transform Compressed Images Using Phase-adaptive Shifted Thresholding", the proceedings of IEEE International Symposium on Multimedia (IEEE ISM), 2008.

- C192 A. Wong, A. Mishra, D.A. Clausi, and P. Fieguth, "Adaptive nonlinear image denoising and restoration using a cooperative Bayesian estimation approach", the proceedings of The IEEE Indian Conference on Computer Vision, Graphics and Image Processing (IEEE ICVGIP), 2008.
- C193 X. Wang, P. Ho, and A. Wong, "Towards Efficient Spectrum Sensing for Cognitive Radio Through Knowledge-Based Reasoning", the proceedings of IEEE International Symposium on Dynamic Spectrum Access Networks (IEEE DySPAN), 2008.
- C194 A. Wong and W. Bishop, "Robust Hough-Based Symbol Recognition using Knowledge-based Hierarchical Neural Networks", the proceedings of International Conference on Image Processing, Computer Vision, and Pattern Recognition, 2008.
- C195 A. Wong and W. Bishop, "Efficient and Robust Approach to Simultaneous Non-rigid Image Registration and Gamma Estimation in the Frequency Domain", the proceedings of International Conference on Image Processing, Computer Vision, and Pattern Recognition, 2008.
- C196 A. Wong, "An Iterative Approach to Improved Local Phase Coherence Estimation", the proceedings of Sixth Conference on Computer and Robot Vision (CRV), 2008.
- C197 A. Wong and W. Bishop, "Perceptually-Adaptive Color Enhancement of Still Images for Dichromacy Deficiencies", the proceedings of IEEE CCECE: Symposium on Signal and Multimedia Processing, 2008.
- C198 M. Hansen, W. Bishop, A. Bellemaire, and A. Wong, "Decompressing Perceptually Adaptive Normal Map Compression (PANMC) Images in Hardware", the proceedings of IEEE CCECE: Symposium on Signal and Multimedia Processing, 2008.
- C199 A. Wong and A. Kennings, "Adaptive Multiple Texture Approach to Texture Packing for 3D Video Games", the proceedings of ACM FuturePlay, Toronto, Ontario, 2007.
- C200 A. Wong and W. Bishop, "Robust Invariant Descriptor for Symbol-Based Image Recognition and Retrieval", the proceedings of the IEEE International Conference on Semantic Computing (IEEE ICSC), Irvine, California, 2007.
- C201 A. Wong and W. Bishop, "Adaptive Large Scale Artifact Reduction in Edge-Based Image Super-Resolution", the proceedings of the IASTED International Conference on Signal and Image Processing, Honolulu, Hawaii, 2007.
- C202 A. Wong and W. Bishop, "Backwards Compatible, Multi-Level Regions-of-Interest (ROI) Image Encryption Architecture with Biometric Authentication", the proceedings of SIGMAP: The International Conference on Signal Processing and Multimedia Applications, Barcelona, Spain, 2007.
- C203 A. Wong and W. Bishop, "Simultaneous Registration and Gamma Correction in the Frequency Domain", the proceedings of the 2007 International Conference on Image Processing, Computer Vision, and Pattern Recognition, Las Vegas, Nevada, 2007.
- C204 A. Wong and W. Bishop, "Indirect Knowledge Based Approach to Non-Rigid Multi-Modal Registration of Medical Images", the proceedings of IEEE Canadian Conference on Electrical and Computer Engineering, Vancouver, 2007.
- C205 A. Wong and W. Bishop, "Practical Perceptually Adaptive Approach to Video Logo Placement in TV Broadcasts", the proceedings of IEEE Canadian Conference on Electrical and Computer Engineering, Vancouver, 2007.
- C206 M. Hansen, A. Wong and W. Bishop, "A Hardware Implementation of Real-Time Video Deblocking Using Shifted Thresholding", the proceedings of IEEE Canadian Conference on Electrical and Computer Engineering, Vancouver, 2007.
- C207 A. Wong and W. Bishop, "Intelligent Multi-Level Regions-of-Interest (ROI) Document Image Encryption using an Online Learning Model", the proceedings of IASTED International Conference on Signal Processing, Pattern Recognition and Applications, Austria, 2007.
- C208 A. Wong and W. Bishop, "Adaptive Perceptual Degradation Based on Video Usage", the proceedings of IEEE International Symposium on Multimedia (IEEE ISM), San Diego, 2006.
- C209 A. Wong and W. Bishop, "Practical Content-Adaptive Subsampling for Image and Video Compression", the

- proceedings of IEEE International Symposium on Multimedia (IEEE ISM), San Diego, 2006.
- C210 A. Wong and W. Bishop, "Adaptive Normal Map Compression for 3D Video Games", the proceedings of FuturePlay, London, Ontario, Canada, 2006.
- C211 A. Wong and W. Bishop, "Efficient Deblocking of Block-Transform Compressed Images and Video Using Shifted Thresholding", the proceedings of the IASTED International Conference on Signal and Image Processing, Honolulu, Hawaii, 2006.
- C212 A. Wong and W. Bishop, "An Efficient, Parallel Multi-Key Encryption of Compressed Video Streams", the proceedings of the IASTED International Conference on Signal and Image Processing, Honolulu, Hawaii, 2006.
- C213 A. Wong and W. Bishop, "A Flexible Content-Based Approach to Adaptive Image Compression", the proceedings of the IEEE International Conference on Multimedia & Expo (IEEE ICME), Toronto, Ontario, Canada, 2006.
- C214 A. Wong and W. Bishop, "Expert Knowledge Based Automatic Regions-of-Interest (ROI) Selection in Scanned Documents for Digital Image Encryption", the proceedings of the 3rd Conference on Computer and Robot Vision, Quebec City, Quebec, Canada, 2006.
- C215 A. Wong, W. Bishop and Jeff Orchard, "Efficient Multi-Modal Least-Squares Alignment of Medical Images Using Quasi-Orientation Maps", the proceedings of the International Conference on Image Processing, Computer Vision, and Pattern Recognition, Las Vegas, Nevada, 2006.
- C216 A. Wong and Jeff Orchard, "Efficient and Robust Non-Rigid Least-Squares Rectification of Medical Images", the proceedings of the International Conference on Image Processing, Computer Vision, and Pattern Recognition, Las Vegas, Nevada, 2006.
- C217 A. Munshi, A. Wong, A. Clinton, S. Braganza, W. Bishop, and M. McCool, "A Parameterizable SIMD Stream Processor", the proceedings of the IEEE Canadian Conference on Electrical and Computer Engineering, Saskatoon, Saskatchewan, Canada, 2005.

3.3 PATENTS AND PATENT APPLICATIONS

- P1 A. Wong, P. Fieguth, A. Ma*, A. Gawish, and M. Lamm, "Real-time Spatial-based Resolution Enhancement Using Shifted Superposition", US Patent Application, 2017. **currently being integrated into Christie Digital products)**
- P2 I. Khodadad, F. Kazemzadeh*, and A. Wong, "System and Method for Sequencing Biological Tissue and Determining the Physical State of a Subject", US Patent Application 62/561,272, 2017.
- P3 E. Li*, H. Sekkati**, M. Lamm, and A. Wong, "Device, System, and Method for Content-Adaptive Resolution-Enhancement", European Patent Application 17178178.4 - 1902, 2017. **currently being integrated into Christie Digital products)**
- P4 E. Li*, H. Sekkati**, M. Lamm, and A. Wong, "Device, System, and Method for Content-Adaptive Resolution-Enhancement", US Patent US Patent 9,736,442, 2016. **currently being integrated into Christie Digital products)**
- P5 A. Wong and M. Shafiee*, " System and Method for Building Artificial Neural Networks Using Data", US Patent Application 62/529,474, 2017.
- P6 A. Wong and M. Shafiee*, " System and Method for Building Artificial Neural Network Architectures", US Patent Application 62/362,834, 2016.
- P7 A. Wong and M. Shafiee*, " System and Method for Building Artificial Neural Network Architectures", Canada Patent Application, 2016.
- P8 R. Amelard* and A. Wong, " System and Method for Spatial Cardiovascular Monitoring", US Patent Application 15/387,365, 2016.
- P9 R. Amelard* and A. Wong, " System and Method for Spatial Cardiovascular Monitoring", Canada Patent Application 2,952,485, 2016.

