

# CURRICULUM VITAE<sup>1</sup>

## Alexandra Branzan Albu, Ph.D, P.Eng.

Associate Professor  
Department of Electrical and Computer Engineering  
cross-listed with  
Department of Computer Science  
University of Victoria  
Engineering Science Building ECS 324  
3800 Finnerty Rd  
Victoria, BC V8P 5C2, Canada

email: [aalbu@uvic.ca](mailto:aalbu@uvic.ca)  
phone: 1(250)721-8681  
fax: 1(250)721-6052  
web: [www.ece.uvic.ca/~aalbu](http://www.ece.uvic.ca/~aalbu)

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<sup>1</sup> last updated May 2014

<sup>2</sup> Co-supervised with Dr. Bergevin, Laval

## **1 BACKGROUND**

### **1.1 Education**

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

### **1.2 Employment History**

- July 2009- present  
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, Electrical and Computer Engineering, Laval University (Quebec), Canada
- October 2001-April 2003  
Postdoctoral fellow, Electrical and Computer Engineering, Laval University (Quebec), Canada
- January 1999-June 2001  
Lecturer, University "Ovidius", Romania

## 2 RESEARCH

### 2.1 Most Significant Research Contributions

My research belongs to the field of Computer Vision. From a practical standpoint, my contributions to this field involve investigating research questions that are closely linked to societal needs such as rehabilitation, aging-in-place, medical imaging, and more recently big data. The nature of the research problems that I have been working on involves a substantial theoretical content that transcends the limits of particular applications. According to Google Scholar, my research papers have received 216 citations (153 since 2009). The remainder of the section outlines my main contributions to medical image analysis, human motion analysis, and big data.

#### Medical Image Analysis

My research addresses the development of interactive 2D and 3D data measurement and visualization techniques for supporting healthcare professionals in improving the processes of image-based diagnosis and therapy planning. Collaborative work with physiotherapists [C8] resulted in a novel tracking method adapted to low-resolution pelvic ultrasound. Work performed in collaboration with the BC Cancer Agency Victoria [C9] deals with the automatic detection of fiducial markers in prostate cancer radiotherapy.

In [J7] we proposed a new morphology-based approach for inter-slice interpolation of CT and MRI datasets composed of parallel slices. The main contribution of our approach is its ability to interpolate between two anatomic shapes by creating a smooth, gradual change of shape and without generating over-smoothed interpolated shapes. Creating interpolated shapes of similar smoothness with the input is relevant for various applications such as 3D morphometry and therapy planning, where the preservation of local shape details matters.

Building accurate 3D models of organs is possible only when input data (i.e. 2D contours in parallel slices) is highly consistent with the anatomical reality. This is why we investigated in [C12] the problem of contour retrieval from legacy data of prostate ultrasound.

#### Human Motion Analysis

##### *Human motion modeling for performance analysis*

A novel method for quantifying the motor performance of human subjects for health-related applications is proposed in [C7]; the method is based on tracking postural changes during motion performance for the assessment hand-eye coordination. A motion model for the quantification of motion irregularities (sways) during the performance of daily actions such as sit-to-stand, stand-to-sit, reaching etc was recently proposed in [C1]. The proposed motion model is based on Hidden Markov Models, and has been trained and tested on a custom-designed database involving multiple daily actions. Experimental results demonstrate its robustness with respect to subject and speed variability. With further refinement this approach could be used as a clinical tool for the motion assessment of elderly frail subjects.

*Temporal segmentation of periodic activities from video data*

Most of the recent studies in video-based human motion analysis are performed on video sequences containing a single activity. There is little research about video streams where the activity pattern changes over time. The work described in [J9] addresses this issue by dealing with the temporal segmentation of multiple human actions from a continuous video sequence. In [C10] we temporally segment breathing irregularities by exploiting the periodicity of normal breathing patterns.

*Modeling human gait: tracking and trajectory normalization of body parts*

In the context of human gait modeling, accurate tracking is an essential requirement. Thus, we have proposed new methods for tracking body parts in real-time in [C17], and for normalizing spatiotemporal trajectories of the tracked feature points with respect to the viewpoint in [J4, J5, C11].

