

Curriculum Vitae

Alexander Wong, P.Eng.

Canada Research Chair in Medical Imaging Systems
Associate Professor, Department of Systems Design Engineering
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1 PERSONAL DATA

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1.1 EDUCATION

University of Waterloo, Waterloo, ON 2007-2010

Ph.D. in Systems Design Engineering

Thesis: "Probabilistic complex phase representation objective function for multimodal image registration"

University of Waterloo, Waterloo, ON 2005-2007

M.A.Sc. in Electrical and Computer Engineering

Thesis: "Low Cost Visual/Inertial Hybrid Motion Capture System for Wireless 3D Controllers"

University of Waterloo, Waterloo, ON, Canada 2000-2005

B.A.Sc. Honours in Computer Engineering

1.2 ACADEMIC AND INDUSTRIAL WORK EXPERIENCE

University of Waterloo, Waterloo, ON 2013-Now

Canada Research Chair in Medical Imaging Systems (Tier II)

Schlegel Research Institute for Aging, Waterloo, ON 2015-Present

Research Scientist

University of Waterloo, Waterloo, ON 2011-Now

Associate Professor, Dept. of Systems Design Engineering (July 2016-Present)

Assistant Professor, Dept. of Systems Design Engineering (May 2011-June 2016)

Cross Appointment, David R. Cheriton School of Computer Science (Dec 2016-)

Cross Appointment, Department of Mechanical and Mechatronics Engineering (June 2015-)

Sunnybrook Health Sciences Centre, Toronto, ON 2010-2011

NSERC Postdoctoral Fellow, Dept. of Medical Biophysics

Focus: Computerized cancer analysis of multivariate prostate magnetic resonance imagery

1.3 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 micro-tomography (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 ultra-wide field-of-view synthetic aperture light-field micro-tomography (UF-SALM)
 - 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 Student Paper Award <i>Ottawa Hockey Analytics Conference, Ottawa</i> | May 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 |

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|---|-------------------------------------|
| 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: 28, i10-index: 81)

| | Publications | IEEE | Citations |
|----------------------------|--------------|------------|-------------|
| Patents | 4 | - | - |
| Patent Applications | 17 | - | - |
| Book Chapters | 2 | - | - |
| Journal papers | 156 | 51 | - |
| Conference papers | 206 | 85 | - |
| Non-refereed contributions | 24 | - | - |
| Total | 409 | 136 | 3435 |

3.1 REFEREED JOURNAL CONTRIBUTIONS

- J1 F. Li*, L. Xu**, A. Wong, and D. Clausi, "A Region-Based Self-Training Algorithm applied to Hyperspectral Image Classification and Segmentation", IEEE Transactions on Geoscience and Remote Sensing, 2017.
- J2 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.
- J3 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.
- J4 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.
- J5 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.
- J6 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.
- J7 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.
- J8 F. Kazemzadeh* and A. Wong, "Laser Light-field Fusion for Wide-field Lensfree On-chip Phase Contrast Microscopy of Nanoparticles", Nature Scientific Reports, 2016.
- J9 R. Amelard*, D. Clausi, and A. Wong, "Spatial probabilistic pulsatility model for enhancing photoplethysmographic imaging systems", Journal of Biomedical Optics, 2016.
- J10 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.
- J11 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.
- J12 F. Kazemzadeh* and A. Wong, "Resolution- and throughput-enhanced spectroscopy using high-throughput computational slit", Optics Letters, 2016.

- J13 M. Shafiee*, P. Fieguth, and A. Wong, "Deep Randomly-connected Conditional Random Fields For Image Segmentation", IEEE Access Journal, 2016.
- J14 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.
- J15 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.
- J16 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.
- J17 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.
- J18 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.
- J19 M. Shafiee*, P. Siva**, and A. Wong, "StochasticNet: Forming Deep Neural Networks via Stochastic Connectivity", IEEE Access Journal, 2016.
- J20 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.
- J21 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.
- J22 M. Shafiee*, P. Fieguth, and A. Wong, "StochasticNet in StochasticNet", Journal of Computational Vision and Imaging Systems, 2016.
- J23 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.
- J24 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.
- J25 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.
- J26 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.
- J27 A. Ma*, F. Li*, and A. Wong, "Depth from Defocus via Active Quasi-random Point Projections", Journal of Computational Vision and Imaging Systems, 2016.
- J28 E. Kuang*, F. Kazemzadeh*, and A. Wong, "Enhanced Smartphone Spectroscopy via High-throughput Computational Slit", Journal of Computational Vision and Imaging Systems, 2016.
- J29 A. Boroomand*, J. Deglint*, and A. Wong, "Bayesian Compensated Microscopy", Journal of Computational Vision and Imaging Systems, 2016.
- J30 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.
- J31 S. Greenberg* and A. Wong, "Art from Algorithms: Saliency-Guided Digital Projections", Journal of Computational Vision and Imaging Systems, 2016.
- J32 P. Dash, A. Mishra, and A. Wong, "Deep Quality: A Deep No-reference Quality Assessment System", Journal of Computational Vision and Imaging Systems, 2016.
- J33 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.
- J34 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.
- J35 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.
- J36 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.
- J37 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.
- J38 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.
- J39 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.
- J40 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.
- J41 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.
- J42 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.
- J43 A. Cameron*, F. Khalvati**, A. Wong, and M. Haider, "MAPS: A Quantitative Radiomics Approach for Prostate Cancer Detection", IEEE Transactions on Biomedical Engineering, 2015.
- J44 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.
- J45 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]**
- J46 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.
- J47 M. Shafiee*, Z. Azimifar, and A. Wong, "A Deep-structured Conditional Random Field Model for Object Silhouette Tracking", PLoS ONE, 2015.
- J48 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.