- P10 A. Wong and F. Kazemzadeh*, “ A System, Method, and Apparatus for Improving the Spectral Resolution and Signal-to-Noise Ratio of Optical Spectrometer Using Digital Beam Refocusing, Reforming, Slicing, and Multiplexing”, Canada Patent Application 2,937,230, 2016.
- P11 A. Wong and F. Kazemzadeh*, “ A System, Method, and Apparatus for Improving the Spectral Resolution and Signal-to-Noise Ratio of Optical Spectrometer Using Digital Beam Refocusing, Reforming, Slicing, and Multiplexing”, US Patent Application 15/219,933, 2016.
- P12 F. Kazemzadeh* and A. Wong, “ A System, Method, and Apparatus for Ultra-resolved Ultra-wide Field-of-view Multispectral and Hyperspectral Holographic Microscopy”, US Patent Application 14/963,662, 2015.
- P13 F. Kazemzadeh* and A. Wong, “ A System, Method, and Apparatus for Ultra-resolved Ultra-wide Field-of-view Multispectral and Hyperspectral Holographic Microscopy”, Canada Patent Application, 2015.
- P14 F. Kazemzadeh*, A. Wong, S. Haider*, “Imaging system and method for concurrent multiview multispectral polarimetric light-field high dynamic range imaging”, US Patent Application 14/840,013, 2015.
- P15 F. Kazemzadeh*, A. Wong, S. Haider*, “Imaging system and method for concurrent multiview multispectral polarimetric light-field high dynamic range imaging”, Canada Patent Application, 2015.
- P16 A. Wong, “A compensated magnetic resonance imaging system and method for improved magnetic resonance imaging and diffusion imaging quality”, US Patent 9,709,651, August 20, 2014.
- P17 A. Wong, “Correlated Diffusion Imaging System and Method for Identification of Biological Tissue of Interest”, United States Patent 9,619,882, June 19, 2014.
- P18 A. Wong, “Correlated Diffusion Imaging System and Method for Identification of Biological Tissue of Interest”, Canada Patent Application 2,854,844, June 19, 2014.
- P19 A. Wong and H. Zhou, “Method and Apparatus for Generating a Panorama from a Sequence of Video Frames”, filed through Seiko Epson Corp., United States Patent Application 20070030396, Feb 8, 2007. **(currently deployed worldwide in Epson products)**
- P20 A. Wong and H. Zhou, “Method and Apparatus for Automatic Image Categorization”, filed through Seiko Epson Corp., United States Patent Application 20080089591, Apr 16, 2008. **(currently deployed worldwide in Epson products)**
- P21 A. Wong and H. Zhou, “Method and Apparatus for Automatic Image Categorization”, filed through Seiko Epson Corp., European Patent Application EP1912161, Apr 16, 2008. **(currently deployed worldwide in Epson products)**
- P22 A. Wong and H. Zhou, “Method to Automatically Classify Input Image”, filed through Seiko Epson Corp., Japanese Patent Application JP2008097607, Apr 16, 2008. **(currently deployed worldwide in Epson products)**
- P23 A. Wong and H. Zhou, “Method and Apparatus for Automatically Estimating the Layout of a Sequentially Ordered Series of Frames to Be Used to Form a Panorama”, filed through Seiko Epson Corp., United States Patent 7474802, Jan 6, 2009. **(currently deployed worldwide in Epson products)**
- P24 A. Wong and H. Zhou, “Method and Apparatus for Estimating Shot Boundaries In A Digital Video Sequence”, filed through Seiko Epson Corp., United States Patent 7551234, June 23, 2009. **(currently deployed worldwide in Epson products)**
- P25 A. Wong and H. Zhou, “Method and Apparatus for Generating a Panorama Background from a Set of Images”, filed through Seiko Epson Corp., United States Patent 7577314, August 18, 2009. **(currently deployed worldwide in Epson products)**

3.4 BOOKS AND BOOK CHAPTERS

- B1 A. Wong, J. Wallace, A. Lee, A. Kumar, V. Cheung, and X. Wang, Data Structures and Algorithms in a Nutshell: 5th Edition, University of Waterloo Publishing, 2016.

- B2 J. Glaister*, R. Amelard*, A. Wong, and D.A. Clausi, "Melanoma decision support using lighting-corrected intuitive feature models", *Computer Vision Techniques for the Diagnosis of Skin Cancer*, Springer, 2013.
- B3 A. Wong, A. Mishra, P. Fieguth, and D.A. Clausi, "Nonparametric Sample-based Methods for Image Understanding", *Emerging Topics in Computer Vision* (C.H. Chen (ed.)), World Scientific Publishing, 2011.

3.5 SELECTED INVITED PRESENTATIONS

- T1 Invited Talk, Operational Artificial Intelligence for Anywhere, Anyone, Anytime, Global CENTRA Talk (participants from 11 countries), December 2017.
- T2 Invited Talk, Toward Operational Artificial Intelligence: Anywhere, Anyone, Anytime, Canadian Special Operation Forces Command, December 2017.
- T3 Invited Talk, Enabling Operational Artificial Intelligence for Anyone, Anywhere, Anytime, Canadian Air Transport Security Authority, November 2017.
- T4 Invited Talk, Operational Artificial Intelligence in Supply Chain, Loblaws, November 2017.
- T5 Invited Talk, An Academic Entrepreneur's Journey Breaking into Healthcare and the Challenges Ahead, 2017 Waterloo Region MedTech Conference, November 2017.
- T6 Invited Talk, Artificial Intelligence in Engineering, OIO Japan A.I. workshop, November 2017.
- T7 Invited Talk, Operational AI and the Potential for Intelligent Transportation, AutoTech Symposium 2017, October 2017.
- T8 Invited Keynote Talk, Operational Artificial Intelligence, The 19th CSI International Symposium on Artificial Intelligence and Signal Processing (AISP), October 2017.
- T9 Invited Talk, Toward Operational Artificial Intelligence: Anywhere, Anyplace, Anytime, Waterloo Reunion 2017, Sept 2017.
- T10 Invited Talk, Toward Operational Artificial Intelligence: Anywhere, Anyplace, Anytime, Volkswagen, August 2017.
- T11 Invited Talk, Artificial Intelligence-driven Data Analytics in Agriculture, Agrium, June 2017.
- T12 Invited Talk, Operational Artificial Intelligence in Finance, CIBC, June 2017.
- T13 Invited Talk, Toward Operational Deep Learning, Microsoft, June 2017.
- T14 Invited Talk, Toward Operational Artificial Intelligence: Anywhere, Anyplace, Anytime, Dayalbagh Educational Institute (DEI) Indo-Canadian Research Colloquium, June 2017.
- T15 Invited Talk, Vision-driven AI for Advanced Manufacturing, Siemens, May 2017.
- T16 Invited Talk, Research Entrepreneurship: From Vision to Reality, Alibaba, April 2017.
- T17 Invited Talk, Toward Operational Artificial Intelligence: Anywhere, Anyplace, Anytime, Up Close & Personal with SYDE, University of Waterloo, March 2017.
- T18 Invited Talk, Operational Artificial Intelligence in Automotive Sector, Continental, March 2017.
- T19 Invited Panelist, Big Ideas Panel Discussion on Tech North: Building Canadas First Technology Supercluster - Canadas Opportunity To Build Toronto-Waterloo In To One of the Worlds Top Technology Superclusters, Rotman School of Management, Toronto, January 2017.
- T20 Invited Talk, Operational Artificial Intelligence for Platform Intelligence, Umajin, January 2017.
- T21 Invited Talk, Evolutionary Synthesis of Operational Deep Intelligence, Nvidia, November 2016.
- T22 Invited Talk, Deep Learning with Darwin: Evolutionary Synthesis of Operational Deep Intelligence, Waterloo Institute for Complexity and Innovation, Waterloo, February 2017.
- T23 Invited Talk, AI for Factory of the Future, NRC, October 2016.
- T24 Invited Talk, Evolutionary Deep Intelligence, Miovision Technologies, October, 2016.
- T25 Invited Talk, Integrative Medical Imaging Systems, Waterloo Senate Meeting, February 2016.
- T26 Invited Talk, Grand Challenges in Computer Vision and Imaging, Department of Statistics and Actuarial Science, University of Waterloo, October 2015.

T27 Invited Talk, Integrative systems for biomedical imaging and analysis, National Biotechnology Week, Waterloo, October, 2014.