A key issue in visual gait analysis is the varying angle between the optical axis of the camera and the direction of the walking trajectory. This issue is typically not addressed in the literature about gait analysis, since most researchers assume a linear trajectory, captured from a fronto-parallel viewpoint. In [J4, J5] we propose two methods for computing body part trajectories that are invariant to the walking direction and to the viewpoint. After normalization, the trajectories appear as if seen from a fronto-parallel viewpoint, which is optimal for gait modeling purposes.

*Perceptual Interfaces*

We proposed in [J6] an algorithm for tracking feet motion and recognizing feet interactions with a ‘visual keyboard’. The ‘visual’ attribute comes from the fact that, unlike its physical counterpart, the keyboard prototype does not involve any force feedback during key-presses. From a practical standpoint, the approach described in this paper is, at the best of our knowledge, the first approach using feet motion for interacting with a perceptual interface. Although the visual keyboard was originally designed in a computer music generation context, it can serve other purposes as well. Applications of human computer interaction based on feet gestures may be relevant for example for display and mode control in non-contact operating rooms, while hands are busy with the surgical intervention.

**Big Data**

Methods for working with large amounts of data have been developed for three collaborative projects. The first one involves working with the public Mountain Legacy database <http://mountainlegacy.ca>, an impressive collection of high resolution mountain photographs acquired in the Rocky Mountains at the beginning of the 20th century, paired with repeat photographs acquired in recent field trips. The focus is on automatic change detection between historic and repeat images using computer vision techniques. Recently, we have submitted a journal manuscript [J2] that proposes texture-based descriptors in combination with support vector machines (SVM) and K-Nearest Neighbour Classifiers for the segmentation of mountain landscapes and for change detection.

The second project involves work with underwater video acquired on a 24/7 basis by Ocean Networks Canada (former Neptune Canada) [www.neptunecanada.com](http://www.neptunecanada.com). The focus is on monitoring marine life and creating automatic abstractions of underwater video and non-video data to be further used by marine biologists and oceanographers. Preliminary results on video summarization and data visualization are reported in [C5, C6].

The third project is a collaboration with SAP Canada on the development of document image analysis techniques suitable for business documents. Contemporary business documents contain diverse, multi-layered mixtures of textual, graphical, and pictorial elements. Existing methods for document segmentation and classification do not handle well the complexity and variety of contents, geometric layout, and elemental shapes. We have recently proposed a novel texture descriptor for the pixel-based classification of business document images [J1].

## 2.2 Publications

**Legend:** Names in **bold** face are students that I have supervised or co-supervised for the work presented in the publication.

### Refereed Book Chapter

[B1] **Prinz, R.**, 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

[J1] **M. Cote** and A. Branzan Albu, "Texture sparseness for pixel classification of business document images," *International Journal of Document Image Analysis* June 2013, accepted Jan 2014, published online Feb 2014.

[J2] **F. Jean**, A. Branzan Albu, D. Capson, E. Higgs, and B. Starzomski, "Change detection in oblique images of mountain landscapes using texture-based segmentation," submitted to *Pattern Recognition* Aug. 2013.

[J3] **N.T. Nguyen**, D. Laurendeau, and A. Branzan-Albu, 'A robust method for camera motion estimation in movies based on optical flow', *Int. J. Intelligent Systems Technologies and Applications*, Vol. 9, Nos. 3/4, pp.228–238, 2010.

[J4] **F. Jean**, R. Bergevin and A. Branzan Albu, "Computing and Evaluating View-Normalized body part trajectories," *Image and Vision Computing, Elsevier Science*, vol. 27, no 9, pp. 1272–1284, 2009.

[J5] **F. Jean**, A. Branzan Albu, and R. Bergevin, "Towards View-Invariant Gait Modelling: Computing View-Normalized Body Part Trajectories," *Pattern Recognition, Elsevier Science*, vol. 42, no 11, pp. 2936-2949, Nov. 2009.

[J6] **F. Jean**, and A. Branzan Albu, "The Visual Keyboard: Real-time feet tracking for the control of Meta-Instruments", *Signal Processing: Image Communication (Elsevier), Special issue on Semantic Analysis for Interactive Multimedia Services*, vol. 23, issue 7, pp. 505-515, 2008.