- J49 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.
- J50 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.
- J51 R. Sachett Medeiros, J. Scharcanski, and A. Wong, "Image Segmentation via Stochastic Regional Texture Appearance Models", *Computer Vision and Image Understanding*, 2015.
- J52 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.
- J53 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.
- J54 A. Wong and X. Wang, "Bayesian Residual Transform for Signal Processing", *IEEE Access Journal*, 2015.
- J55 A. Wong, X. Wang, and M. Gorbet, "Bayesian-based deconvolution fluorescence microscopy using dynamically updated nonparametric nonstationary expectation estimates", *Nature Scientific Reports*, 2015.
- J56 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.
- J57 A. Wong, M. Shafiee*, P. Siva, and X. Wang, "A deep-structured fully-connected random field model for structured inference", *IEEE Access Journal*, 2015.
- J58 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.
- J59 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.
- J60 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.
- J61 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.
- J62 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.
- J63 F. Kazemzadeh*, A. Wong, B. Behr, and A. Hajian, "Depth Profilometry via Multiplexed Optical High-coherence Interferometry", *PLoS ONE*, 2015.
- J64 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.
- J65 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.
- J66 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.
- J67 C. Wang, L. Xu, D. Clausi, and A. Wong, "A Bayesian Joint Decorrelation and Despeckling Approach for Speckle Reduction of SAR Images", *Vision Letters*, 2015.
- J68 E. Barshan, P. Fieguth, and A. Wong, "Multi-neighborhood Convolutional Networks", *Vision Letters*, 2015.
- J69 D. Cho*, D. Clausi, and A. Wong, "Dermal Radiomics for Melanoma Screening", *Vision Letters*, 2015.

- J70 R. Amelard*, J. Leung*, D. Clausi, and A. Wong, "A Portable Plug-and-Play Imaging System for Physiological Monitoring", *Vision Letters*, 2015.
- J71 S. Haider*, F. Kazemzadeh, D. Clausi, and A. Wong, "An Integrated Systems Design Framework for Computational Polarimetry", *Vision Letters*, 2015.
- J72 E. Li*, M. Shafiee*, A. Boroomand*, F. Khalvati**, M. Haider, and A. Wong, "Compensated Diffusion Magnetic Resonance Imaging", *Vision Letters*, 2015.
- J73 M. Shafiee*, P. Siva, P. Fieguth, and A. Wong, "Domain Adaptation and Transfer Learning in StochasticNets", *Vision Letters*, 2015.
- J74 F. Kazemzadeh* and A. Wong, "Lens-free Multi-Laser Spectral Light-Field Fusion Microscopy", *Vision Letters*, 2015.
- J75 J. Deglint*, F. Kazemzadeh, A. Wong, and D. Clausi, "Numerical Spectral Demultiplexing Microscopy of Measurements from an Anatomical Specimen", *Vision Letters*, 2015.
- J76 J. Deglint*, A. Gawish, K. Zuj, A. Wong, D. Clausi, and R. Hughson, "Active Contours for Measuring Arterial Wall Diameter of Astronauts from Ultrasound Images", *Vision Letters*, 2015.
- J77 A. Boroomand*, K. Bizheva, and A. Wong, "A Conditional Random Field Weakly Supervised Segmentation Approach for Segmenting Keratocytes Cells in Corneal Optical Coherence Tomography Images", *Vision Letters*, 2015.
- J78 F. Li*, A. Wong, and J. Zelek "Illumination-Guided Stereo Correspondence", *Vision Letters*, 2015.
- J79 R. Medeiros*, A. Wong, and J. Scharcanski, "Efficient and Scalable Image Segmentation Using Bag-of-Features and Stochastic Region Merging", *Vision Letters*, 2015.
- J80 A. Chung*, M. Shafiee*, and A. Wong, "Stochastic Receptive Fields in Deep Convolutional Networks", *Vision Letters*, 2015.
- J81 B. Chwyl*, A. Chung*, A. Wong, and D. Clausi, "Remote Heart Rate Measurement through Broadband Video via Stochastic Bayesian Estimation", *Vision Letters*, 2015.
- J82 S. Greenberg*, J. Blight, and A. Wong, "Colour-based gesture recognition for American Sign Language via Hidden Markov Models", *Vision Letters*, 2015.
- J83 J. Zhang, F. Khalvati**, A. Wong, and M. Haider, "Superpixel-based Prostate Cancer Detection from Diffusion Magnetic Resonance Imaging", *Vision Letters*, 2015.
- J84 D. Vasquez, J. Scharcanski, A. Wong, "Automatic Framework for Extraction and Characterization of Wetting Front Propagation using Tomographic Image Sequences of Water Infiltrated Soils", *PLoS ONE*, 2014.
- J85 C. Liu*, A. Wong, P. Fieguth, K. Bizheva, and H. Bie, "Noise-compensated Homotopic Non-local Regularized Reconstruction from Rapid Retinal Optical Coherence Tomography Acquisitions", *BMC Medical Imaging*, 2014.
- J86 B. Davoudi, K. Bizheva, A. Wong, R. Dinniwel, W. Levin, and A. Vitkin, "Correlating optical coherence tomography images with dose distribution in late oral radiation toxicity patients", *Photonics and Lasers in Medicine*, 2014.
- J87 C. Liu*, A. Wong, A. Moayed, P. Fieguth, H. Bie, and K. Bizheva, "Automatic tracking of pupillary dynamics from in-vivo functional optical coherence tomography images", *Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization*, 2014.
- J88 L. Xu**, J. Li, A. Wong, C. Wang, "A KPCA texture feature model for efficient segmentation of Radarsat-2 SAR sea ice imagery", *International Journal of Remote Sensing*, 2014.
- J89 K. Fergani*, D. Lui*, C. Scharfenberger**, A. Wong, and D.A. Clausi, "Structural and textural distinctiveness vector field convolution for image segmentation", *Computer Vision and Image Understanding*, 2014.
- J90 F. Kazemzadeh*, S. Haider*, C. Scharfenberger**, A. Wong, and D.A. Clausi, "Multispectral