3.6 NON-REFEREED PRESENTATIONS AND POSTERS

- N1 K. Fewster, M. Noguchi, C. Gooyers, A. Wong, and J. Callaghan, "Do structural changes in the anterior region of the intervertebral disc reflect those in the posterior-lateral region?", CRE-MSE Research Day, 2015. (Designed and implemented algorithm for data extraction used for the study)
- N2 S. Haider, A. Chung, E. Li, M. Shafiee, and A. Wong, Computational diffusion imaging modalities for prostate cancer, Abstract and Poster presentation. CIHR Team Grant and OICR Smarter Imaging Program (SIP) Prostate Workshop: Imaging Applications in Prostate Cancer, London, ON, November 21, 2014.
- N3 F. Li, M. Zhu, A. Wong, and D.A. Clausi, Depth sensing and reconstruction, Poster presentation. Welnnovate Symposium, Waterloo, ON, November 19, 2014.
- N4 B. Chywl, J. Deglint, A. Wong, and D.A. Clausi, Detecting Biomarkers Through Multispectral Data, Poster presentation. Welnnovate Symposium, Waterloo, ON, November 19, 2014.
- N5 A. Chung, E. Li, M. Shafiee, and A. Wong, Computer-Aided MRI Reconstruction and Analysis, Poster presentation. Welnnovate Symposium, Waterloo, ON, November 19, 2014.
- N6 S. Haider, F. Kazemzadeh, R. Amelard, and A. Wong, Integrative systems for biomedical imaging and analysis, Poster presentation. Welnnovate Symposium, Waterloo, ON, November 19, 2014.
- N7 A. Wong, D.A. Clausi, and P. Fieguth, Vision and image processing (VIP) research group, Poster presentation. Welnnovate, Waterloo, ON, November 14, 2014.
- N8 R. Amelard, A. Wong, and D.A. Clausi, Highly intuitive features for melanoma detection, Oral presentation. Graduate Student Research Conference, Waterloo, ON, April, 2013. **Won Best Oral Presentation Award.**
- N9 J. Glaister, A. Wong, and D.A. Clausi, Automatic illumination correction for dermatological photos, Oral presentation. Graduate Student Research Conference, Waterloo, ON, April, 2013.
- N10 A. Wong and D.A. Clausi, Intelligent clinical decision support system for melanoma cancer, Oral presentation. UW/OCE/Agfa Joint Workshop on Intelligent Clinical Decision Support System for Melanoma Cancer (Oral presentation), Waterloo, ON, June 7, 2012.
- N11 A. Wong, D.A. Clausi, and P. Fieguth, Vision and image processing (VIP) research group, Poster presentation. Welnnovate, Waterloo, ON, June 7, 2011.
- N12 N. Bandekar, A. Wong, D.A. Clausi, and M. Gorbet, A novel approach to automated cell counting for studying human corneal epithelial cells, Oral presentation. Graduate Student Research Conference, Waterloo, ON, April, 2011.
- N13 A. Wong, Stochastic multi-scale strategies for biomedical image analysis, Oral presentation. Graduate Student Research Conference, Waterloo, Ontario, Canada, Apr 2010. **Won Best Oral Presentation Award.**
- N14 A. Wong and D.A. Clausi, Image processing and computer vision algorithms for public surveillance, Oral presentation. Research Group Meeting, Geomatics for Informed Decisions (GEOIDE) an NSERC Network of Centres of Excellence (NCE), Vancouver, B.C., May 28-30, 2009.
- N15 A. Wong, W. Zhang, and D.A. Clausi, IceSynth: An image synthesis system for sea-ice segmentation evaluation, Oral presentation. Annual General Meeting of Geomatics for Informed Decisions (GEOIDE) an NSERC Network of Centres of Excellence (NCE), Vancouver, B.C., May 28-30, 2009.
- N16 A. Wong, Pre-processing/Filtering for Computer Vision, Oral presentation. CRV Tutorial Day 2009, Kelowna, BC, Canada, May 2009.
- N17 A. Wong, W. Zhang, and D.A. Clausi, IceSynth: An image synthesis system for sea-ice segmentation evaluation, Oral presentation. Vision and Image Processing (VIP) Workshop, University of Waterloo, Waterloo, ON, May 15, 2009.
- N18 A. Wong, D.A. Clausi, and P. Fieguth, Adaptive Monte Carlo Retinex method for illumination and reflectance separation and color image enhancement, Oral presentation. Vision and Image Processing (VIP) Workshop,

University of Waterloo, Waterloo, ON, May 15, 2009.

- N19 W. Zhang, A. Wong, and D.A. Clausi, IceSynth: JEDI: Adaptive stochastic estimation for joint enhancement and despeckling of SAR images, Oral presentation. Vision and Image Processing (VIP) Workshop, University of Waterloo, Waterloo, ON, May 15, 2009.
- N20 A. Mishra, A. Wong, W. Zhang, P. Fieguth, and D.A. Clausi, Improved Interactive Medical Image Segmentation using Enhanced Intelligent Scissors (EIS), Poster presentation. Imagine Imaging Workshop on Biomedical Imaging Technologies, Waterloo, ON, 2008.
- N21 A. Wong, An Adaptive Non-local Means Approach to Exemplar-based Inpainting, Oral presentation. Graduate Student Research Conference, Waterloo, ON, Canada, April 2008.
- N22 A. Wong, Indirect Knowledge Based Approach to Non-Rigid Multi-Modal Registration of Medical Images, Oral presentation. Graduate Student Research Conference, Waterloo, ON, Canada, April 2007.
- N23 A. Wong, Efficient Multi-key Encryption of Compressed Video Streams, Poster presentation. Graduate Student Research Conference, Waterloo, ON, Canada, April 2006.

3.7 RESEARCH FUNDING

Total Funding: \$6,768,148 in cash, \$1,117,652 in-kind

PI (Collaborators)	Title & Agency	Amount	Year	Share %
B. Buck, A. Wong, and 4 others (co-I)	MAchine Learning and Computer Vision to Enhance the Diagnosis of STROke (MAE-STRO) - Quality Improvement & Clinical Research Alberta Stroke Program	24,900 in cash	2017-2019	20
A. Wong (PI)	Azure Grant - Microsoft	40,000 in cash	2017-2018	100
J. Yeow, A. Wong, and T. Willett (co-PI)	Multi-beam X-ray Source based Computed Tomography Platform - NSERC RTI	147,619 in cash	2017	33
J. Yeow, A. Wong, and N. Jiang (co-PI)	High-resolution Real-time Three-dimensional (3-D) Ultrasound Medical Imaging Research - CFI John R. Evans Leaders Fund (JELF)	50,000 in cash	2017	33
A. Wong (PI)	Deep Advanced Driving Assistance - Research Contract	754,600 in cash	2016-2021	100
A. Wong and K. Ponnambalam (PI)	Applying machine learning classifiers to acoustic leak detection data - Southern Ontario Waterloo Consortium Advancing Water Technologies	100,000 in cash and 182,550 in cash	2017-2018	50
A. Wong (PI)	Medical Imaging Systems - Canada Research Chair (Tier II) NSERC	500,000 in cash	2013-2018	100
A. Wong (PI)	Multiscale Monte Carlo methods for multi-parametric biomedical image processing and analysis - NSERC Discovery Grant	210,000 in cash	2012-2018	100
P. Fieguth, A. Wong, and D.Clausi (co-PI)	Multi-projector calibration and super-resolution enhancement - OCE Voucher for Innovation and Productivity II	230,000 in cash and 156,000 in-kind	2016-2018	33
P. Fieguth, A. Wong, and D.Clausi (co-PI)	Advanced Correction of Projected Imagery - NSERC Collaborative Research and Development Grant	158,830 in cash	2016-2018	33
J. McPhee and A. Wong (co-PI)	Automatic baseball tracking - Research Contract	10,000 in cash	2016	80
A. Wong (PI)	High-speed, computerized human pose estimation from pressure imaging sensors in clinical and healthcare environments - NSERC Engage	25,000 in cash	2016	100
A. Wong and 3 others (PI)	Resolution- and Contrast-enhanced Benchtop Magnetic Resonance Imaging System for Tissue Characterization and Assessment - Research Tools and Instruments Grant - NSERC	103,036 in cash	2016	50
Clark Dickerson, A. Wong, and 4 others (PI)	A Novel Focal Mechanical Tissue Testing Device - Research Tools and Instruments Grant - NSERC	91,308 in cash	2016	15
A. Wong (PI)	Computer-aided prostate cancer diagnosis using multi-parametric MRI imaging - Early Researcher Award - Ministry of Research and Innovation	190,000 in cash	2012-2017	100

PI (Collaborators)	Title & Agency	Amount	Year	Share %
A. Wong (PI)	Computer-aided cancer diagnosis platform - CIHR Incentive Research Fund - University of Waterloo	8,000 in cash	2015-2017	100
M. Mourtzakis, A. Wong, and 2 others (co-PI)	Identifying and characterizing poor muscle health in an aged population: exploring new uses for ultrasonography - NAR Catalyst Grant	10,000 in cash	2017	25
A. Wong and D. Clausi (co-PI)	Ambient-based Cardiorespiratory Monitoring in Natural Settings for Preventative Healthcare - AGE-WELL NCE Award (Robert Amelard)	10,000 in cash	2015-2017	50
A. Wong (PI)	Automatic background initialization in the presence of foreground clutter for video surveillance of crowded environments - OCE/NSERC	50,000 in cash, 49,000 in-kind	2015	100
F. Khalvati and A. Wong (co-I)	A Computer Platform for Cancer Risk Stratification via Quantitative Radiomics and Deep Learning - Medical Imaging (Mi) Discovery Phase Grant	20,000 in cash	2015-2016	30
A. Wong and D. Rayside (co-PI)	Automatic piano chord identification - OCE	25,000 in cash, 15,960 in-kind	2015	80
D.Clausi, A. Wong (co-PI)	Improved Projection Display Systems - OCE	45,000 in cash	2015-2016	50
D.Clausi, A. Wong, P. Fieguth (co-PI)	Spatio-temporal resolution enhancement for high frame rate display - Mitacs	45,000 in cash	2015-2016	33
A. Wong (PI)	Intelligent team member training system - Toyota Motor Manufacturing Canada	84,500 in cash	2014-2015	100
A. Wong (PI)	Intelligent eye analysis system - Johnson and Johnson	121,429 in cash	2014-2015	100
W. McIlroy, A. Wong, and 8 others (co-PI)	Advanced aging ResearCH (ARCH) to transform health and well-being of older adults - CFI Innovation Fund	1,387,023 in cash	2015	10
M. Haider, A. Wong, and F. Khalvati (co-PI)	Design and evaluation of computational diffusion MR imaging techniques for prostate cancer diagnosis - Cancer Imaging Network of Ontario	40,000 in cash	2015	33
A. Wong (PI)	Hardware Grant - NVIDIA	1,300 in-kind	2015	100
J. Scharcanski, A. Wong, and P. Fieguth (co-PI)	Medical Imaging Exchange - International Insertion of Graduate Programs, FAPERGS	16,000 in cash	2014-2015	33
D.Clausi, A. Wong, P. Fieguth (co-PI)	Improved Projection Display Systems - Mitacs Accelerate Internship Cluster	301,667 in cash	2014-2015	34
D.A. Clausi, A. Wong, and 3 others (co-PI)	Automated Ice and Oil Spill Mapping - Protecting Arctic Coastal Regions and Communities - ArcticNet Phase IV	208,395 in cash	2015-2018	20
J. Yeow, A. Wong (co-PI)	A cleanroom-free approach towards a robust CMUT-based High Resolution 3D NDT System - NSERC Strategic Projects	387,500 in cash, 75,000 in-kind	2013-2015	15

