

## CURRICULUM VITAE<sup>1</sup>

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<sup>1</sup> last updated December 2019

## 1 BACKGROUND

### 1.1 Education

- 2001 - 2003  
Postdoctoral fellowship in the Computer Vision and Systems Laboratory, Laval University, (Quebec), Canada  
Project: *3D Visualization of Anatomical Structures from MRI Images*
- 2000  
Ph.D. in Electrical Engineering, Polytechnic University of Bucharest, Romania  
Dissertation: *Contributions to Pattern Recognition in Medical Imaging*
- 1992  
Engineering Diploma in Electronics, Polytechnic University of Bucharest, Romania
- 1992  
Research internship at University Joseph Fourier, Grenoble, France  
Laboratory of Imaging, Modeling and Cognition Techniques (TIMC).

### 1.2 Employment History

- July 2019 – present  
Professor, Electrical and Computer Engineering (cross-listed with Computer Science), University of Victoria (BC), Canada
- July 2009 – June 2019  
Associate Professor, Electrical and Computer Engineering (cross-listed with Computer Science), University of Victoria (BC), Canada
- August 2005 – June 2009  
Assistant Professor, Electrical and Computer Engineering (cross-listed with Computer Science), University of Victoria (BC), Canada
- May 2003 – July 2005  
Assistant Professor, Département de Génie Électrique et Génie Informatique, Université Laval (Quebec), Canada
- 2001 - 2003  
Postdoctoral fellow, Département de Génie Électrique et Génie Informatique, Université Laval (Quebec), Canada
- 1999 - 2001  
Lecturer, University “Ovidius”, Romania

### 1.3 Visiting Scholar Positions

- 2018  
Visiting Professor, University of Uppsala, Sweden (Centre for Image Analysis)
- 2016 - 2017  
Visiting Scientist, Ocean Networks Canada
- 2012  
Visiting Professor, Utrecht University, Netherlands (Image Sciences Institute)

## 2 RESEARCH

### 2.1 Publications

**Legend:** Names in **bold** face represent students and/or research assistants that I have supervised or co-supervised for the work presented in the publication.

#### Refereed Book Chapter

[B1] **R. Prinz**, A. Branzan Albu, and N. Livingston, “Quantification of gait improvement with a computer vision-based approach,” chapter in IOS Press Book *Technology and Aging*, January 2008, 264 pp., hardcover, ISBN: 978-1-58603-815-1.

#### Refereed Journal Publications

[J15] **T. Porto Marques**, A. Branzan Albu, and M. Hoeberechts, “A Contrast-Guided Approach for the Enhancement of Low-Lighting Underwater Images,” *MDPI J. Imaging*, 5(10), 2019.

[J14] **A. Rezvanifar**, **M. Cote**, and A. Branzan Albu, “Symbol spotting for architectural drawings: state-of-the-art and new industry-driven developments”, *IPSJ Transactions on Computer Vision and Appl.* **11**(2), doi:10.1186/s41074-019-0055-1, 2019.

[J13] **M. Cote** and A. Branzan Albu, “Teaching socio-cultural impacts of technology in advanced technical courses: A case study,” *European Journal of Engineering Education*, Nov. 2018.

[J12] M. Matabos, M. Hoeberechts, C. Doya, J. Aguzzi, J. Nephin, T.E. Reimchen, S. Leaver, R.M. Marx, A. Branzan Albu, **R. Fier**, U. Fernandez-Arcaya, and S.K. Juniper, “Expert, Crowd, Students, or Algorithm: Who holds the key to deep-sea imagery ‘big data’ processing?,” *Methods in Ecology and Evolution*, vol. 8, no. 8, pp. 996–1004, 2017.

[J11] **A. Agahchen** and A. Branzan-Albu, “Chromatic modulation in visual art: a computational perspective,” *SPIE Journal of Electronic Imaging*, vol. 26, no. 1, pp. 011014, 2016.

[J10] **M. Cote** and A. Branzan Albu, “Robust texture classification by aggregating pixel-based LBP statistics,” *IEEE Signal Processing Letters*, vol. 22, no. 11, pp. 2102–2106, 2015.

[J9] **M. Cote** and A. Branzan Albu, “Texture sparseness for pixel classification of business document images,” *International Journal on Document Image Analysis*, vol. 17, no. 3, pp. 257–273, 2014.

[J8] **N.T. Nguyen**, D. Laurendeau, and A. Branzan-Albu, “A robust method for camera motion estimation in movies based on optical flow,” *International Journal of Intelligent*

*Systems Technologies and Applications*, vol. 9, nos. 3/4, pp.228–238, 2010.

[J7] **F. Jean**, R. Bergevin, and A. Branzan Albu, “Computing and evaluating view-normalized body part trajectories,” *Image and Vision Computing*, vol. 27, no 9, pp. 1272–1284, 2009.

[J6] **F. Jean**, A. Branzan Albu, and R. Bergevin, “Towards view-invariant gait modelling: Computing view-normalized body part trajectories,” *Pattern Recognition*, vol. 42, no 11, pp. 2936–2949, 2009.