- Stereoscopic Imaging Device: Simultaneous Multiview Imaging from the Visible to the Near-Infrared”, IEEE Transactions on Measurements and Instrumentation, 2014.
- J91 L. Xu**, J. Li, A. Wong, J. Peng, “K-PMeans: A Clustering Algorithm of K ‘Purified’ Means for Hyperspectral Endmember Estimation”, IEEE Geoscience and Remote Sensing Letters, 2014.
- J92 J. Glaister*, A. Wong, and D.A. Clausi, “Automatic segmentation of skin lesions from dermatological photographs using a joint probabilistic texture distinctiveness approach”, IEEE Transactions on Biomedical Engineering, 2014.
- J93 D. Lui*, C. Scharfenberger**, K. Fergani*, A. Wong, and D.A. Clausi, “Enhanced decoupled active contour using structural and textural variation energy functionals”, IEEE Transactions on Image Processing, 2014.
- J94 A. Scott, E. Li*, and A. Wong, “Sea ice surface temperature estimation using MODIS and AMSR-E data within a guided variational model along the Labrador Coast”, IEEE Journal of Special Topics in Remote Sensing, 2014.
- J95 J. Eichel, A. Wong, P. Fieguth, and D.A. Clausi, “Robust Spectral Clustering using Statistical Sub-graph Affinity Model”, PLoS ONE, 2014.
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3.2 REFEREED CONFERENCE ARTICLES

- C1 D. Kumar*, G. Taylor, and A. Wong, "Explaining the Unexplained: A CLass-Enhanced Attentive Response (CLEAR) Approach to Understanding Deep Neural Networks", the proceedings of IEEE Computer Vision and Pattern Recognition Workshops (IEEE CVPRW), 2017.
- C2 H. Neher*, M. Fani, D. Clausi, A. Wong, and J. Zelek, "Hockey Activity Recognition via Integrated Stacked Hourglass Network", the proceedings of IEEE Computer Vision and Pattern Recognition Workshops (IEEE CVPRW), 2017.
- C3 H. Neher*, M. Fani, D. Clausi, A. Wong, and J. Zelek, "Pose Estimation of Players in Hockey Videos using Convolutional Neural Networks", the proceedings of Ottawa Hockey Analytics Conference, 2017. **Won Best Student Paper Award.**
- C4 M. Shafiee**, E. Barshan, and A. Wong, "Evolution in Groups: A deeper look at synaptic cluster driven evolution of deep neural networks", the proceedings of Future Technologies Conference (FTC), 2017.