[J7] 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, issue 8, pp. 2022-2038, 2008.

[J8] A. Branzan Albu, and **T. Beugeling**, "A three-dimensional spatiotemporal template for interactive human motion analysis", *Journal of Multimedia*, Academy Publishers, vol. 2, issue 4, pp. 45-54, 2007.

[J9] A. Branzan Albu, R. Bergevin, and **S. Quirion**, "Generic temporal segmentation of cyclic human motion", *Pattern Recognition, Elsevier Science*, vol. 41, pp. 6-21, 2008.

[J10] 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 Journal, Elsevier Science, Special Issue on Video Object Processing*, Vol.11, pp. 219-232, June 2005.

### Refereed Conference Publications

[C1] **M. Cote** and A. Branzan Albu, "Sparseness-based descriptors for texture segmentation", accepted to the *International Conference on Pattern Recognition (ICPR 2014)*, Sweden, August 2014.

[C2] **T. Beugeling** and A Branzan-Albu, " Computer Vision-Based Identification of Individual Turtles using Characteristic Patterns of Their Plastrons", *Proc. of the Canadian Conference on Computer and Robot Vision (CRV 2014)*, Montreal, May 2014.

[C3] **A. Agahchen** and A. Branzan-Albu, "Towards Understanding Beautiful Things: A Computational Approach for the Study of Color Modulation in Visual Art", *Proc. of Eurographics 2014*, Strasbourg, France, April 2014.

[C4] **T. Beugeling** and A Branzan-Albu, "Sway Detection in Human Daily Actions Using Hidden Markov Models", *Proc. of the Engineering in Medicine and Biology Society (EMBS) Conference on Neural Engineering (NER 2013)*, San Diego, US.

[C5] **T. Beugeling** and A Branzan-Albu, "Detection of Objects and Their Shadows from Acoustic Images of the Sea Floor", *Proc. of IEEE Oceans 2013*, San Diego, US.

[C6] **M. Mehrnejad**, A. Branzan-Albu, M. Hoeberechts, and D. Capson, "Detection of Stationary Animals in Deep-Sea Video", *Proc. of IEEE Oceans 2013*, San Diego, US.

[C7] **J. Svendsen** and A. Branzan-Albu, "Segmenting Graphics-Intensive Business Documents", *Proc. of SPIE Electronic Imaging Conference, Document Recognition and Retrieval (DRR 2013)*, San Francisco, US.

[C8] **A. Gebali**, A. Branzan-Albu, and M. Hoeberechts, "Detection of Salient Events in Large Datasets of Underwater Video", *Proc. of IEEE Oceans 2012*, Virginia Beach, US.

[C9] **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", *Proc. of IEEE Oceans 2012*, Virginia Beach, US.

[C10] **J. Svendsen**, **T. Beugeling**, and A. Branzan-Albu, "Computer Vision-Based Assessment of Hand-Eye Coordination in Young Gamers: A Baseline Approach", *Proc. of Computer Vision and Pattern Recognition Workshops (CVPRW 2012) IEEE Conference on Computer Vision Pattern Recognition (CVPR 2012)*, Rhode Island, US.

[C11] **F. Jean**, A. Branzan Albu, and C. Dumoulin, "Feature-based tracking of urethral motion in low-resolution trans-perineal ultrasound", *Proc. Int. Conf. of the IEEE Eng. in Medicine and Biology Society (EMBC 2011)*, Boston, US.

[C12] **P. Bonneau**, A. Branzan Albu, and M. Hiltz, "Local Image Enhancement for Fiducial Marker Detection in Electronic Portal Images", *Proc. Int. Conf. of the IEEE Eng. in Medicine and Biology Society (EMBC 2010)*, Buenos Aires, Argentina.

[C13] **K. Malakuti** and A. Branzan Albu, "Towards an Intelligent Bed Sensor: Non-Intrusive Monitoring of Sleep Irregularities with Computer Vision Techniques", *Proc. IEEE Int. Conf. on Pattern Recognition (ICPR 2010)*, Istanbul, Turkey.