[J5] **F. Jean** and A. Branzan Albu, “The Visual Keyboard: Real-time feet tracking for the control of meta-instruments,” *Signal Processing: Image Communication, Special Issue on Semantic Analysis for Interactive Multimedia Services*, vol. 23, no. 7, pp. 505–515, 2008.

[J4] A. Branzan Albu, **T. Beugeling**, and D. Laurendeau, “A morphology-based approach for inter-slice interpolation of anatomical structures from volumetric images,” *IEEE Transactions of Biomedical Imaging*, vol. 55, no. 8, pp. 2022–2038, 2008.

[J3] A. Branzan Albu, R. Bergevin, and **S. Quirion**, “Generic temporal segmentation of cyclic human motion,” *Pattern Recognition*, vol. 41, no. 1, pp. 6–21, 2008.

[J2] A. Branzan Albu and **T. Beugeling**, “A three-dimensional spatiotemporal template for interactive human motion analysis,” *Journal of Multimedia*, vol. 2, no. 4, pp. 45–54, 2007.

[J1] A. Branzan Albu, **M. Yazdi**, and R. Bergevin, “Detection of cyclic human activities based on the morphological analysis of the inter-frame similarity matrix,” *Real-Time Imaging, Special Issue on Video Object Processing*, vol.11, no. 3, pp. 219–232, 2005.

### **Refereed Conference Publications**

[C57] **M. Cote** and A. Branzan Albu, “Towards Preserving the Ephemeral: Texture-Based Background Modelling for Capturing Back-of-the-Napkin Notes,” accepted in *IEEE Winter Conference on Applications of Computer Vision (WACV 2020)*, Snowmass Village, CO, Mar. 2020.

[C56] **T. Porto Marques**, **A. Rezvanifar**, **M. Cote**, and A. Branzan Albu, “A Deep Learning-based Framework for the Detection of Schools of Herring in Echograms,” in *NeurIPS Workshops (Tackling Climate Change with Machine Learning)*, Vancouver, CA, Dec 2019.

[C55] **A. Burden**, **M. Cote**, and A. Branzan Albu, “Rectification of Camera-Captured Document Images with Mixed Contents and Varied Layouts”, in *IEEE Canadian Conference on Computer and Robot Vision (CRV 2019)*, Kingston, ON, May 2019.

[C54] **T. Porto Marques**, **A. Branzan Albu**, and M. Hoeberechts, “Enhancement of Low-Lighting Underwater Images Using Dark Channel Prior and Fast Guided Filters”, in *ICPR*

*Workshops (Computer Vision for Analysis of Underwater Imagery)*, CVAUI 2018, Beijing, China, Aug 2018.

[C53] **A. Dash** and A. Branzan Albu, “Counting large flocks of birds using videos acquired with hand-held devices,” in *Advanced Concepts for Intelligent Vision Systems (ACIVS 2017)*, Lecture Notes in Computer Science, vol. 10617, Springer, 2017.

[C52] **A. Dash** and A. Branzan Albu, “A domain independent approach to video summarization,” in *Advanced Concepts for Intelligent Vision Systems (ACIVS 2017)*, Lecture Notes in Computer Science, vol. 10617, Springer, 2017.

[C51] **M. Alizadeh**, **M. Cote**, and A. Branzan Albu, “Leaflet free edge detection for the automatic analysis of prosthetic heart valve opening and closing motion patterns from high speed video recordings,” in *Image Analysis (SCIA 2017)*, Lecture Notes in Computer Science, vol. 10270, Springer, 2017.

[C50] **A. Burden**, **M. Cote**, and A. Branzan Albu, “Fast and accurate tracking of highly deformable heart valves with locally constrained level sets,” in *IEEE Canadian Conference on Computer and Robot Vision (CRV 2017)*, Edmonton, AB, May 2017.

[C49] **M. Cote** and A. Branzan Albu, “Layered ground truth: conveying structural and statistical information for document image analysis and evaluation,” in *IEEE International Conference on Pattern Recognition (ICPR 2016)*, Cancun, Mexico, Dec. 2016.

[C48] **M. Cote**, **A. Dash** and A. Branzan-Albu, “Look who is NOT talking: Assessing engagement levels in panel conversations,” in *IEEE International Conference on Pattern Recognition (ICPR 2016)*, Cancun, Mexico, Dec. 2016.

[C47] **T. Sadhu**, A. Branzan Albu, M. Hoeberechts, E. Wisernig, B. Wyvill, “Obstacle detection for image- guided surface water navigation,” in *IEEE Canadian Conference on Computer and Robot Vision (CRV 2016)*, Victoria, BC, June 2016.

[C46] **M. Cote** and A. Branzan Albu, “A comparative study of sparseness measures for segmenting textures,” in *IEEE Canadian Conference on Computer and Robot Vision (CRV 2016)*, Victoria, BC, June 2016.