- C5 B. Chwyl*, A. Chung*, M. Shafiee*, Y. Fu, and A. Wong, "DeepPredict: A Deep Predictive Intelligence Platform for Patient Monitoring", the proceedings of Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC), 2017.
- C6 S. Haider*, F. Kazemzadeh*, and A. Wong, "Computational laser intensity stabilisation for organic molecule concentration estimation in low-resource settings", the proceedings of SPIE Photonics West, 2017.
- C7 A. Boroomand*, A. Wong, and K. Bizheva, "A Stochastically Fully Connected Conditional Random Field Framework for Super Resolution OCT", the proceedings of SPIE Photonics West, 2017.
- C8 R. Amelard*, R. L. Hughson, D. A. Clausi, A. Wong, "Non-contact arrhythmia assessment in natural settings: a step toward preventive cardiac care", the proceedings of SPIE Photonics West, 2017.
- C9 R. Amelard*, R. L. Hughson, D. A. Clausi, A. Wong, "Assessing photoplethysmographic imaging performance beyond facial perfusion analysis", the proceedings of SPIE Photonics West, 2017.
- C10 A. Gawish, J. Deglint*, K. Zuj, M. Egana, J. Rocha, A. Wong, and R. Hughson, "Determining arterial blood velocity using MAUI software from recorded Doppler ultrasound videos", the proceedings of the Annual Meeting of North American Artery, 2017.
- C11 T. Clark, A. Wong, F. Khalvati**, and M.A. Haider, "Fully Deep Convolutional Neural Networks for Segmentation of the Prostate Gland in Diffusion-Weighted MR Images", Proc. International Conference on Image Analysis and Recognition (ICIAR), 2017.
- C12 J. Zhang, S. Baig, A. Wong, F. Khalvati**, and M.A. Haider, "Segmentation of Prostate in Diffusion MR Images via Clustering", Proc. International Conference on Image Analysis and Recognition (ICIAR), 2017.
- C13 D. Cho*, F. Khalvati**, D. Clausi, and A. Wong, "A Machine Learning-Driven Approach to Computational Physiological Modeling of Skin Cancer", Proc. International Conference on Image Analysis and Recognition (ICIAR), 2017.
- C14 A. Karimi*, A. Chung*, M. Shafiee*, F. Khalvati**, M.A. Haider, A. Ghodsi, and A. Wong, "Discovery Radiomics via a Mixture of Deep ConvNet Sequencers for Multi-Parametric MRI Prostate Cancer Classification", Proc. International Conference on Image Analysis and Recognition (ICIAR), 2017.
- C15 D. Kumar*, A. Chung*, M. Shafiee*, F. Khalvati**, M.A. Haider, and A. Wong, "Discovery Radiomics for Pathologically-Proven Computed Tomography Lung Cancer Prediction", Proc. International Conference on Image Analysis and Recognition (ICIAR), 2017.
- C16 I. Ben Daya*, A. Chen, M. Shafiee*, A. Wong, and J. Yeow, "Compensated Row-Column Ultrasound Imaging System Using Three Dimensional Conditional Random Fields", Proc. International Conference on Image Analysis and Recognition (ICIAR), 2017.
- C17 A. Ma* and A. Wong "Depth from Defocus via Active Quasi-random Point Projections: A Deep Learning Approach", Proc. International Conference on Image Analysis and Recognition (ICIAR), 2017.
- C18 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.
- C19 A. Ma* and A. Wong, "Depth from defocus via active quasi-random point projections", Proc. International Conference on Inverse Problems in Engineering (ICIPE), 2017.
- C20 F. Khalvati**, J. Zhang, S. Baig, A. Wong, and M.A. Haider, "Flipping the Computer Aided Diagnosis (CAD) Training Paradigm for Prostate Cancer: Using PIRADS Reporting of Multi-Parametric MRI (mpMRI) to Train a CAD System and then Validating with Pathology", Proc. Annual Meeting of the Imaging Network of Ontario, 2017.
- C21 A. Karimi*, A. Chung*, M. Shafiee*, F. Khalvati**, M.A. Haider, A. Ghodsi, and A. Wong "Discovery Radiomics via a Mixture of Expert Sequencers using Layered Random Projections (LaRP) for Prostate Cancer Classification", Proc. Annual Meeting of the Imaging Network of Ontario, 2017.
- C22 D. Kumar*, V. Menkovski*, F. Khalvati**, M.A. Haider, and A. Wong "Deep Medical Imaging Visualization for Clinical Decision Support", Proc. Annual Meeting of the Imaging Network of Ontario, 2017.
- C23 I. Ben Daya*, A. Chen, M. Shafiee*, A. Wong, and J. Yeow, "Compensated Row-Column Ultrasound Imaging System Using Conditional Random Fields", Proc. Annual Meeting of the Imaging Network of Ontario, 2017.

- C24 P. Dash, A. Mishra, and A. Wong, "VeNICE: A Very Deep Neural Network Approach to No-Reference Image Assessment", the proceedings of International Conference on Industrial Technology, 2017.
- C25 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.
- C26 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.**
- C27 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.
- C28 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.
- C29 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.
- C30 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.
- C31 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.
- C32 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.
- C33 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.
- C34 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.
- C35 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.
- C36 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 CVPRW), 2016.
- C37 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 CVPRW), 2016. (Participated in the design for algorithm).
- C38 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 CVPRW), 2016.
- C39 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.
- C40 B. Chwyl*, 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.
- C41 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.
- C42 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.
- C43 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.
- C44 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.**
- C45 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.
- C46 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.**
- C47 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.
- C48 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.
- C49 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.
- C50 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)
- C51 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.
- C52 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.**
- C53 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.
- C54 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.
- C55 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.
- C56 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.
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- C58 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.
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- C182 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.