PI (Collaborators)	Title & Agency	Amount	Year	Share %
K. Bizheva, A. Wong, D.A. Clausi, P. Fieguth, and 2 others (co-PI)	Optical Coherence Tomography for corneal transplant surgery in Keratoconus - NSERC/CIHR CHRP	629,940 in cash	2012-2015	15
A. Wong (PI)	Intelligent patient monitoring system - Hill-Rom, Inc.	35,000 in cash	2016	100
B. Leblon, D.A. Clausi, A. Wong, and 11 others (co-PI)	Assimilation of optical and radar data into permafrost/soil temperature modelling in relationship to carbon and water cycles in northern ecosystems - Capacity Building in Space Science and Technology (CSA)	437,030 in cash, 367,425 in-kind	2012-2015	6
A. Wong (with student S. Haider) (PI)	Norman Edmund Inspiration Award - Edmund Optics	5,000 in cash	2014-2015	100
Alexander Wong (PI)	Automatic tracking and trajectory computation for sports projectiles from video for sports performance analytics NSERC Engage	25000 in cash, 12547 in-kind	2013-2014	100
V. Choi, A. Wong, and 2 others (co-PI)	Non-invasive assessments of early retinal ganglion cell dysfunction in an intermittently-raised intraocular pressure rat model of glaucoma - Propel Centre for Population Health Impact	10000 in cash	2013-2014	25
D.A. Clausi, A. Wong, (co-PI)	A Mixing Model for Inferring Oxygen Status from Multispectral Imaging - Mitacs-Accelerate Internship	15,000 in cash	2014	50
A. Wong (PI)	Intelligent Ocular analysis system - Allergan Inc.	6,600 in cash	2014	100
A. Wong (PI)	Robust Tracking of Body Joints for Computerized Physiotherapy System - Applied Research and Commercialization Initiative (FedDev)	40,000 in cash, 53,870 in-kind	2012-2013	100
A. Wong (PI)	Intelligent Electronic Authentication Platform for Pre-Employment Screening - Applied Research and Commercialization Initiative (FedDev)	20,000 in cash, 20,000 in-kind	2012-2013	100
D.A. Clausi, A. Wong (co-PI)	Automated Pallet Cube Volume Estimate for the Transportation Industry - Applied Research and Commercialization Initiative (FedDev)	40,000 in cash, 20,000 in-kind	2012-2013	50
D.A. Clausi, A. Wong, P. Fieguth, and H. Chen (co-PI)	Intelligent Skin Cancer Detection System OCE	300,000 in cash, 200,000 in-kind	2011-2013	25
A. Wong (PI)	Engineering Faculty Research Award (Research supplement) - University of Waterloo	1,200 in cash	2012-2013	100
A. Wong (PI)	Start-up Researcher Grant - University of Waterloo	75,000 in cash	2011	100

3.8 MEDIA COVERAGE

- M1 “Artificial intelligence may not need networks at all”, Network World, December, 2017.
- M2 “Lifesavers: Diagnosis driven by artificial intelligence (AI)”, CIHR Celebrating Health Research Storybook, November, 2017.
- M3 “New research in AI and cloud computing to make commuting smarter”, Smart Computing for Innovation (SOSCIP) News, November, 2017.
- M4 “Making artificial intelligence more private and portable”, Digital Journal, November, 2017.
- M5 “Tecnologia criada na Universidade de Waterloo promete liberar a IA da internet e da nuvem”, iMasters, November, 2017.
- M6 “New AI system can work without internet”, The Economic Times, November, 2017.
- M7 “New AI system can break away from internet and cloud computing, provide privacy”, The Indian Express, November, 2017.
- M8 “New Technology Makes Artificial Intelligence More Private and Portable”, ACM TechNews, November, 2017.
- M9 “Making Artificial Intelligence compact”, Live Mint News, November, 2017.
- M10 “New AI system can work without internet”, The Hindu, November, 2017.
- M11 “University of Waterloo: Artificial Intelligence Without Internet Now Possible”, The University Network News, November, 2017.
- M12 “New research in AI and cloud computing to make commuting smarter”, Smart Computing for Innovation (SOSCIP) News, November, 2017.
- M13 “Novel Technology Enables AI to Function without Internet”, Tech You n Me, November, 2017.
- M14 “New technology makes artificial intelligence more private and portable”, ScienceDaily, November, 2017.
- M15 “Making artificial intelligence more private and portable”, AAI AITopics, November, 2017.
- M16 “Internetloze AI Op Zakformaat”, De Ingenieur Magazine, November, 2017.
- M17 “New technology makes artificial intelligence more private and portable”, R & D Magazine, November, 2017.
- M18 “New technology could make AI work without internet, cloud”, Sify Finance, November, 2017.
- M19 “New technology makes artificial intelligence more private and portable”, Tech Xplore, November, 2017.
- M20 “New AI system can work without internet”, Money Control, November, 2017.
- M21 “New Technology Could Make AI Work Without Internet, Cloud”, News18, November, 2017.
- M22 “Erzwungene Evolution macht KI portabler”, Wallstreet Online, November, 2017.
- M23 “Why its no longer strange to talk to your home appliances”, Globe and Mail, October, 2017.
- M24 “Elucid Labs continues to garner attention as it brings its game-changing AI device to market”, Waterloo Chronicle, October, 2017.
- M25 “New software could make it easier to adopt and trust AI systems that set insurance premiums”, Canadian Underwriter, October, 2017.
- M26 “Waterloo research paves the way for use of complex AI in the financial sector”, Exchange Magazine, October, 2017.
- M27 “Building trust in AI”, Investment Executive, October, 2017.
- M28 “Biotechnology and new biomarkers help diagnose multiple diseases”, Sina, September, 2017.
- M29 “Cutting-edge technology combining medical imaging and AI, AIDA aims to detect skin cancer in its infancy”, HiTech Magazine, September, 2017.
- M30 “Inteligencia artificial ayuda a identificar cancer de piel precoz,” LabMedica, September, 2017.
- M31 “Novel AI imaging approach yields improved skin cancer diagnosis,” Healio Dermatology, September, 2017.
- M32 “ University of Waterloo medical technology startup named to Canadian innovation list,” Waterloo News,

September, 2017.

- M33 "Medical technology startup named to innovation list," Waterloo Engineering News, September, 2017.
- M34 "New Artificial Intelligent Used for Early Melanoma Detection," TrendinTech Magazine, September, 2017.
- M35 "Employing Artificial Intelligence to Detect Skin Cancer Earlier," Specialty Pharmacy Times, September, 2017.
- M36 "AI Is Now Helping Doctors Diagnose Skin Cancer Faster," Huffington Post, August, 2017.
- M37 "Artificial intelligence helps with skin cancer detection," Digital Journal, August, 2017.
- M38 "Artificial Intelligence May Help With Earlier Detection of Skin Cancer," The American Society of Clinical Oncology Post, August, 2017.
- M39 "Device can detect cancer," Waterloo Record, August, 2017.
- M40 "AI detects melanoma in earliest stages," Clinical Innovation and Technology Magazine, August, 2017.
- M41 "Canadians invent AI for early skin cancer screening," Digitimes Magazine Taiwan, August, 2017.
- M42 "AI can help skin cancer early diagnosis," BIOON, August, 2017.
- M43 "Une nouvelle technologie IA developpee pour detecter plus tot les cancers de la peau," ActulA, August, 2017.
- M44 "From dementia to skin cancer, artificial intelligence poised to change health care," DOTMed News, August, 2017.
- M45 "Skin Cancer News: Artificial intelligence helps with earlier detection of skin cancer," Youth Health Magazine, August, 2017.
- M46 "New tech detects cancer early," Innovators Magazine, August, 2017.
- M47 "Doctors could soon use AI-based systems to detect skin cancers early," International Business Times UK, August, 2017.
- M48 "AI system to help detect skin cancer in early stages," The Tribune, August, 2017.
- M49 "Artificial Intelligence Used to Diagnose Alzheimer's Disease," MedIndia News, August, 2017.
- M50 "La Inteligencia Artificial podra detectar el cancer de piel antes que los medicos," TekCrispy Magazine, August, 2017.
- M51 "Artificial intelligence to help detect early stage skin cancer," The Stack, August, 2017.
- M52 "AI Technology is the Next Step in Fast Cancer Detection," IEEE Engineering360, August, 2017.
- M53 "Artificial intelligence helps with earlier detection of skin cancer," ScienceDaily, August, 2017.
- M54 "Artificial Intelligence Imaging Research Facilitates Disease Diagnosis," Clinical Lab Products Magazine, July, 2017.
- M55 "From gaming to autonomous cars, NVIDIA shapes a fantastical future," Invest Ontario Success Story, July, 2017. (showcased evolutionary deep learning technology from my research group)
- M56 "AI With A Difference," WEAL Magazine, July, 2017.
- M57 "How Figure 1, The 'Instagram For Doctors' App, Plans To Introduce AI," Fast Company, June, 2017.
- M58 "Figure 1 se lanza a la Inteligencia Artificial," Milenio, June, 2017.
- M59 "Canadian Researchers Develop Low-Cost, Lens-Free Light-Field Microscope; Could Make Anatomic Pathology Labs Portable and More Affordable," Dark Daily, June, 2017.
- M60 "AI-powered microscope has no lens yet sees nanoparticles for pathologists," Health Imaging, June, 2017.
- M61 "Reading the minds of deep learning AI systems," Waterloo Stories, June, 2017.
- M62 "Lens-free microscope enables full-colour pathology at low cost," The Engineer, June, 2017.
- M63 "Artificial intelligence imaging research makes diagnosing disease easier," Technology Networks Magazine, June, 2017.
- M64 "Artificial intelligence imaging research makes diagnosing disease easier," Lab Manager Magazine, June, 2017.