[C45] **K. Moria**, A. Branzan Albu, and K. Wu, “Computer vision-based detection of violent individual actions witnessed by crowds,” in *IEEE Canadian Conference on Computer and Robot Vision (CRV 2016)*, Victoria, BC, June 2016.

[C44] **A. Kalmbach**, M. Hoeberechts, A. Branzan Albu, et al., “Learning deep-sea substrates with visual topic models,” in *IEEE Winter Conference on Applications of Computer Vision (WACV 2016)*, Lake Placid, NY, Mar. 2016.

[C43] **M. Cote, F. Jean, A. Branzan Albu, and D. Capson**, “Video summarization for remote invigilation of online exams,” in *IEEE Winter Conference on Applications of Computer Vision (WACV 2016)*, Lake Placid, NY, Mar. 2016.

[C42] **A. Dash, M. Cote, and A. Branzan Albu**, “Automatic speaker identification from interpersonal synchrony of body motion behavioral patterns in multi-person videos,” in *ACM Proceedings of Workshop on Modeling INTERPERSONAL Synchrony And influence (INTERPERSONAL)* in conjunction with the *17th International ACM Conference on Multimodal Interaction (ICMI 2015)*, Seattle, WA, Nov. 2015.

[C41] **J. Svendsen and A. Branzan-Albu**, “Change classification in graphics-intensive digital documents,” in *ACM Symposium on Document Engineering (DocEng 2015)*, Lausanne, Switzerland, Sept. 2015.

[C40] **K. Moria, A. Branzan Albu, and K. Wu**, “Fire detection in videos of violent crowds acquired with handheld devices,” in *IEEE Canadian Conference on Computer and Robot Vision (CRV 2015)*, Halifax, NS, June 2015.

[C39] **N. Wang, S. Cullis-Suzuki, and A. Branzan Albu**, “Automated analysis of wild fish behaviour in a natural habitat,” in *ACM International Workshop on Environmental Multimedia Retrieval (EMR 2015)*, in conjunction with the *ACM International Conference on Multimedia Retrieval (ICMR 2015)*, Shanghai, China, June 2015.

[C38] **F. Jean, A. Branzan Albu, D. Capson, et al.**, “Visualizing category-specific changes in oblique photographs of mountain landscapes,” in *ACM Eurographics Workshop on Visualization in Environmental Sciences, (Envirvis 2015)*, Cagliari, Italy, May 2015.

[C37] **F. Jean, A. Branzan Albu, D. Capson, et al.**, “The mountain habitats segmentation and change detection dataset”, in *IEEE Winter Conference on Applications of Computer Vision (WACV 2015)*, Kona, HI, Jan. 2015.

[C36] **A. Mendes, M. Hoeberechts, and A. Branzan Albu**, “Evolutionary computational methods for optimizing the classification of sea stars in underwater images”, in *IEEE Winter Conference on Applications of Computer Vision (WACV 2015)*, Kona, HI, Jan. 2015.

[C35] **R. Fier, A. Branzan Albu, and M. Hoeberechts**, “Automatic fish counting system for noisy deep-sea videos,” in *IEEE Oceans 2014*, St. John’s, NL, Sept. 2014.

[C34] **M. Mehrnejad, A. Branzan Albu, M. Hoeberechts, and D. Capson**, “Towards robust identification of slow moving animals in deep-sea imagery by integrating shape and appearance cues”, in *ICPR Workshop on Computer Vision for Analysis of Underwater Imagery (CVAUI 2014)*, Stockholm, Sweden, Aug. 2014.

- [C33] **M. Cote** and A. Branzan Albu, "Sparseness-based descriptors for texture segmentation", in *International Conference on Pattern Recognition (ICPR 2014)*, Stockholm, Sweden, Aug. 2014.
- [C32] **T. Beugeling** and A. Branzan Albu, "Computer vision-based identification of individual turtles using characteristic patterns of their plastrons", in *IEEE Canadian Conference on Computer and Robot Vision (CRV 2014)*, Montreal, QC, May 2014.
- [C31] **A. Agahchen** and A. Branzan Albu, "Towards understanding beautiful things: A computational approach for the study of color modulation in visual art," in *Eurographics 2014*, Strasbourg, France, Apr. 2014.
- [C30] **T. Beugeling** and A. Branzan Albu, "Sway detection in human daily actions using Hidden Markov Models," in *Engineering in Medicine and Biology Society (EMBS) Conference on Neural Engineering (NER 2013)*, San Diego, CA, Nov. 2013.
- [C29] **T. Beugeling** and A. Branzan Albu, "Detection of objects and their shadows from acoustic images of the sea floor," in *IEEE Oceans 2013*, San Diego, CA, Sept. 2013.
- [C28] **M. Mehrnejad**, A. Branzan Albu, M. Hoeberechts, and D. Capson, "Detection of stationary animals in deep-sea video," in *IEEE Oceans 2013*, San Diego, CA, Sept. 2013.
- [C27] **J. Svendsen** and A. Branzan Albu, "Segmenting graphics-intensive business documents," in *SPIE Electronic Imaging Conference, Document Recognition and Retrieval (DRR 2013)*, San Francisco, CA, Feb. 2013.
- [C26] **A. Gebali**, A. Branzan Albu, and M. Hoeberechts, "Detection of salient events in large datasets of underwater video," in *IEEE Oceans 2012*, Virginia Beach, VA, Oct. 2012.
- [C25] **T. Beugeling**, A. Branzan Albu, M. Hoeberechts, and S. Mihaly, "3D visualization of circulation and water properties at the endeavour segment of the Juan de Fuca mid-ocean ridge," in *IEEE Oceans 2012*, Virginia Beach, VA, Oct. 2012.
- [C24] **J. Svendsen**, **T. Beugeling**, and A. Branzan Albu, "Computer vision-based assessment of hand-eye coordination in young gamers: A baseline approach," in *IEEE Conference on Computer Vision Pattern Recognition Workshops (CVPRW 2012)*, Providence, RI, June 2012.
- [C23] **F. Jean**, A. Branzan Albu, and C. Dumoulin, "Feature-based tracking of urethral motion in low-resolution trans-perineal ultrasound," in *International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2011)*, Boston, MA, Sept. 2011.
- [C22] **P. Bonneau**, A. Branzan Albu, and M. Hiltz, "Local image enhancement for fiducial marker detection in electronic portal images," in *International Conference of the IEEE*