- C183 A. Wong, "An Iterative Approach to Improved Local Phase Coherence Estimation", the proceedings of Sixth Conference on Computer and Robot Vision (CRV), 2008.
- C184 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.
- C185 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.
- C186 A. Wong and A. Kennings, "Adaptive Multiple Texture Approach to Texture Packing for 3D Video Games", the proceedings of ACM FuturePlay, Toronto, Ontario, 2007.
- C187 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.
- C188 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.
- C189 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.
- C190 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.
- C191 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.
- C192 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.
- C193 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.
- C194 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.
- C195 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.
- C196 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.
- C197 A. Wong and W. Bishop, "Adaptive Normal Map Compression for 3D Video Games", the proceedings of FuturePlay, London, Ontario, Canada, 2006.
- C198 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.
- C199 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.
- C200 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.
- C201 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.
- C202 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.
- C203 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.
- C204 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 E. Li*, H. Sekkati**, M. Lamm, and A. Wong, “ Device, System, and Method for Content-Adaptive Resolution-Enhancement”, US Patent Application 15/250,429, 2016. **currently being integrated into Christie Digital products)**
- P2 A. Wong and M. Shafiee*, “ System and Method for Building Artificial Neural Network Architectures”, US Patent Application 62/362,834, 2016.
- P3 R. Amelard* and A. Wong, “ System and Method for Spatial Cardiovascular Monitoring”, US Patent Application 15/387,365, 2016.
- P4 R. Amelard* and A. Wong, “ System and Method for Spatial Cardiovascular Monitoring”, Canada Patent Application 2,952,485, 2016.
- P5 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.
- P6 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.
- P7 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.
- P8 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.
- P9 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.
- P10 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.
- P11 A. Wong, “A compensated magnetic resonance imaging system and method for improved magnetic resonance imaging and diffusion imaging quality”, US Patent Application 14/463,887, August 20, 2014.
- P12 A. Wong, “Correlated Diffusion Imaging System and Method for Identification of Biological Tissue of Interest”, United States Patent 9,619,882, June 19, 2014.
- P13 A. Wong, “Correlated Diffusion Imaging System and Method for Identification of Biological Tissue of Interest”, Canada Patent Application 2,854,844, June 19, 2014.
- P14 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)**

- P15 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)**
- P16 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)**
- P17 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)**
- P18 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)**
- P19 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)**
- P20 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 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, 2017.
- T2 Invited Talk, Toward Operational Artificial Intelligence: Anywhere, Anyplace, Anytime, Indo-Canadian Research Colloquium, Waterloo, 2017.
- T3 Invited Talk, Deep Learning with Darwin: Evolutionary Synthesis of Operational Deep Intelligence, Waterloo Institute for Complexity and Innovation, Waterloo, 2017.
- T4 Invited Talk, Toward Operational Artificial Intelligence: Anywhere, Anyplace, Anytime, Up Close & Personal with SYDE, Waterloo, 2017.
- T5 Invited Talk, Evolutionary Deep Intelligence, Miovision Technologies Headquarters, Waterloo, 2016.
- T6 Invited Talk, Grand Challenges in Computer Vision and Imaging, Department of Statistics and Actuarial Science, Waterloo, 2015.
- T7 Invited Talk, Integrative systems for biomedical imaging and analysis, National Biotechnology Week, Waterloo, ON, October 1, 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. WelInnovate Symposium, Waterloo, ON, November 19, 2014.
- N4 B. Chywl, J. Deglint, A. Wong, and D.A. Clausi, Detecting Biomarkers Through Multispectral Data, Poster presentation. WelInnovate Symposium, Waterloo, ON, November 19, 2014.
- N5 A. Chung, E. Li, M. Shafiee, and A. Wong, Computer-Aided MRI Reconstruction and Analysis, Poster presentation. WelInnovate 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. WelInnovate Symposium, Waterloo, ON, November 19, 2014.
- N7 A. Wong, D.A. Clausi, and P. Fieguth, Vision and image processing (VIP) research group, Poster presentation. WelInnovate, 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. WelInnovate, 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: \$6,693,248 in cash, \$1,117,652 in-kind

| PI (Collaborators) | Title & Agency | Amount | Year | Share % |
|---|---|-------------------------------------|-----------|---------|
| 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. Pon-nambalam (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 | 180,000 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 Bench-top 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 |
| A. Wong (PI) | Computer-aided cancer diagnosis platform - CIHR Incentive Research Fund - University of Waterloo | 8,000 in cash | 2015-2017 | 100 |

| PI (Collaborators) | Title & Agency | Amount | Year | Share % |
|--|--|---------------------------------|-------------|----------------|
| 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 |
| 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 |