[C14] **F. Jean**, R. Bergevin, and A. Branzan Albu, "Trajectories Normalization for Viewpoint Invariant Gait Recognition", in *Proc. of IEEE Int. Conf. on Pattern Recognition (ICPR'08)*, Tampa, US.

[C15] **G. Rivet-Sabourin**, A. Branzan Albu, L. Beaulieu, and D. Laurendeau, "Automatic contour retrieval in annotated TRUS prostate images", In *Proc. of the 5<sup>th</sup> IEEE Int. Symposium on Biomedical Imaging (ISBI'08)*, Paris, France.

[C16] 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 *Proc. of the 5<sup>th</sup> IEEE Intelligent Vehicles Symposium (IV 2008)*, Eindhoven, Netherlands.

[C17] **F. Jean**, A. Branzan Albu, A. Schloss, and P. Driessen, "Computer vision-based interface for the control of musical meta-instruments", *12<sup>th</sup> Conference on Human Computer Interaction (HCII International 2007)*, Beijing, China, pp. 428-432.

[C18] 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", *12<sup>th</sup> Conference on Human Computer Interaction (HCII International 2007)*, Beijing, China, pp. 1189-1193.

[C19] **N. T. Nguyen**, D. Laurendeau, and A. Branzan Albu, "A new segmentation method for MRI images of the shoulder joint", in *Proc. of the 4<sup>th</sup> IEEE Canadian Conference of Computer and Robot Vision (CRV 2007)*, Montreal, Canada, pp. 329-338.

[C20] **F. Jean**, R. Bergevin, and A. Branzan Albu, "Computing View-Normalized Body Part Trajectories", in *Proc. of the 4<sup>th</sup> IEEE Canadian Conference of Computer and Robot Vision (CRV 2007)*, Montreal, Canada, pp. 89-96.

[C21] A. Branzan Albu, **T. Beugeling**, N. Virji-Babul, and C. Beach, "Analysis of Irregularities in Human Actions with Volumetric Motion History Images", in *Proc. of IEEE Workshop on Motion and Video Computing (WMVC 2007)*, Austin, US, pp. 16-23.

[C22] A. Branzan Albu, "Vision-based user interfaces for health applications: a survey", in *Proc. of Advanced Visual Computing, 2<sup>nd</sup> International Symposium (ISVC 2006)*, Lake Tahoe, USA, pp. 771-782.

[C23] A. Branzan Albu, D. Laurendeau, et al. "MONNET: Monitoring pedestrians with a network of loosely-coupled cameras", in *Proc. IEEE Int. Conference on Pattern Recognition (ICPR 2006)*, Hong Kong, China.

[C24] **F. Jean**, R. Bergevin, and A. Branzan Albu, "Body tracking in human walk from monocular video sequences", in *Proc. of 2<sup>nd</sup> IEEE Canadian Conference on Computer and Robot Vision (CRV 2005)*, Victoria, Canada.

[C25] **S. Quirion**, A. Branzan Albu, and R. Bergevin, "Skeleton-based temporal segmentation of human activities from video sequences", in *Proc. of 13th Int. Conf. in Central Europe on Comp. Graphics, Visualization and Comp. Vision (WSCG 2005)*, Plzen-Broy, Czech Republic.

[C26] 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 *Proc. of 13<sup>th</sup> Medicine Meets Virtual Reality Conference (MMVR13-2005)*, Long Beach, US.

[C27] **M. Yazdi**, A. Branzan Albu, and R. Bergevin, "Morphological analysis of spatio-temporal patterns for the segmentation of cyclic human activities", in *Proc. IEEE Int. Conference on Pattern Recognition (ICPR2004)*, Cambridge, UK.



[C28] 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 *Proc. Medical Robotics, Navigation and Visualization (MRNV 2004)*, Remagen, Germany.

[C29] **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 *Proc. 1<sup>st</sup> IEEE Canadian Conf. on Computer and Robot Vision (CRV2004)*, London, Ontario, pp. 279-286.

[C30] 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 *Proc. Int. Symp. on Medical Simulation (ISMS 2004)* (S. Cotin, D. Metaxas Eds.), Lecture Notes in Computer Science, Cambridge, US, pp. 193-202.