- M65 "Artificial intelligence imaging research makes diagnosing disease easier," Exchange Magazine, June, 2017.
- M66 "Artificial intelligence imaging research makes diagnosing disease easier," University of Waterloo Media Release, June, 2017.
- M67 "Taking on Lake Eries Algae Monster: A look inside AquaHacking 2017," Water Institute News, June, 2017.
- M68 "Which countries and universities are leading on AI research?" Times Higher Education, May, 2017.
- M69 "How tech firms are racing to perfect conversational artificial intelligence," Canadian Business, May, 2017.
- M70 "The Great Equalizer," Maclean's Magazine, May, 2017.
- M71 "Seven wonders that will change your world," Waterloo Magazine, May, 2017.
- M72 "Group wins award at hockey analytics conference," Waterloo Engineering Media Release, May, 2017.
- M73 "Brain Drain North," Financial Post, March 27, 2017.
- M74 "Artificial intelligence and the Waterloo-Toronto tech supercluster," Waterloo Stories, January 28, 2017.
- M75 "Researchers edge out leading institutions to win AI award," Waterloo Engineering Research Media Release, December 16, 2016.
- M76 "University of Waterloo Engineering Rated Number One by Macleans' Magazine," SpokeTV News, November, 2016.
- M77 "The Best of the Physics arXiv (week ending June 25, 2016)," MIT Technology Review, June, 2016. (showcasing evolutionary deep intelligence)
- M78 "Cancer detection technology at University of Waterloo," The Morning Edition with Craig Norris, CBC Radio One, May, 2016.
- M79 "Prostate, lung cancer ID filter created at University of Waterloo," CBC News, May, 2016.
- M80 "Breakthrough tech helps doctors more accurately diagnose cancer," Waterloo Stories, May, 2016.
- M81 "Coded Hemodynamic Imaging," Focus Cantonese OMNI Television, May 4, 2016.
- M82 "Coded Hemodynamic Imaging," Focus Mandarin OMNI Television, May 4, 2016.
- M83 "Researchers honoured for advances in identifying cancer through imaging," Waterloo Engineering Research Media Release, March 31, 2016.
- M84 "It takes a village," Lab Business, January/February, 2016. (showcased CHI technology from my research group)
- M85 "'Selfie' under the skin: Mini camera tracking blood flow," Sina, February, 2016.
- M86 "Invent This Week: Day 3," Daily Planet (TV show on Discovery Channel), February, 2016. (showcased CHI technology)
- M87 "The selfie that really DOES get under your skin: Camera can track blood flow and show it pulsing through the body," Daily Mail, January, 2016.
- M88 "Imaging technology can spot heart problems at a glance," The Spectator, January, 2016.
- M89 "Single Blood Pulse Reading Meets its Waterloo," Intellectual Capitals, January, 2016.
- M90 "Touchless UW device monitors blood flow to look for abnormalities," The Waterloo Region Record, January, 2016.
- M91 "Whole-body imaging technology uses contactless tracking of blood flow," Gizmag Magazine, January, 2016.
- M92 "Canadian scientists invent portable device that can see blood flow in your veins to detect disease," International Business Times, January, 2016.
- M93 "Non-contact imaging device for monitoring blood flow," The Engineer, January, 2016.
- M94 "Now a body imaging device can help detect heart problems early," Deccan Chronicle, January, 2016.
- M95 "Touchless device can provide whole body blood flow monitoring," United Press International, January, 2016.
- M96 "New touchless device to better detect heart problems," Yahoo News!, January, 2016.
- M97 "New touchless device to detect heart problems early," Business Standard, January, 2016.
- M98 "Coded Hemodynamic Imaging: Dieses System macht den menschlichen Blutfluss sichtbar," Trends Der

Zukunft, January, 2016.

- M99 "Se puede predecir un ataque al corazón? Ese es el objetivo de este revolucionario dispositivo virtual," Prnoticias, January, 2016.
- M100 "Un système permet de monitorer le rythme cardiaque sans contact," Pourquoi Docteur, January, 2016.
- M101 "UW researchers out with new touchless device to prevent heart issues," 570 News, January, 2016.
- M102 "New touchless device makes earlier detection of heart problems possible," University of Waterloo Media Release, January, 2016.
- M103 "News in Artificial Intelligence and Machine Learning with Nathan Benaich", Medium, Nov 2015. (showcased discovery radiomics)
- M104 "Industry partnership leads to Distinguished Paper Award," Waterloo Engineering Research Media Release, June 8, 2015.
- M105 "No more sore fingers: hand-held device could make blood sugar testing less painful," Educating the Engineering of The Future, April, 2015.
- M106 "An exceptional EYE-dea," Waterloo Life Blog, March, 2015.
- M107 "Recognized excellence," Defining Tomorrow: 2014-2015 State of the University Report, University of Waterloo, 2015.
- M108 "Waterloo device could take the pain out of diabetics blood tests," Waterloo Stories, Feb, 2015.
- M109 "Grad student honoured for easier blood glucose testing," Eng-e-News, vol. 11, no. 10, Nov, 2014.
- M110 "Research Excellence Endorsed," WEAL Magazine, no. 60, Sept, 2014.
- M111 "Health Warriors: How researchers at the University of Waterloo are improving - and saving - lives," University of Waterloo Magazine, Spring 2014.
- M112 "Malaysia Airlines MH370: The challenges of a remote ocean search," CBC News, Mar 20, 2014 (provided expert opinion).
- M113 "Four University of Waterloo engineering professors named Canada Research Chairs," University of Waterloo Media Release, March 28, 2014.
- M114 "Making it harder for cancer to hide," Waterloo Stories, Jan, 2013.
- M115 "Improving Early Diagnosis to Save Lives," Centre for Bioengineering and Biotechnology Media Release, Jan, 2013.
- M116 "Taking Aim at Cancer," WEAL Magazine, no. 58, Sept, 2012.
- M117 "Cancer Screening Gets a Boost," Eng-e-News, vol. 9, no. 5, May 9, 2012.
- M118 "11 local researchers win provincial awards," The Waterloo Region Record, May 4, 2012.
- M119 "Our next generation of researchers gets a strong leg up from the province," Waterloo Engineering Research Media Release, May 4, 2012.
- M120 "Eight University of Waterloo researchers receive prestigious research grants," University of Waterloo Media Release, May 4, 2012.
- M121 "A Golden Future," University of Waterloo Engineering Annual Report, 2011.

4 SUPERVISION

Current students:

Name (Co-Supervisor)	Degree	Supervisory Period	Thesis Title and Comments
Zilong Zhong	Ph.D.	01/18-Now	Very deep autoencoders
William McNally	Ph.D.	01/18-Now	Computational intelligence for biomechanics
Rene Bidart	Ph.D.	01/18-Now	Deep pathology analysis
Devinder Kumar	Ph.D.	01/17-Now	Evolving network visualization and optimization for evolutionary deep intelligence (awarded OGS)
Audrey Chung (P. Fieguth)	Ph.D.	09/16-Now	Evolutionary deep intelligence for complex scene understanding (awarded NSERC CGS-D, Alumni Gold Medal)
Kaylen Pfisterer	Ph.D.	09/16-Now	Computational nutritional analysis (awarded NSERC PGS-D, SPIE Optics and Photonics Education Scholarship)
Jason Deglint	Ph.D.	09/16-Now	Computational hyperspectral imaging (awarded NSERC CGS-D)
Shahid Haider	Ph.D.	05/15-Now	Computational polarimetric imaging for glucose monitoring (awarded NSERC PGS-D, OGS)
Ibrahim Ben Daya (J. Yeow)	Ph.D.	09/15 -Now	Enhanced row-column ultrasound image reconstruction via a multi-penalty conditional random field model
Salman Khan (B. Tripp)	Ph.D.	01/17 -Now	Image inpainting using random field-guided deep neural networks
Andrew Hryniowski (P. Fieguth)	MASc	05/17-Now	Style Transfer via Adversarial Networks
Helmut Neher (D.A. Clausi)	MASc	09/16-Now	Deep hockey analytics
Sunny Gurm	MASc	05/16-Now	Automatic arm localization using multi-spectral imaging
Amir Karimi (A. Ghodsi)	MMath	09/16-Now	Random deep intelligence for efficient scene understanding (awarded OGS)
Avery Ma (D.A. Clausi)	MASc	05/16-Now	Multi-projector super-resolution (awarded OGS)
Sara Greenberg (J. McPhee)	MASc	09/15-Now	3D tracking for robot-guided rehabilitation
Meng Xi Zhu (D.A. Clausi)	MASc	09/14-Now	Concurrent three-dimensional reconstruction and auto-calibration for camera ensembles (awarded NSERC CGS-M)
Dino Kabiljagic (D.A. Clausi)	MASc	09/14-Now	Hyperspectral data analysis from concurrent multi-view, stereo-polarimetric imaging system