| PI (Collaborators) | Title & Agency | Amount | Year | Share % |
|--|---|----------------------------------|-------------|----------------|
| 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 imaging research makes diagnosing disease easier," University of Waterloo Media Release, June, 2017.
- M2 "Which countries and universities are leading on AI research?" Times Higher Education, May, 2017.
- M3 "How tech firms are racing to perfect conversational artificial intelligence," Canadian Business, May, 2017.
- M4 "The Great Equalizer," Maclean's Magazine, May, 2017.
- M5 "Seven wonders that will change your world," Waterloo Magazine, May, 2017.
- M6 "Group wins award at hockey analytics conference," Waterloo Engineering Media Release, May, 2017.
- M7 "Brain Drain North," Financial Post, March 27, 2017.
- M8 "Artificial intelligence and the Waterloo-Toronto tech supercluster," Waterloo Stories, January 28, 2017.
- M9 "Researchers edge out leading institutions to win AI award," Waterloo Engineering Research Media Release, December 16, 2016.
- M10 "University of Waterloo Engineering Rated Number One by Macleans' Magazine," SpokeTV News, November, 2016.
- M11 "The Best of the Physics arXiv (week ending June 25, 2016)," MIT Technology Review, June, 2016. (showcasing evolutionary deep intelligence)
- M12 "Cancer detection technology at University of Waterloo," The Morning Edition with Craig Norris, CBC Radio One, May, 2016.
- M13 "Prostate, lung cancer ID filter created at University of Waterloo," CBC News, May, 2016.
- M14 "Breakthrough tech helps doctors more accurately diagnose cancer," Waterloo Stories, May, 2016.
- M15 "Coded Hemodynamic Imaging," Focus Cantonese OMNI Television, May 4, 2016.
- M16 "Coded Hemodynamic Imaging," Focus Mandarin OMNI Television, May 4, 2016.
- M17 "Researchers honoured for advances in identifying cancer through imaging," Waterloo Engineering Research Media Release, March 31, 2016.
- M18 "It takes a village," Lab Business, January/February, 2016. (showcased CHI technology)
- M19 ""Selfie" under the skin: Mini camera tracking blood flow," Sina, February, 2016.
- M20 "Invent This Week: Day 3," Daily Planet (TV show on Discovery Channel), February, 2016. (showcased CHI technology)
- M21 "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.
- M22 "Imaging technology can spot heart problems at a glance," The Spectator, January, 2016.
- M23 "Single Blood Pulse Reading Meets its Waterloo," Intellectual Capitals, January, 2016.
- M24 "Touchless UW device monitors blood flow to look for abnormalities," The Waterloo Region Record, January, 2016.
- M25 "Whole-body imaging technology uses contactless tracking of blood flow," Gizmag Magazine, January, 2016.
- M26 "Canadian scientists invent portable device that can see blood flow in your veins to detect disease," International Business Times, January, 2016.
- M27 "Non-contact imaging device for monitoring blood flow," The Engineer, January, 2016.
- M28 "Now a body imaging device can help detect heart problems early," Deccan Chronicle, January, 2016.
- M29 "Touchless device can provide whole body blood flow monitoring," United Press International, January, 2016.
- M30 "New touchless device to better detect heart problems," Yahoo News!, January, 2016.
- M31 "New touchless device to detect heart problems early," Business Standard, January, 2016.
- M32 "Coded Hemodynamic Imaging: Dieses System macht den menschlichen Blutfluss sichtbar," Trends Der Zukunft, January, 2016.

- M33 "Se puede predecir un ataque al corazón? Ese es el objetivo de este revolucionario dispositivo virtual," Prnoticias, January, 2016.
- M34 "Un système permet de monitorer le rythme cardiaque sans contact," Pourquoi Docteur, January, 2016.
- M35 "UW researchers out with new touchless device to prevent heart issues," 570 News, January, 2016.
- M36 "New touchless device makes earlier detection of heart problems possible," University of Waterloo Media Release, January, 2016.
- M37 "Industry partnership leads to Distinguished Paper Award," Waterloo Engineering Research Media Release, June 8, 2015.
- M38 "No more sore fingers: hand-held device could make blood sugar testing less painful," Educating the Engineering of The Future, April, 2015.
- M39 "An exceptional EYE-dea," Waterloo Life Blog, March, 2015.
- M40 "Recognized excellence," Defining Tomorrow: 2014-2015 State of the University Report, University of Waterloo, 2015.
- M41 "Waterloo device could take the pain out of diabetics blood tests," Waterloo Stories, Feb, 2015.
- M42 "Grad student honoured for easier blood glucose testing," Eng-e-News, vol. 11, no. 10, Nov, 2014.
- M43 "Research Excellence Endorsed," WEAL: Waterloo Engineering Alumni Letter Magazine, no. 60, Sept, 2014.
- M44 "Health Warriors: How researchers at the University of Waterloo are improving - and saving - lives," University of Waterloo Magazine, Spring 2014.
- M45 "Malaysia Airlines MH370: The challenges of a remote ocean search," CBC News, Mar 20, 2014 (provided expert opinion).
- M46 "Four University of Waterloo engineering professors named Canada Research Chairs," University of Waterloo Media Release, March 28, 2014.
- M47 "Making it harder for cancer to hide," Waterloo Stories, Jan, 2013.
- M48 "Improving Early Diagnosis to Save Lives," Centre for Bioengineering and Biotechnology Media Release, Jan, 2013.
- M49 "Taking Aim at Cancer," WEAL: Waterloo Engineering Alumni Letter Magazine, no. 58, Sept, 2012.
- M50 "Cancer Screening Gets a Boost," Eng-e-News, vol. 9, no. 5, May 9, 2012.
- M51 "11 local researchers win provincial awards," The Waterloo Region Record, May 4, 2012.
- M52 "Our next generation of researchers gets a strong leg up from the province," Waterloo Engineering Research Media Release, May 4, 2012.
- M53 "Eight University of Waterloo researchers receive prestigious research grants," University of Waterloo Media Release, May 4, 2012.
- M54 "A Golden Future," University of Waterloo Engineering Annual Report, 2011.