[C31] Branzan Albu, A., 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 *Proc. 4<sup>th</sup> IEEE Int. Conf. on 3D Digital Imaging and Modeling (3DIM2003)*, Banff, Canada, pp. 370-377.

[C32] Branzan Albu, A., J.-M. Schwartz, D. Laurendeau, and C. Moisan, "Integrating geometric and biomechanical models of a liver tumor for cryosurgery simulation", in *Proc. Int. Symp. on Surgery Simulation and Soft Tissue Modelling 2003* (N. Ayache, H. Delingette Eds.), Lecture Notes in Computer Science, Springer, Juan-Les-Pins, France, pp. 121-131.

[C33] Branzan Albu, A., D. Laurendeau, and C. Moisan, "Tumor detection in MR liver images by integrating edge and region information", in *Proc. Modelling & Simulation for Computer-aided Medicine and Surgery 2002*, INRIA Rocquencourt, France, ESSAIM Proceedings Vol.12, pp. 17-24.

### 2.3 Invited Talks

[P1] "Detection of Salient Events in Large Datasets of Underwater Video", Invited talk sponsored by the IEEE Victoria Oceans Chapter, Victoria, December 2012.

[P2] "Medical Imaging Research at UVic: an overview of recent results", Invited talk hosted by Prof. Viergever, University of Utrecht, Netherlands, April 2012.

[P3] "Artificial Intelligence: Friend or Foe?", Cafe Scientifique public presentation sponsored by the Center on Aging at UVic, Victoria, BC, Canada, January 2012.

[P4] "Towards Building Computers That See", Invited Talk at Mount Douglas High

School, Victoria, BC, Canada, October 2011.

[P5] Exploring New Horizons for Computer Vision, Invited Seminar hosted by Prof. J.K. Aggarwal, University of Texas at Austin, December 2010.

[P6] Computer Vision Research at the University of Victoria, Invited Seminar at SAP Vancouver, December 2009.

[P7] New Horizons for Computer Vision, Invited Talk at the School of Engineering Science, Simon Fraser University, (sponsored by Prof. Lesley Shannon), Vancouver, Nov. 2009.

[P8] Successful Industrial Partnerships, panel member, Creating Connections 2009, Maple Ridge, BC, September 2009, (sponsored by the NSERC Chair for Women in Science and Engineering for BC).

[P9] 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), April 2008.

[P10] Computer Vision: Towards Building Computers that See, Invited Talk at the Brentwood College, UVic Speaker's Bureau Series, Victoria, October 2008.

[P11] 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, September 2008.

[P12] 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, July 2008.

[P13] Motion Analysis and Video Understanding. Tutorial, IEEE International Conference on Signals, Circuits, and Systems, ISSCS 2005, Iasi, Romania, July 2005.

## 2.4 Research Funding

The following shows research funding for which I am or was principal investigator.

Index	Type	Source	Awarded	End	Annual	Total (CAD)
G1	Operating	Plurilock and NSERC-CRD	2013	2015	48,650	97,300
G2	Operating	INTEL	2011	2012	10,000	10,000
G3	Contract	Kongsberg Mesotech	2010	2013	23,000	92,000
G4	Operating	MITACS	2009	2009	30,000	30,000
G5	Operating	SAP Canada and NSERC-CRD	2011	2014	76,000	228,000
G6	Operating	MITACS	2008	2008	15,000	15,000
G7	Equipment	CFI/BCKDF	2009	2010	236,750	236,750
G8	Operating	NSERC-DG	2008	2013	20,000	100,000
G9	Operating	NSERC-DG	2006	2008	20,000	40,000
G10	Operating	NSERC-DG	2003	2006	30,000	120,000
G11	Operating	FQRNT	2003	2005	15,000	30,000
G12	Operating	Start-up UVIC	2005		40,000	40,000

TOTAL: \$ (CAD) 802,300 Operating + \$ (CAD) 236,750 Equipment

### Grant Descriptions

[G1] Cloud-Based Secure Virtual On-Line Exam Center (SeVOEC), funded by Plurilock Inc. and by the NSERC CRD program.