*Engineering in Medicine and Biology Society (EMBC 2010)*, Buenos Aires, Argentina, Sept. 2010.

[C21] **K. Malakuti** and A. Branzan Albu, "Towards an intelligent bed sensor: Non-intrusive monitoring of sleep irregularities with computer vision techniques," in *IEEE International Conference on Pattern Recognition (ICPR 2010)*, Istanbul, Turkey, Aug. 2010.

[C20] **F. Jean**, R. Bergevin, and A. Branzan Albu, "Trajectories normalization for viewpoint invariant gait recognition," in *IEEE International Conference on Pattern Recognition (ICPR 2008)*, Tampa, FL, Dec. 2008.

[C19] A. Branzan Albu, **B. Widsten**, **T. Wang**, **J. Lan**, and **J. Mah**, "A computer vision-based system for real-time detection of sleep in fatigued drivers," in *IEEE Intelligent Vehicles Symposium (IV 2008)*, Eindhoven, Netherlands, June 2008.

[C18] **G. Rivet-Sabourin**, A. Branzan Albu, L. Beaulieu, and D. Laurendeau, "Automatic contour retrieval in annotated TRUS prostate images," in *IEEE International Symposium on Biomedical Imaging (ISBI 2008)*, Paris, France, May 2008.

[C17] **F. Jean**, A. Branzan Albu, A. Schloss, and P. Driessen, "Computer vision-based interface for the control of musical meta-instruments," in *International Conference on Human Computer Interaction (HCI International 2007)*, Beijing, China, July 2007.

[C16] A. Branzan Albu, N. Virji-Babul, **D. Kerr**, and R. Hovorka, "Funland: a playful software for the on-line assessment of facial emotion recognition skills in children," in *International Conference on Human Computer Interaction (HCI International 2007)*, Beijing, China, July 2007.

[C15] **N. T. Nguyen**, D. Laurendeau, and A. Branzan Albu, "A new segmentation method for MRI images of the shoulder joint," in *IEEE Canadian Conference on Computer and Robot Vision (CRV 2007)*, Montreal, QC, May 2007.

[C14] **F. Jean**, R. Bergevin, and A. Branzan Albu, "Computing view-normalized body part trajectories," in *IEEE Canadian Conference on Computer and Robot Vision (CRV 2007)*, Montreal, QC, May 2007.

[C13] A. Branzan Albu, **T. Beugeling**, N. Virji-Babul, and C. Beach, "Analysis of irregularities in human actions with volumetric motion history images," in *IEEE Workshop on Motion and Video Computing (WMVC 2007)*, Austin, TX, Feb. 2007.

[C12] A. Branzan Albu, "Vision-based user interfaces for health applications: a survey," in *Advances in Visual Computing (ISVC 2006)*, Lecture Notes in Computer Science, vol. 4291, Springer, 2006.



[C11] A. Branzan Albu, D. Laurendeau, S. Comtois, et al. "MONNET: Monitoring pedestrians with a network of loosely-coupled cameras," in *IEEE International Conference on Pattern Recognition (ICPR 2006)*, Hong Kong, China, Aug. 2006.

[C10] **F. Jean**, R. Bergevin, and A. Branzan Albu, "Body tracking in human walk from monocular video sequences," in *IEEE Canadian Conference on Computer and Robot Vision (CRV 2005)*, Victoria, BC, May 2005.

[C9] **S. Quirion**, A. Branzan Albu, and R. Bergevin, "Skeleton-based temporal segmentation of human activities from video sequences," in *International Conference in Central Europe on Computer Graphics, Visualization and Computer Vision 2005 in co-operation with EUROGRAPHICS (WSCG 2005)*, Plzen-Broy, Czech Republic, Feb. 2005.