4 SUPERVISION

Current students:

| Name (Co-Supervisor) | Degree | Supervisory Period | Thesis Title and Comments |
|--------------------------------|--------|--------------------|---|
| Devinder Kumar | Ph.D. | 01/17-Now | Evolving network visualization and optimization for evolutionary deep intelligence |
| 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 -Present | Enhanced row-column ultrasound image reconstruction via a multi-penalty conditional random field model |
| Salman Khan (B. Tripp) | Ph.D. | 01/17 -Present | Image inpainting using random field-guided deep neural networks |
| Robert Amelard (D.A. Clausi) | Ph.D. | 09/13-Now | Coded hemodynamic imaging system for clinical and physiotherapy assessment (awarded NSERC CGS-D and Carl A. Pollock Postgraduate Fellowship) |
| 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 |
|--|---------------|---------------------------|--|
| Mohammad Javad Shafiee (P. Fieguth) | Ph.D. | 09/13-05/17 | Efficient Bayesian inference via Stochastically fully-connected conditional random fields |
| Ameneh Boroomand (K. Bizheva) | Ph.D. | 09/12-05/17 | Statistical modeling and reconstruction of UHR-SDOCT |
| 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 Signal Processing Electrical Engineer at Schlumberger) |
| 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 |
| 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-Now | Evolutionary deep intelligence |
| 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 (63)

1. Xiang Bo, "Deep object detector optimization", Undergraduate Research Assistant, Spring 2017.
2. Chris Zhang, "Deep segmentation", Undergraduate Research Assistant, Spring 2017.
3. Liam Coleman-Aulenbach, "Deep Object Detectors", Undergraduate Research Assistant, Spring 2017.
4. Anna Dong, "Computational magnetic resonance spectroscopy", Undergraduate Research Assistant, Winter 2017.
5. Linda Wang, "Color spectral lightfield fusion microscopy", Undergraduate Research Assistant, Winter 2017.
6. Angela Chao, "Computational multispectral microscopy", Undergraduate Research Assistant, Winter 2017. **(awarded President's Research Award)**
7. Emily Kuang, "Compact computational spectroscopy system", Undergraduate Research Assistant, Fall 2016. **(awarded President's Research Award)**
8. Mackenzie Wilson, "Multispectral coded hemodynamic imaging system", Undergraduate Research Assistant, Fall 2016. **(awarded President's Research Award)**
9. Mikaela MacMahon, "Novel NIR-SWIR coded hemodynamic imaging system", Undergraduate Research Assistant, Fall 2016. **(awarded President's Research Award)**
10. Stacey Ilioukhina, "Compact computational lightfield fusion microscopy", Undergraduate Research Assistant, Fall 2016. **(awarded President's Research Award)**
11. Jad Hamawi, "Computational lightfield fusion microscopy reconstruction", Undergraduate Research Assistant, Fall 2016.
12. Kuil Schoneveld, "Computational multispectral microscopy", Undergraduate Research Assistant, Spring 2016.
13. Sam Newhook, "Intelligent muscle segmentation from ultrasound images", Undergraduate Research Assistant, Spring 2016.
14. Sichen Zhao, "Real-time tomographic reconstruction for spectral lightfield fusion nanoscopy", Undergraduate Research Assistant, Spring 2016.
15. Daniel Min, "Calibration for chiral polarimetry", Undergraduate Research Assistant, Spring 2016.
16. Bill Lin, "Motion-compensated coded hemodynamic imaging for hemodynamics measurement", Undergraduate Research Assistant, Winter 2016.
17. Vincent Young, "Computer-aided prostate segmentation from MRI images", Undergraduate Research Assistant, Fall 2015. **(awarded President's Research Award)**
18. Herman Grewal, "Computer-aided tumor segmentation from lung computed tomography images", Undergraduate Research Assistant, Fall 2015. **(awarded President's Research Award)**
19. Jason Leung, "Novel long-range transmittance cardiorespiratory monitoring system", Undergraduate Research Assistant, Fall 2015. **(awarded President's Research Award)**
20. Yu Mei, "Laser Spectral Light-field Fusion Microscopy", Undergraduate Research Assistant, Fall 2015.
21. David Wang, "Computer-aided skin lesion segmentation from dermatological photographs", Undergraduate Research Assistant, Fall 2015.