[G2] Computer Vision for Multi-Core Processing, funded by INTEL.

[G3] Automatic Quantitative Analysis and Generation of Mosaics from Sonars, funded by Kongsberg Mesotech.

[G4] Development of Computer Vision Algorithms for Pan-Tilt-Zoom Surveillance Cameras, funded by FLIR Inc. and by the MITACS Accelerate BC Internship Program.

[G5] A Framework for High-Level Content-Based representation of Screen-Rendered Documents, funded by SAP Canada and by the NSERC CRD program.

[G6] Development of an Intelligent Bed Sensor Based on Computer Vision Techniques, \$ 15,000, funded by Tactex Inc. and by the MITACS Accelerate BC Internship Program.

[G7] Canadian Foundation for Innovation (CFI) and BC Knowledge Development Fund (BCKDF) VISION: A research facility for Computer Vision. \$ 236,000 (2009)

[G8] A Computer Vision-Based Framework for Human Motion Analysis with Applications to Health Care, NSERC Discovery Grant.

[G9] Abnormal Gait Detection with Applications to Senior Health Care, NSERC Discovery Grant.

[G10] Real-time unusual event detection in human motion in a surveillance context, NSERC Discovery Grant.

[G11] Analyse morphologique 3D de l'épaule humaine basée sur la vision par ordinateur. NATEQ Nouveaux Chercheurs.

[G12] University of Victoria Start-up Grant.

### 3 TEACHING

#### 3.1 Courses Taught

Course	Term	Level	University
CENG421/ELEC536: Computer Vision	2008-2014	cross-listed	UVic
ELEC 435: Medical Image Processing	2011, 2013	undergraduate 4 <sup>th</sup> year	UVic
ELEC310: Digital Signal Processing I	2008-2011	undergraduate 3 <sup>rd</sup> year	UVic
ELEC590: Directed Studies	2006-2013	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
GIF66900: Analyse de mouvement en vision par ordinateur	2004, 2005	graduate	Laval
MAT19961: Calcul matriciel	2004	undergraduate 1st year	Laval
GIF66800/22717: Introduction a la réalité virtuelle	2005	crosslisted	Laval

### 3.2 Publications Related to Teaching

[T1] F. Jean, A. Gebali, T. Beugeling, and A. Branzan-Albu, "An Educational Visual Prototyping Environment for Real-Time Imaging" Proc of the IEEE Conf on Frontiers in Education, FIE 2012.

[T2] A. Branzan Albu, "Learning Artificial Intelligence Clip-by-Clip: Post Class Reflections on the First Online Norvig-Thrun-Stanford-Know Labs Artificial Intelligence Course", Proc of the IEEE Conf on Frontiers in Education, FIE 2012.

[T3] A. Branzan Albu, H. Tuokko, K. Malakuti, and K. Kowalski, "Interdisciplinary Project-based Learning in Ergonomics for Software Engineers: A Case Study", Proc. of Int. Conf. of Softw. Engr. Adv., ICSEA, Malta, pp. 295-300, 2008.

[T4] A. Branzan Albu and R. Siemens, "Teaching Human-Computer-Interaction with Shakespeare Sonnets: a case study in interdisciplinary project-based learning" In Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2009, EDMEDIA 2009, pp. 973-979, Honolulu 2009.

[T5] A. Branzan Albu and K. Malakuti, "Work in Progress – Problem-based learning in digital signal processing", Proc of the IEEE Conf on Frontiers in Education, FIE 2009.

[T6] A. Branzan Albu, "Work in Progress-Imageria: A visual computing festival for girls", Proc of the IEEE Conf on Frontiers in Education, FIE 2009.