[C8] A. Branzan Albu, D. Laurendeau, **M. Gurtner**, and **C. Martel**, "A web-based remote collaborative system for visualization and assessment of semi-automatic diagnosis of liver cancer from CT Images," in *Medicine Meets Virtual Reality Conference (MMVR13-2005)*, Long Beach, CA, Jan. 2005.

[C7] A. Branzan Albu, D. Laurendeau, L. Hébert, H. Moffet, M. Dufour, and C. Moisan, "Image-guided analysis of shoulder pathologies: Modeling the 3D deformation of the subacromial space during arm flexion and abduction," in *International Symposium on Medical Simulation (ISMS 2004)*, Lecture Notes in Computer Science, vol. 3078, Springer, 2004.

[C6] **M. Yazdi**, A. Branzan Albu, and R. Bergevin, "Morphological analysis of spatio-temporal patterns for the segmentation of cyclic human activities," in *IEEE International Conference on Pattern Recognition (ICPR 2004)*, Cambridge, UK, Aug. 2004.

[C5] **M.E. Tremblay**, A. Branzan Albu, D. Laurendeau, and L. Hébert, "Integrating region and edge information for the automatic segmentation for interventional magnetic resonance images of the shoulder complex," in *IEEE Canadian Conference on Computer and Robot Vision (CRV 2004)*, London, ON, May 2004.

[C4] A. Branzan Albu, D. Laurendeau, C. Moisan, and D. Rancourt, "SKALPEL-ICT: Simulation kernel applied to the planning and evaluation of image-guided cryotherapy," in *Medical Robotics, Navigation and Visualization (MRNV 2004)*, Remagen, Germany, Mar. 2004.

[C3] A. Branzan Albu, J.-M. Schwartz, D. Laurendeau, and C. Moisan, "Integrating geometric and biomechanical models of a liver tumor for cryosurgery simulation," in *Surgery Simulation and Soft Tissue Modeling*, Lecture Notes in Computer Science, vol. 2673. Springer, 2003.

[C2] A. Branzan Albu, D. Laurendeau, L. Hébert, H. Moffet, and C. Moisan, "Three-dimensional reconstruction of the bony structures involved in the articular complex of the human shoulder using shape-based interpolation and contour-based extrapolation," in

*IEEE International Conference on 3D Digital Imaging and Modeling (3DIM 2003)*, Banff, AB, Oct. 2003.

[C1] A. Branzan Albu, D. Laurendeau, and C. Moisan, "Tumor detection in MR liver images by integrating edge and region information," in *Modelling & Simulation for Computer-Aided Medicine and Surgery 2002*, ESAIM Proceedings, vol.12, 2002.

## 2.2 Invited Talks (Selected)

[P18] “Computer Vision for Underwater Environmental Monitoring,” Monterey Bay Research Aquarium (sponsored by Dr. D. Edgington), Monterey, USA, 2019.

[P17] “Advancing Academic Women in Science and Engineering,” University of Uppsala (sponsored by Prof. I. Nystrom), Sweden, May 2017.

[P16] “Computer Vision-Based Analysis of Prosthetics Heart Valves,” University of Uppsala (sponsored by Prof. I. Nystrom), Sweden, May 2017.

[P15] Tutorial on “State of the Art in Automated Analysis of Underwater Imagery” (with M. Hoeberechts), IEEE Oceans, Monterey, USA, Sept. 2016.

[P14] “Computer Vision for Environmental Monitoring,” invited talk, Canadian Conference on Computer and Robot Vision (CRV), Victoria, BC, June 2016.

[P13] “Image Analysis for Environmental Monitoring” (with M. Hoeberechts), Discover UVic (outreach activity for high school students and their parents), University of Victoria, BC, Nov. 2015.

[P12] “Analyse d’images de documents numeriques”, invited talk at Laboratoire de Vision et Systemes Numeriques, Universite Laval (sponsored by Prof. D. Laurendeau), Quebec City, QC, May 2014.

[P11] “Detection of Salient Events in Large Datasets of Underwater Video,” invited talk (sponsored by the IEEE Victoria Oceans Chapter), Victoria, BC, Dec. 2012.

[P10] “Medical Imaging Research at UVic: An Overview of Recent Results,” invited talk (sponsored by Prof. Viergever), University of Utrecht, Netherlands, Apr. 2012.

[P9] “Artificial Intelligence: Friend or Foe?,” Cafe Scientifique public presentation sponsored by the Center on Aging at UVic, Victoria, BC, Jan. 2012.

[P8] “Towards Building Computers That See,” invited talk (outreach) at Mount Douglas High School, Victoria, BC, Oct. 2011.

[P7] “Exploring New Horizons for Computer Vision,” invited seminar (sponsored by Prof. J.K. Aggarwal), University of Texas at Austin, USA, Dec. 2010.