22. Adam Heins, "Large-scale graphical model based processing", Undergraduate Research Assistant, Spring 2015.
23. Elizabeth Yang, "Computer-aided tumor feature characterization from lung computed tomography images", Undergraduate Research Assistant, Spring 2015.
24. Bill Lin, "Non-contact reflectance spatial PPG for hemodynamics measurement", Undergraduate Research Assistant, Spring 2015.
25. Meghan Yabsley, "Computational lung nodule analysis from computed tomography images", Undergraduate Research Assistant, Winter 2015. **(awarded President's Research Award)**
26. Yu Mei, "Spectral Light-field Fusion Microscopy", Undergraduate Research Assistant, Winter 2015.
27. Christopher Ngan, "Emotion classification from video", Undergraduate Research Assistant, Winter 2015.
28. Mahimna Dave, "Large-scale graphical modeling using GraphChi", Undergraduate Research Assistant, Winter 2015.
29. Avery Ma, "Large-scale graphical inference using GraphChi", Undergraduate Research Assistant, Winter 2015.
30. Bill Lin, "Non-contact spatial PPG for hemodynamics measurement", Undergraduate Research Assistant, Fall 2014. **(awarded President's Research Award)**
31. Elizabeth Yang, "Saliency-based video summarization", Undergraduate Research Assistant, Fall 2014.
32. Aiden Lee, "Eye tracking for intelligent eye behaviour monitoring", Undergraduate Research Assistant, Fall 2014. **(awarded President's Research Award)**
33. Atef Chaudhury, "Feature extraction for intelligent eye behaviour monitoring", Undergraduate Research Assistant, Fall 2014. **(awarded President's Research Award)**
34. Felicity Yang, "Efficient switching active light source for skin imaging", Undergraduate Research Assistantship, Spring 2014.
35. Christopher Luc, "Improved video tracking for robust video analytics", Undergraduate Research Assistantship, Spring 2014.
36. Naeem Talukdar, "Improved video saliency for robust video analytics", Undergraduate Research Assistantship, Spring 2014.
37. Amir-Hossein Karimi, "Invariant background modeling for robust video analytics", Undergraduate Research Assistantship, Spring 2014.
38. Audrey Chung, "Inference of respiratory rate from video", Undergraduate Research Assistant, Winter 2014.
39. Daxal Desai, "Probabilistic classification for prostate cancer analysis", Undergraduate Research Assistant, Winter 2014.
40. Brendan Chwyl, "Computer-aided eye tear detection", Undergraduate Research Assistant, Winter 2014.
41. Elizabeth Yang, "Spatio-temporal saliency detection", Undergraduate Research Assistant, Winter 2014.
42. Edward Li, "Computer-aided eye tear detection", Undergraduate Research Assistant, Winter 2014.
43. Jennifer Blight, "Endorectal MRI Denoising", Undergraduate Research Assistant, Fall 2013.

44. Edward Li, "Super-resolved optical coherence tomography imaging ", Undergraduate Research Assistant, Fall 2013.
45. James Yeh, "Modeling of relationship between skin reflectance and melanin concentrations", Undergraduate Research Assistant, Spring 2013.
46. Hassan Reznavi, "Robust feature descriptors for image analysis", Undergraduate Research Assistant, Spring 2013.
47. Kirusha Srimohanarajah, "Semi-automatic prostate gland segmentation", Undergraduate Research Assistant, Spring 2013.
48. Rafay Khan, "Intelligent segmentation for medical images", Undergraduate Research Assistant, Spring 2013.
49. Michael Weingert, "Intelligent prostate gland contouring", Undergraduate Research Assistant, Winter 2013.
50. Shahid Haider, "Single-acquisition Multi-modal camera system", Undergraduate Research Assistant, Winter 2013.
51. Victor Gan, "Noise-compensated Confocal Fluorescence Microscopy", Undergraduate Research Assistant, Winter 2013.
52. Edward Li, "Fusion and Assimilation of passive microwave and infrared sensing data for measurement of ice thickness ", Undergraduate Research Assistant, Winter 2013.
53. Victor Gan, "Computer-aided cancer localization tools ", Undergraduate Research Assistant, Fall 2012.
54. Anselm Lau, "Computer-aided data calibration tools for cancer imaging", Undergraduate Research Assistant, Fall 2012.
55. Betty Ni, "Super-resolved OCT imaging", Undergraduate Research Assistantship, Fall 2012.
56. Dorothy Lui, "Multi-parametric prostate gland segmentation system", Undergraduate Research Assistant, Spring 2012.
57. Grace Ku, "Platform for MRI prostate cancer diagnosis", Undergraduate Research Assistantship, Spring 2012.
58. Andrew Cameron, "Multi-parametric prostate cancer diagnostic system", Undergraduate Research Assistantship, Winter 2012.
59. Betty Ni, "Multi-parametric prostate cancer diagnostic system", Undergraduate Research Assistantship, Winter 2012.
60. Mohan Thomas, "Motion artifact correction and rectification of volumetric ultrahigh-resolution optical coherence tomograms", Undergraduate Research Assistantship, Fall 2011.
61. Amir-Hossein Karimi, "Automated detection and counting of keratocytes in human corneal stroma from ultrahigh-resolution optical coherence tomograms", Undergraduate Research Assistantship, Spring 2011.
62. Brenda Chan, Oliver Chan, Anselm Lau, Jason Tang, and Ting Zhang, "Universal hand gesture remote-control", Third-year Design Group, 2012.
63. Angus Leigh (under Dr. David A. Clausi), "Performance analysis of image denoising in relation to various noise estimates", Undergraduate Research Assistantship, Spring 2010.
64. 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
 - Member on IEEE Computer Society Technical Committee on Pattern Analysis and Machine Intelligence
 - Member on IEEE Computer Society Technical Committee on Multimedia Computing
- 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)
- 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)
- Scientific committee member, International Conference on Inverse Problems in Engineering (ICIPE 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 Etablissement de nouveaux chercheurs universitaires.