Past students:

Name (Co-Supervisor)	Degree	Supervisory Period	Thesis Title and Comments
Robert Amelard (D.A. Clausi)	Ph.D.	09/13-07/17	Coded hemodynamic imaging system for clinical and physiotherapy assessment (awarded NSERC CGS-D, Carl A. Pollock Postgraduate Fellowship, NSERC PDF, Alumni Gold Medal)
Mohammad Javad Shafiee (P. Fieguth)	Ph.D.	09/13-05/17	Efficient Bayesian inference via Stochastically fully-connected conditional random fields (current PDF at University of Waterloo)
Ameneh Boroomand (K. Bizheva)	Ph.D.	09/12-05/17	Statistical modeling and reconstruction of UHR-SDOCT (current PDF at University of Waterloo)
Audrey Chung	MASc	09/14-08/16	Quantitative tissue modeling and analysis from MP-MRI and histopathology for radiomics-driven prostate cancer detection and localization (awarded NSERC CGS-M, Alumni Gold Medal)(Currently Ph.D. student at University of Waterloo)
Edward Li	MASc	09/14-08/16	Reconstruction of compressed medical imaging data via multilayered stochastically-connected random fields (awarded OGS)
Francis Li (J. Zelek)	MASc	09/14-08/16	Three-dimensional reconstruction from compact stereo imaging systems (awarded OGS)
Jason Deglint (D.A. Clausi)	MASc	09/14-08/16	Hyperspectral data estimation and reconstruction from concurrent multiview, stereo-polarimetric imaging system (awarded QE-II scholarship)(Currently Ph.D. student at University of Waterloo)
Brendan Chwyl (D.A. Clausi)	MASc	09/14-08/16	Robust facial analysis for affective computing
Daniel Cho (D.A. Clausi)	Ph.D.	09/12-08/16	Multi-modal classification of melanoma from imaging and clinical features", (awarded NSERC CGS-D)(Currently Medical Physicist student at McGill University)
Rafael Sachett Medeiros (J. Scharcanski)	Ph.D.	08/15-08/16	High-resolution texture-based image segmentation via large-scale graphical modeling (Currently at UFGS)
Farnoud Kazemzadeh (D.A. Clausi)	Ph.D.	09/12-04/16	Multi-spectral polarimetric imaging apparatus for skin disease analysis (awarded QE-II scholarship)(Currently CEO at Elucid Labs Inc.)
Fan Li (D.A. Clausi)	Ph.D.	05/13-07/15	Automated Remote Sensing Image Interpretation with Limited Labeled Training Data (Currently PDF at University of Guelph)
Shahid Haider (D.A. Clausi)	MASc	05/13-04/15	Automatic calibration and interpretation of multi-spectral polarimetric imaging data (awarded OGS, Norman Edmund Inspiration Award, Sandford Fleming Foundation Award) (Currently Ph.D. student at University of Waterloo)
Ibrahim Ben Daya (J. Yeow)	MASc	01/14-04/15	Characterization of row-column ultrasound imaging systems (Currently Ph.D. student at University of Waterloo)

Name (Co-Supervisor)	Degree	Supervisory Period	Thesis Title and Comments
Dorothy Lui	MASc	09/12-08/14	Prostate gland segmentation from multi-parametric MRI data (awarded NSERC CGS-M, QE-II, Outstanding Achievement in Graduate Studies designation) (Currently algorithms developer at Synaptic Medical)
Andrew Cameron	MASc	05/12-08/14	Multi-parametric prostate cancer diagnostic system (Currently algorithm developer at SPORT-LOGiQ)
Robert Amelard (D.A. Clausi)	MASc	09/11-08/13	Automatic classification of skin cancers from dermatological photos (awarded NSERC CGS-M) (Currently Ph.D. student at University of Waterloo)
Jeff Glaister (D.A. Clausi)	MASc	09/11-08/13	Automatic segmentation of skin lesions from dermatological photos (awarded NSERC CGS-M, CGS-D, Alumni Gold Medal) (Currently Ph.D. student at Johns Hopkins University)
Shimon Schwartz (D.A. Clausi)	Ph.D.	05/11-04/13	Compressed sensing for medical imaging applications (Currently Industrial Technology Adviser at National Research Council (NRC); Adjunct Professor in Systems Design Engineering at University of Waterloo)
Chenyi Liu (P. Fieguth)	Ph.D.	05/11-08/12	Sparse medical image reconstruction using a homotopic optimization framework (Currently Information Technologist at Bank of China)
Aanchal Jain (P. Fieguth)	MASc	09/11-12/12	Multi-scale stochastic modeling methods for images (Currently Image Processing Engineer at Adobe)
Khalil Fergani	MASc	09/12-08/13	Saliency detection in natural images (Currently Product Manager for circuit protection devices at Siemens)

Research Faculty and Postdoctoral fellows:

Name (Co-Supervisor)	Role	Supervisory Period	Thesis Title and Comments
Chao Jin	Research Assistant Professor	09/16-Now	Intelligent water assessment systems
Mohammad Javad Shafiee	Research Assistant Professor	09/17-Now	Efficient deep learning
Farzad Khalvati	Research Assistant Professor (jointly with Sunnybrook Research Institute)	09/14-Now	Evolving radiomics-driven prostate cancer analysis
Mohammad Javad Shafiee	PDF	03/17-08/17	Evolutionary deep intelligence
Ameneh Boroomand	PDF	03/17-Now	Intelligent human behaviour detection
Linlin Xu	PDF	05/14-Now	Semi- and Weakly-supervised Remote sensing analysis
Elnaz Barshan	PDF	11/16-04/16	Time-varying Evolutionary Deep Intelligence (Currently Research Scientist at Synaptive Medical)
Hicham Sekkati	PDF	01/15-04/16	Dynamic geometry rectification and video super-resolution for digital projection systems (Currently Research Officer at NRC)
Christian Scharfenberger	PDF	01/13-12/14	Multi-scale textural models for visual saliency detection (Currently Project Manager and Team Lead at Halla DAS Lab Europe GmbH; Adjunct Professor in Systems Design Engineering at University of Waterloo)
Parthipan Siva	PDF	01/13-12/13	Object localization and recognition based on spatial-temporal sparse self-similarity (Currently Computer Vision Researcher at Aimetis Corp.)
Amir Shabani	PDF	05/12-04/13	Robust human body model extraction using camera data (Currently NSERC Industrial Research Chair for Colleges (IRCC) and Professor at George Brown College)

4.1 OTHER SUPERVISION

Research developers (7)

- Parthipan Siva, "Video tracking and information extraction for sports performance analysis", Research Developer, Fall 2013-Spring 2014. (Currently Computer Vision Researcher at Aimetis Corp.).
- Amir Shabani, "Video tracking and information extraction for sports performance analysis", Research Developer, Fall 2013-Spring 2014. (Currently NSERC Industrial Research Chair for Colleges (IRCC) and Professor at George Brown College).
- Mehrad Karamlou, "Vision-based posture extraction for physiotherapy rehabilitation", Research Developer, Spring 2012-Winter 2013. (Currently User Experience Architect at Focal Healthcare).

- Colin Heics, “Vision-based body tracking for physiotherapy rehabilitation”, Research Developer, Spring 2012-Winter 2013. (Currently Product Designer at Desire2Learn).
- Abdi Kahiye, “Vision-based body tracking for physiotherapy rehabilitation”, Research Developer, Spring 2012-Winter 2013.
- Amen Ali Modhafar Hussain-Jamil, “Multi-modal registration and analysis of prostate gland”, Research Developer, Spring 2012-Spring 2014. (Currently Team Lead at Focal Healthcare).
- Wes Campaigne, “Multi-parametric prostate cancer analysis”, Research Developer, May 2011-May 2012. (Currently Software Developer at Tulip Retail).

Visiting Scholars (5)

- Harish Bhaskar, “Computational crowd analysis”, Visiting Scholar, Spring 2016.
- Caifeng Wang, “Statistical approach to joint SAR decorrelation and despeckling”, Visiting Scholar, Fall 2014-Winter 2016.
- Yongfeng Cao, “Advanced SAR image processing”, Visiting Scholar, Fall 2014-Winter 2016.
- Hongbo Bi, “Invisible digital watermarking”, Visiting Scholar, Fall 2014-Winter 2016.
- Fu Hui, “Advanced aerial image processing”, Visiting Scholar, Fall 2014-Winter 2016.