[P6] “Successful Industrial Partnerships,” panel member, Creating Connections 2009 (sponsored by the NSERC Chair for Women in Science and Engineering for BC), Maple Ridge, BC, Sept. 2009.

[P5] “Computer Vision-Based Human Motion Analysis with Applications to Health Care,” invited seminar at the Dept. of Computer Science, University of Northern British Columbia (sponsored by Prof. L. Chen), Prince George, BC, Apr. 2008.

[P4] “Computer Vision: Towards Building Computers that See,” invited talk (outreach) at the Brentwood College, UVic Speaker’s Bureau Series, Victoria, BC, Oct. 2008.

[P3] “Analyse de Mouvement Humain dans le Contexte des Applications Biomedicales,” invited seminar at the Laboratoire de Vision et Systemes Numeriques, Universite Laval (sponsored by Prof. D. Laurendeau), Quebec City, QC, Sept. 2008.

[P2] “Computer Vision-Based Human Motion Analysis with Applications to Health Care,” Invited seminar at the Laboratory for Computational Intelligence, University of British Columbia (sponsored by Prof. E. A. Croft), Vancouver, BC, July 2008.

[P1] Tutorial on “Motion Analysis and Video Understanding,” IEEE International Conference on Signals, Circuits, and Systems (ISSCS 2005), Iasi, Romania, July 2005.

### 2.3 Research Funding

The following shows research funding that I obtained as principal investigator.

Index	Type	Source	Awarded	End	Total (CAD)
G20	Operating	ASL and NSERC-Engage Plus	2019	2020	25,000
G19	Operating	NSERC-Engage	2018	2019	25,000
G18	Operating	QuirkLogic and NSERC-CRD <sup>2</sup>	2018	2021	263,200
G17	Operating	NSERC-Engage <sup>3</sup>	2017	2017	25,000
G16	Operating	NSERC-Engage	2016	2016	25,000
G15	Operating	NSERC-Engage	2016	2016	25,000
G14	Operating	Triumph and NSERC-CRD	2015	2018	225,000
G13	Operating	NSERC-Engage	2014	2014	25,000
G12	Operating	Plurilock and NSERC-CRD	2013	2015	97,300
G11	Operating	SAP Canada and NSERC-CRD	2011	2014	228,000
G10	Operating	INTEL	2011	2012	10,000
G9	Contract	Kongsberg Mesotech	2010	2013	92,000
G8	Equipment	CFI/BCKDF	2009	2010	236,750
G7	Operating	FLIR and MITACS <sup>4</sup>	2009	2009	30,000
G6	Operating	NSERC-DG <sup>5</sup>	2008	2013	100,000
G5	Operating	MITACS	2008	2008	15,000
G4	Operating	NSERC-DG	2006	2008	40,000
G3	Operating	Start-up UVIC	2005		40,000
G2	Operating	NSERC-DG	2003	2006	120,000
G1	Operating	NATEQ-New Researcher	2003	2005	30,000

TOTAL: \$ (CAD) 1,415,500 Operating + \$ (CAD) 236,750 Equipment

#### Grant Descriptions

[G20] Computer Vision and Machine Learning Algorithms for Detecting Marine Life from Acoustic Time Series, funded by NSERC and ASL Environmental Monitoring.

[G19] Computer Vision-Based Detection of Fish from Acoustic Backscatter Time Series, funded by NSERC Engage and ASL Environmental Monitoring.

[G18] Mobile Computer Vision System for Document Image Rendering, Manipulation, and Management on Collaborative E-Writing Devices, funded by QuirkLogic Inc. and NSERC CRD.

[G17] Computer Vision Methods for Image Rendering and Manipulation on E-Writing

<sup>2</sup> [http://www.nserc-crsng.gc.ca/Professors-Professeurs/RPP-PP/CRD-RDC\\_eng.asp](http://www.nserc-crsng.gc.ca/Professors-Professeurs/RPP-PP/CRD-RDC_eng.asp)

<sup>3</sup> [http://www.nserc-crsng.gc.ca/Professors-Professeurs/RPP-PP/Engage-Engagement\\_eng.asp](http://www.nserc-crsng.gc.ca/Professors-Professeurs/RPP-PP/Engage-Engagement_eng.asp)

<sup>4</sup> <https://www.mitacs.ca/en/programs/accelerate>

<sup>5</sup> [http://www.nserc-crsng.gc.ca/Professors-Professeurs/Grants-Subs/DGIGP-PSIGP\\_eng.asp](http://www.nserc-crsng.gc.ca/Professors-Professeurs/Grants-Subs/DGIGP-PSIGP_eng.asp)

Devices, funded by NSERC Engage and QuirkLogic Inc.

[G16] Computer Vision-Based Part Number Recognition for Optimized Off-Logging Processes, funded by NSERC Engage and MTU Maintenance Canada.

[G15] Computer Vision-Based Evaluation of Prosthetic Heart Valves, funded by NSERC Engage and Vivitro Labs.

[G14] Automatic Image Analysis and Generation of Digital Residential Floor Plans, funded by Triumph Electrical Consulting Engineering Ltd and by NSERC CRD.