### 3.3 Graduate student supervision

#### Summary of supervisory duties at graduate level

Ph.D.		M.A.Sc.		Post-docs	Total
Current	Graduated	Current	Graduated	Current	
3	3	2	10	2	20

#### Graduate supervision – Currently supervised students

Name	Degree	Thesis Title	Start Date
Melissa Cote	Postdoc	Document image analysis for electronic business reports	2012
Frederic Jean	Postdoc	Change detection in mountain landscape images	2012
Jeremy Svendsen	Ph.D.	Automatic analysis of screen-rendered documents	2009
Trevor Beugeling	Ph.D.	Processing and analysis of underwater acoustic Images	2010
Kawthar Moria	Ph.D.	Attribute-based video query for surveillance applications	2010
Marzieh Mehrnejad	M.A.Sc.	Segmentation of sea life in underwater images	2011
Anissa Agahchen	M.A.Sc.	Computational models for the aesthetic analysis of documents	2011

### Graduate supervision – Graduated students

Name	Degree	Thesis Title	Graduation Year
Frederic Jean <sup>2</sup>	Ph.D.	Modélisation et comparaison de la démarche de personnes à partir de séquences vidéo monoculaires	2012
Joey Quevillon	M.A.Sc.	Video surveillance with pan tilt zoom cameras	2012
Aleya Gebali	M.A.Sc.	Detection of Salient Events in Underwater Video	2012
Chris Gat <sup>3</sup>	M.A.Sc.	Change Detection in Landscape Images	2011
Patrick Bonneau <sup>4</sup>	M.A.Sc.	Automatic detection of fiducial markers for prostate cancer radiotherapy	2010
Trevor Beugeling	M.A.Sc.	Analysis of abnormalities in daily human actions	2010
Nguyen Nhat Tan <sup>5</sup>	Ph.D.	Reconnaissance des activités humaines à partir de séquences de films	2010
Jeremy Svendsen	M.A.Sc.	Analysis of Motor Skills in Subjects with Down’s Syndrome using Computer Vision techniques	2009
Geoffroy Rivet Sabourin <sup>6</sup>	PhD	Fusion de l’information clinique pour l’aide a la segmentation: application a la segmentation de la prostate pour la curietherapie	2009
Kaveh Malakuti	M.A.Sc.	Monitoring Sleep Apnea with Computer Vision	2008
Sebastien Quirion <sup>6</sup>	M.A.Sc.	Detection automatique des activites cycliques dans le mouvement humain	2006
Louis Buteau Vaillancourt <sup>6</sup>	M.A.Sc.	Paire stereo agile en vue d’une application a MONNET: etude du viewport	2006
Chris Dompierre <sup>6</sup>	M.A.Sc.	AVATAR: une application de realite virtuelle	2006

## 4 SERVICE AND LEADERSHIP

### 4.1 Service to the University of Victoria

#### Administrative positions and committees

- 2013-2014: elected member of the search committee for the Vice-president Research (representative of the Faculty of 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

<sup>2</sup> Co-supervised with Dr. Bergevin, Laval

<sup>3</sup> Co-Supervised with Dr. German, Computer Science, UVIC

<sup>4</sup> Co-supervised with Dr. Hilt, BC Cancer Agency, Victoria

<sup>5</sup> Co-supervised with Dr. Laurendeau, Laval

- 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)
- 2007-present: Technical Program Chair for the IEEE Victoria section

#### **4.2 Service to the international academic community**

2009-2012: I served as the Newsletter Editor for the International Association of Pattern Recognition (IAPR). This association has been founded in 1979 and counts more than 10000 members affiliated to their national IAPR sections. IAPR hosts a series of top conferences in Computer Vision (such as the International conference on Pattern Recognition, ICPR, and the British Machine Vision Conference, BMVC).

##### Review of Tenure and Promotion Application

2008: Ecole Polytechnique de Montreal (Dept. de genie electrique et de genie informatique)

##### External Examiner (PhD Defense)

2008: University of Ottawa, “Towards Context-Aware Gesture Enabled User Interfaces” (supervisor: Prof. Georganas)

##### Grant Proposal Reviewer

- 2009, 2011: NATEQ – international committee for team grants evaluation
- 2008: Post-Doctoral Fellowships (Michael Smith Foundation for Health Research)
- 2008: Alberta Ingenuity New Faculty Award program
- 2005-2014: NSERC Discovery Grants
- 2007: NSERC Idea to Innovation Program
- 2007: Social Sciences and Humanities Research Council (SSHRC)
- 2010: National Science Foundation Merit Review

##### Journal Reviewer

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