B.A.Sc. full-time co-op research assistants (11)

1. Megan Tran, “Coded hemodynamic imaging for oxygen flow imaging”, Undergraduate Co-op Research Assistant, Spring 2017. **(awarded NSERC USRA)**
2. Alexander Maclean, “Compact spectrometer via high-throughput computational slits”, Undergraduate Co-op Research Assistant, Winter 2017. **(awarded NSERC USRA)**
3. Linda Wang, “Unified imaging visualization platform for heterogenous cameras”, Undergraduate Co-op Research Assistant, Fall 2016. **(awarded NSERC USRA)**
4. Vignesh Sivan, “Novel demultiplexing multispectral microscopy system”, Undergraduate Co-op Research Assistant, Spring 2016. **(awarded NSERC USRA)**
5. Emily Kuang, “Novel lensfree multispectral microscopy system”, Undergraduate Co-op Research Assistant, Spring 2016. **(awarded NSERC USRA)**
6. Mackenzie Wilson, “Novel multi-camera coded hemodynamic imaging system”, Undergraduate Co-op Research Assistant, Spring 2016. **(awarded NSERC USRA)**
7. Kuil Schoneveld, “Computational multispectral microscopy”, Undergraduate Co-op Research Assistant, Winter 2016.
8. Lee Yu Wu, “Novel 4D lensfree microscope for imaging micro-organisms”, Undergraduate Co-op Research Assistant, Spring 2015. **(awarded NSERC USRA)**
9. Jason Leung, “Novel long-range transmittance cardiorespiratory monitoring system”, Undergraduate Co-op Research Assistant, Spring 2015. **(awarded NSERC USRA)**
10. Audrey Chung, “Sample-guided saliency from natural images”, Undergraduate Co-op Research Assistant, Spring 2013. **(awarded NSERC USRA)**

11. Edward Li, "Fusion and Assimilation of passive microwave and infrared sensing data for measurement of ice thickness", Undergraduate Co-op Research Assistant, Fall 2012. **(awarded NSERC USRA)**

B.A.Sc. undergraduate research assistants (75)

1. Linda Wang, "Cross-platform deep learning", Undergraduate Research Assistant, Fall 2017.
2. Hao Miao Yu, "Mobile deep learning", Undergraduate Research Assistant, Fall 2017. **(awarded President's Research Award)**
3. Saba Ketabchi, "Compensated magnetic resonance spectroscopy", Undergraduate Research Assistant, Fall 2017. **(awarded President's Research Award)**
4. Jesse Won, "Enhanced magnetic resonance spectroscopy", Undergraduate Research Assistant, Fall 2017. **(awarded President's Research Award)**
5. Gary Zhang, "Intelligent soccer analytics", Undergraduate Research Assistant, Fall 2017.
6. Nina Thanh Phan, "Computational water imaging", Undergraduate Research Assistant, Fall 2017. **(awarded President's Research Award)**
7. Nathan Duarte, "Multi-view spectral lightfield fusion microscopy", Undergraduate Research Assistant, Fall 2017. **(awarded President's Research Award)**
8. Andrea Sabo, "Portable computational thermal imaging", Undergraduate Research Assistant, Fall 2017. **(awarded President's Research Award)**
9. Jason Pu, "Deep semantic labeling", Undergraduate Research Assistant, Fall 2017. **(awarded President's Research Award)**
10. Hillary Ngai, "Intelligent thermal image analysis", Undergraduate Research Assistant, Fall 2017.
11. Megan Tran, "Coded hemodynamic imaging for oxygen flow imaging", Undergraduate Research Assistant, Fall 2017.
12. Xiang Bo, "Deep object detector optimization", Undergraduate Research Assistant, Spring 2017.
13. Chris Zhang, "Deep segmentation", Undergraduate Research Assistant, Spring 2017.
14. Liam Coleman-Aulenbach, "Deep Object Detectors", Undergraduate Research Assistant, Spring 2017.
15. Anna Dong, "Computational magnetic resonance spectroscopy", Undergraduate Research Assistant, Winter 2017.
16. Linda Wang, "Color spectral lightfield fusion microscopy", Undergraduate Research Assistant, Winter 2017.
17. Angela Chao, "Computational multispectral microscopy", Undergraduate Research Assistant, Winter 2017. **(awarded President's Research Award)**
18. Emily Kuang, "Compact computational spectroscopy system", Undergraduate Research Assistant, Fall 2016. **(awarded President's Research Award)**
19. Mackenzie Wilson, "Multispectral coded hemodynamic imaging system", Undergraduate Research Assistant, Fall 2016. **(awarded President's Research Award)**
20. Mikaela MacMahon, "Novel NIR-SWIR coded hemodynamic imaging system", Undergraduate Research Assistant, Fall 2016. **(awarded President's Research Award)**

21. Stacey Ilioukhina, "Compact computational lightfield fusion microscopy", Undergraduate Research Assistant, Fall 2016. **(awarded President's Research Award)**
22. Jad Hamawi, "Computational lightfield fusion microscopy reconstruction", Undergraduate Research Assistant, Fall 2016.
23. Kuil Schoneveld, "Computational multispectral microscopy", Undergraduate Research Assistant, Spring 2016.
24. Sam Newhook, "Intelligent muscle segmentation from ultrasound images", Undergraduate Research Assistant, Spring 2016.
25. Sichen Zhao, "Real-time tomographic reconstruction for spectral lightfield fusion nanoscopy", Undergraduate Research Assistant, Spring 2016.
26. Daniel Min, "Calibration for chiral polarimetry", Undergraduate Research Assistant, Spring 2016.
27. Bill Lin, "Motion-compensated coded hemodynamic imaging for hemodynamics measurement", Undergraduate Research Assistant, Winter 2016.
28. Vincent Young, "Computer-aided prostate segmentation from MRI images", Undergraduate Research Assistant, Fall 2015. **(awarded President's Research Award)**
29. Herman Grewal, "Computer-aided tumor segmentation from lung computed tomography images", Undergraduate Research Assistant, Fall 2015. **(awarded President's Research Award)**
30. Jason Leung, "Novel long-range transmittance cardiorespiratory monitoring system", Undergraduate Research Assistant, Fall 2015. **(awarded President's Research Award)**
31. Yu Mei, "Laser Spectral Light-field Fusion Microscopy", Undergraduate Research Assistant, Fall 2015.
32. David Wang, "Computer-aided skin lesion segmentation from dermatological photographs", Undergraduate Research Assistant, Fall 2015.
33. Adam Heins, "Large-scale graphical model based processing", Undergraduate Research Assistant, Spring 2015.
34. Elizabeth Yang, "Computer-aided tumor feature characterization from lung computed tomography images", Undergraduate Research Assistant, Spring 2015.
35. Bill Lin, "Non-contact reflectance spatial PPG for hemodynamics measurement", Undergraduate Research Assistant, Spring 2015.
36. Meghan Yabsley, "Computational lung nodule analysis from computed tomography images", Undergraduate Research Assistant, Winter 2015. **(awarded President's Research Award)**
37. Yu Mei, "Spectral Light-field Fusion Microscopy", Undergraduate Research Assistant, Winter 2015.
38. Christopher Ngan, "Emotion classification from video", Undergraduate Research Assistant, Winter 2015.
39. Mahimna Dave, "Large-scale graphical modeling using GraphChi", Undergraduate Research Assistant, Winter 2015.
40. Avery Ma, "Large-scale graphical inference using GraphChi", Undergraduate Research Assistant, Winter 2015.
41. Bill Lin, "Non-contact spatial PPG for hemodynamics measurement", Undergraduate Research Assistant, Fall 2014. **(awarded President's Research Award)**

42. Elizabeth Yang, "Saliency-based video summarization", Undergraduate Research Assistant, Fall 2014.
43. Aiden Lee, "Eye tracking for intelligent eye behaviour monitoring", Undergraduate Research Assistant, Fall 2014. **(awarded President's Research Award)**
44. Atef Chaudhury, "Feature extraction for intelligent eye behaviour monitoring", Undergraduate Research Assistant, Fall 2014. **(awarded President's Research Award)**
45. Felicity Yang, "Efficient switching active light source for skin imaging", Undergraduate Research Assistantship, Spring 2014.
46. Christopher Luc, "Improved video tracking for robust video analytics", Undergraduate Research Assistantship, Spring 2014.
47. Naeem Talukdar, "Improved video saliency for robust video analytics", Undergraduate Research Assistantship, Spring 2014.
48. Amir-Hossein Karimi, "Invariant background modeling for robust video analytics", Undergraduate Research Assistantship, Spring 2014.
49. Audrey Chung, "Inference of respiratory rate from video", Undergraduate Research Assistant, Winter 2014.
50. Daxal Desai, "Probabilistic classification for prostate cancer analysis", Undergraduate Research Assistant, Winter 2014.
51. Brendan Chwyl, "Computer-aided eye tear detection", Undergraduate Research Assistant, Winter 2014.
52. Elizabeth Yang, "Spatio-temporal saliency detection", Undergraduate Research Assistant, Winter 2014.
53. Edward Li, "Computer-aided eye tear detection", Undergraduate Research Assistant, Winter 2014.
54. Jennifer Blight, "Endorectal MRI Denoising", Undergraduate Research Assistant, Fall 2013.
55. Edward Li, "Super-resolved optical coherence tomography imaging", Undergraduate Research Assistant, Fall 2013.
56. James Yeh, "Modeling of relationship between skin reflectance and melanin concentrations", Undergraduate Research Assistant, Spring 2013.
57. Hassan Reznavi, "Robust feature descriptors for image analysis", Undergraduate Research Assistant, Spring 2013.
58. Kirusha Srimohanarajah, "Semi-automatic prostate gland segmentation", Undergraduate Research Assistant, Spring 2013.
59. Rafay Khan, "Intelligent segmentation for medical images", Undergraduate Research Assistant, Spring 2013.
60. Michael Weingert, "Intelligent prostate gland contouring", Undergraduate Research Assistant, Winter 2013.
61. Shahid Haider, "Single-acquisition Multi-modal camera system", Undergraduate Research Assistant, Winter 2013.
62. Victor Gan, "Noise-compensated Confocal Fluorescence Microscopy", Undergraduate Research Assistant, Winter 2013.
63. Edward Li, "Fusion and Assimilation of passive microwave and infrared sensing data for measurement of ice thickness", Undergraduate Research Assistant, Winter 2013.