[G13] Computer Vision-Based Analysis of Digital Architectural Floor Plans, funded by NSERC Engage and Triumph Electrical Consulting Engineering Ltd.

[G12] Cloud-Based Secure Virtual On-Line Exam Center (SeVOEC), funded by Plurilock Inc. and by NSERC CRD.

[G11] A Framework for High-Level Content-Based representation of Screen-Rendered Documents, funded by SAP Canada and NSERC CRD.

[G10] Computer Vision for Multi-Core Processing, funded by INTEL.

[G9] Automatic Quantitative Analysis and Generation of Mosaics from Sonars, funded by Kongsberg Mesotech.

[G8] Canadian Foundation for Innovation (CFI) and BC Knowledge Development Fund (BCKDF) VISION: A research facility for Computer Vision.

[G7] Development of Computer Vision Algorithms for Pan-Tilt-Zoom Surveillance Cameras, funded by FLIR Inc. and MITACS Accelerate BC.

[G6] A Computer Vision-Based Framework for Human Motion Analysis with Applications to Health Care, funded by NSERC Discovery Grant.

[G5] Development of an Intelligent Bed Sensor Based on Computer Vision Techniques, funded by Tactex Inc. and MITACS Accelerate BC Internship Program.

[G4] Abnormal Gait Detection with Applications to Senior Health Care, funded by NSERC Discovery Grant.

[G3] University of Victoria Start-up grant.

[G2] Real-Time Unusual Event Detection in Human Motion in a Surveillance Context, funded by NSERC Discovery Grant.

[G1] Analyse morphologique 3D de l'épaule humaine basée sur la vision par ordinateur, NATEQ Nouveaux Chercheurs.

### 3 TEACHING

#### 3.1 Courses Taught

Course	Term	Level	University
CENG421/ELEC536: Computer Vision	2008-2018	graduate/undergraduate 4 <sup>th</sup> year	UVic
ECE 399: Design Project 1	2017-2019	undergraduate 3 <sup>rd</sup> year	UVic
ECE 435: Medical Image Processing	2011, 2013-2015, 2019	undergraduate 4 <sup>th</sup> year	UVic
ELEC310: Digital Signal Processing I	2008-2011, 2015, 2016	undergraduate 3 <sup>rd</sup> year	UVic
ELEC590: Directed Studies	2006-2018	graduate	UVic
SENG310: Human Computer Interaction	2006- 2007, 2010	undergraduate 3 <sup>rd</sup> year	UVic
CENG 412: Human Factors in Engineering	2009	undergraduate 4 <sup>th</sup> year	UVic
SENG412: Ergonomics	2007	undergraduate 4 <sup>th</sup> year	UVic
ELEC669A: Selected Topics-Fundamentals of Computer Vision	2006	graduate	UVic
GIF66800/22717: Introduction a la réalité virtuelle	2005	graduate/undergraduate 4 <sup>th</sup> year	Laval
GIF66900: Analyse de mouvement en vision par ordinateur	2004, 2005	graduate	Laval
MAT19961: Calcul matriciel	2004	undergraduate 1 <sup>st</sup> year	Laval

#### 3.2 Publications Related to Teaching

[T7] **M. Cote**, and A. Branzan Albu “Teaching computer vision and its societal effects: A look at privacy and security issues from the students’ perspective,” in *IEEE Conference on Computer Vision and Pattern Recognition Workshops (CVPRW 2017)*, Honolulu, HI, July 2017.

[T6] **F. Jean**, **A. Gebali**, **T. Beugeling**, and A. Branzan-Albu, “An educational visual prototyping environment for real-time imaging,” in *IEEE Conference on Frontiers in Education (FIE 2012)*, Seattle, WA, Oct. 2012.

[T5] A. Branzan Albu, “Learning artificial intelligence clip-by-clip: Post class reflections on the first online Norvig-Thrun-Stanford-Know Labs Artificial Intelligence course,” in *IEEE Conference on Frontiers in Education (FIE 2012)*, Seattle, WA, Oct. 2012.

[T4] A. Branzan Albu, H. Tuokko, **K. Malakuti**, and K. Kowalski, “Interdisciplinary project-based learning in ergonomics for software engineers: A case study,” in *International Conference of Software Engineering Advances (ICSEA 2008)*, Sliema, Malta, Oct. 2008.

[T3] A. Branzan Albu and R. Siemens, “Teaching Human-Computer-Interaction with Shakespeare Sonnets: a case study in interdisciplinary project-based learning,” in *World Conference on Educational Media and Technology (EdMedia 2009)*, Honolulu, HI, June 2009.

[T2] A. Branzan Albu and **K. Malakuti**, “Work in progress – Problem-based learning in digital signal processing,” in *IEEE Conference on Frontiers in Education (FIE 2009)*, San Antonio, TX, Oct. 2009.