64. Victor Gan, "Computer-aided cancer localization tools ", Undergraduate Research Assistant, Fall 2012.
65. Anselm Lau, "Computer-aided data calibration tools for cancer imaging", Undergraduate Research Assistant, Fall 2012.
66. Betty Ni, "Super-resolved OCT imaging", Undergraduate Research Assistantship, Fall 2012.
67. Dorothy Lui, "Multi-parametric prostate gland segmentation system", Undergraduate Research Assistant, Spring 2012.
68. Grace Ku, "Platform for MRI prostate cancer diagnosis", Undergraduate Research Assistantship, Spring 2012.
69. Andrew Cameron, "Multi-parametric prostate cancer diagnostic system", Undergraduate Research Assistantship, Winter 2012.
70. Betty Ni, "Multi-parametric prostate cancer diagnostic system", Undergraduate Research Assistantship, Winter 2012.
71. Mohan Thomas, "Motion artifact correction and rectification of volumetric ultrahigh-resolution optical coherence tomograms", Undergraduate Research Assistantship, Fall 2011.
72. Amir-Hossein Karimi, "Automated detection and counting of keratocytes in human corneal stroma from ultrahigh-resolution optical coherence tomograms", Undergraduate Research Assistantship, Spring 2011.
73. Brenda Chan, Oliver Chan, Anselm Lau, Jason Tang, and Ting Zhang, "Universal hand gesture remote-control", Third-year Design Group, 2012.
74. Angus Leigh (under Dr. David A. Clausi), "Performance analysis of image denoising in relation to various noise estimates", Undergraduate Research Assistantship, Spring 2010.
75. Alexandru Amariutei (under Dr. David A. Clausi), "Monte Carlo video denoising", Undergraduate Research Assistantship, Spring 2009.

5 PROFESSIONAL ACTIVITIES

5.1 SOCIETY MEMBERSHIPS

- **Professional Engineer**, Professional Engineers of Ontario (PEO) (2010-Present) [with Certificate of Authorization]
- Institute of Electrical and Electronics Engineers (IEEE) (Senior Member) (2005-Present)
 - Voting member on IEEE Communication Society Multimedia Communications Technical Committee (2011-Present)
 - Member on IEEE Computer Society Technical Committee on Pattern Analysis and Machine Intelligence (2015-Present)
 - Member on IEEE Computer Society Technical Committee on Multimedia Computing (2016-Present)
- Association for Computing Machinery (ACM) (2005-Present)
- Kitchener-Waterloo Vision and Imaging Society (KW-VIS) (**Founding Co-President**)(2013-Present)
- Canadian Game Studies Association (CGSA) (2007-Present)
- Canadian Image Processing and Pattern Recognition Society (CIPPRS) (2010-Present)
- Waterloo Artificial Intelligence Institute (**Founding Member and Steering Committee Member**)(2016-Present)
- Centre for Bioengineering and Biotechnology (2012-Present)
- Water Institute (2015-Present)

5.2 EDITORIAL POSITIONS

- Section Editor, BMC Medical Imaging, Springer. (2015-Present)
- Section Editor, Encyclopedia of Biomedical Engineering, Elsevier. (2016-Present)
- Co-Editor-in-Chief, Journal of Computational Vision and Imaging Systems (2015-Present)
- Associate Editor, IEEE Canadian Journal of Electrical and Computer Engineering. (2013-Present)
- Associate Editor, BMC Medical Imaging, Springer. (2013-2015)
- Editorial board member, International Scholarly Research Notices. (2014-Present)
- Editorial board member, ISRN Biomedical Imaging. (2012-2014)
- Editorial board member, ISRN Signal Processing. (2010-2014)
- Editorial board member, Journal of the Canadian Game Studies Association. (2008-Present)

5.3 CONFERENCE ORGANIZATION

- Conference co-chair, Annual Conference on Vision and Imaging Systems (CVIS 2015, 2016, 2017)
- Co-chair, Workshop on Machine Learning for Medical Care at International Conference on Image Analysis and Recognition (ICIAR) (2017)
- Scientific committee member, International Conference on Inverse Problems in Engineering (ICIPE 2017)
- Technical program committee member, The 19th CSI International Symposium on Artificial Intelligence and Signal Processing (AISP 2017)
- Session chair, International Conference on Inverse Problems in Engineering (ICIPE 2017)
- Technical program committee member, International Conference on Single Processing and Data Mining (ICSPDM 2015)
- Technical program committee member, International Symposium on Computer Vision and the Internet (VisionNet 2015)
- Technical program committee member, International Conference on Computer Vision and Image Analysis (ICCVIA 2015)
- Technical program committee member, International Conference on Computer Applications and Aided Diagnosis (ICCAAD 2014)
- Technical program committee member, Conference on Computer and Robot Vision (CRV 2012, 2013, 2014, 2015, 2016, 2017)
- Technical program committee member, International Conference on Electronic & Mechanical Engineering and Information Technology, 2011
- Technical program committee member, The 3rd International Conference on Internet Technology and Applications (iTAP 2012)

5.4 SCIENTIFIC JOURNAL AND CONFERENCE REVIEW

- IEEE Transactions on Medical Imaging.
- IEEE Transactions on Image Processing.
- IEEE Transactions on Biomedical Engineering.
- IEEE Journal of Biomedical and Health Informatics.
- IEEE Journal on Selected Areas in Communications.
- IEEE Journal of Selected Topics in Earth Observations and Remote Sensing.
- IEEE Transactions on Geoscience and Remote Sensing.
- IEEE Signal Processing Letters.
- IEEE Geoscience and Remote Sensing Letters.
- IEEE Canadian Journal of Electrical and Computer Engineering
- Nature Scientific Reports, Nature Publishing Group.

- Optics Express, Optical Society of America.
- Optics Engineering, Society of Photo-Optical Instrumentation Engineers (SPIE).
- Journal of the Optical Society of America A, Optical Society of America.
- Pattern Recognition Letters, Elsevier.
- Signal Processing: Image Communication, Elsevier.
- Signal Processing, Elsevier.
- Journal of Visual Communication and Image Representation, Elsevier.
- Biomedical Signal Processing and Control, Elsevier.
- Computer and Geoscience, Elsevier.
- Information Fusion, Elsevier.
- Journal of the Franklin Institute, Elsevier.
- BMC Medical Imaging, Springer.
- Machine Vision and Applications, Springer.
- Signal, Image and Video Processing Journal, Springer.
- Journal of Signal Processing Systems, Springer.
- Journal of Electrical and Computer Engineering.
- Journal of Ophthalmology.
- EURASIP Journal on Image and Video Processing.
- ISRN Signal Processing.
- Advances in Multimedia.
- Current Medical Imaging Reviews, Bentham Science.
- Journal of Spectral Imaging.
- An Introductory Guide to the Emerging Areas of Digital Image Processing (book), IConcept Press Ltd.
- Multivariate Statistical Modeling in Engineering and Management (book), CRC Press.
- International Journal of Image and Graphics, World Scientific.
- International Journal of Pattern Recognition and Artificial Intelligence, World Scientific.
- Remote Sensing, Molecular Diversity Preservation International (MDPI).
- International Journal of Open Problems in Computer Science and Mathematics.
- International Journal of Optomechatronics, Taylor and Francis.
- Journal of Canadian Game Studies Association.
- British Machine Vision Conference (BMVC), 2015, 2016, 2017.

- IEEE International Symposium on Geoscience and Remote Sensing (IEEE IGARSS), 2009, 2010.
- IEEE International Conference on Image Processing (IEEE ICIP), 2008, 2011.
- IEEE International Conference on Semantic Computing (IEEE ICSC), 2008.
- International Symposium on Visual Computing, 2011.
- IEEE Canadian Conference on Electrical and Computer Engineering (IEEE CCECE), 2008, 2011.
- The 34th Annual Conference of the IEEE Industrial Electronics Society (IEEE IECON), 2008.
- International Symposium on Computer Vision and the Internet (VisionNet), 2015.

5.5 GRANT REVIEW

- NSERC Discovery Grants.
- Canada Research Chair Grants.
- Fonds de recherche Nature et technologies Establishment de nouveaux chercheurs universitaires.