[T1] A. Branzan Albu, “Work in progress – Imageria: A visual computing festival for girls,” in *IEEE Conference on Frontiers in Education (FIE 2009)*, San Antonio, TX, Oct. 2009.

### 3.3 Graduate Student Supervision

#### Summary of Supervisory Duties at Graduate Level

Ph.D.		M.A.Sc.		Postdocs/Research associates	
Current	Graduated	Current	Graduated	Current	Past
4	5	3	14	1	2

#### Graduate Supervision (Currently Supervised Students)

Name	Degree	Thesis/Project Title
Melissa Cote	Research associate	Computer vision-based analysis of digital floor plans
Maryam Alizadeh	Ph.D.	Computer vision-based evaluation of prosthetic heart valves
Amanda Dash	Ph.D.	Video summarization
Alireza Rezvanifar	Ph.D.	Symbol spotting on residential floor plans
Tunai Porto Marques	Ph.D.	Robotics for underwater image analysis
Dany Cabrera	M.A.Sc.	Wall and room segmentation on residential floor plans
Atsuko Umeki	M.A.Sc.	Computer vision applications for big data visualization



## **4 SERVICE AND LEADERSHIP**

### **4.1 Service to the University of Victoria**

#### **Administrative Positions and Committees**

- 2019 – present: Member of the Faculty of Engineering Committee on Equity, Diversity, and Inclusivity
- 2019 – present: University of Victoria 30-by-30 co-Champion <https://engineerscanada.ca/diversity/women-in-engineering/30-by-30>
- 2018 - present: Graduate Advisor, Electrical and Computer Engineering
- 2014 - 2016: Elected member of the Senate of the University of Victoria
- 2013 - 2014: Elected member of the search committee for the Vice-president Research (representative Engineering) at the University of Victoria
- 2011 - present: Graduate Advisor for Interdisciplinary Individual Graduate Programs at the University of Victoria
- 2010 - 2012: Member of the university steering committee of the Academic Women Caucus (AWC) at the University of Victoria
- 2010 - 2012: Elected member of the Faculty Advisory Committee (Promotion and Tenure) (representative of the ECE Department)
- 2009 - 2010: Elected member of the search committee for the Vice-president Academic (representative of the Faculty of Engineering)

### **4.2 Service to National and International, Academic and Professional Communities**

#### **Event Administration**

- 2014, 2016, 2018: Co-organizer of 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> ICPR workshop on “Computer Vision for Analysis of Underwater Imagery” (CVAUI), Stockholm-2014, Cancun-2016, Beijing-2018
- 2016: Co-organizer of the MTS/IEEE Oceans Tutorial on “State of the Art in Automated Analysis of Underwater Imagery,” Monterey, CA, Sept.2016
- 2015: Publication Chair, IEEE Pacific Rim Conference on Communications, Computers and Signal Processing (PACRIM 2015), Victoria, BC

#### **Service to National and International Associations and Organizations**

- 2018 - 2020: Elected IAPR<sup>6</sup> 1<sup>st</sup> Vice-President
- 2016 - 2018: IEEE Victoria Section Chair (Region 7- Canada)  
2018: Winner of the Exemplary Section Award (IEEE Canada Awards)
- 2014 - 2018: Elected IAPR Secretary (member of the executive committee)

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<sup>6</sup> <http://www.iapr.org>

- 2014 - ongoing: Committee Member, Ocean Observatory Council<sup>7</sup>, Ocean Networks Canada
- 2013 - ongoing: Member of the NOAA Strategic Initiative on Automated Image Analysis<sup>8</sup>
- 2009 - 2012: IAPR Newsletter Editor

### **Grant Proposal Reviewer and Committee Member**

- 2019-2020 – Member of NSERC Selection Committee for the NSERC Chairs for Women in Science and Engineering
- 2009, 2011, 2015, 2018, 2020: FQRNT (Fonds Nature et Technologies Quebec) – member of international committee for team grants evaluation
- 2005 - 2017: NSERC Discovery Grants
- 2010: National Science Foundation Merit Review
- 2008: Post-Doctoral Fellowships (Michael Smith Foundation for Health Research)
- 2008: Alberta Ingenuity New Faculty Award program
- 2007: NSERC Idea to Innovation Program
- 2007: Social Sciences and Humanities Research Council (SSHRC)

### **Journal and Conference Reviewer**

- Pattern Recognition
- IEEE Transactions on Biomedical Engineering
- Computer Vision Image Understanding
- EURASIP Journal on Signal Processing
- Artificial Intelligence in Medicine
- Canadian Conference on Robot Vision

### **External Examiner (PhD Dissertations)**

- 2019: University of Montreal
- 2019: University of Western Australia
- 2018: University of Bielefeld, Germany
- 2017: University of Saskatchewan, Canada
- 2009: University of Ottawa, Canada

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<sup>7</sup> <http://www.oceannetworks.ca/about-us/organization/committees>

<sup>8</sup> [http://marineresearchpartners.com/nmfs\\_aiasi/Home.html](http://marineresearchpartners.com/nmfs_aiasi/Home.html)