CENTRE FOR INTELLIGENT MACHINES (CIM)
www.cim.mcgill.ca

Annual Report 2009 - 2010

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BACKGROUND SUMMARY

Mission

The Centre for Intelligent Machines (CIM) supports graduate research, teaching and applications of intelligent systems. This dynamic community of scientists, engineers and designers seek to bridge science and innovation. Their novel ideas bring solutions to some of the most challenging problems of the 21st century.

Established in 1985

CIM was formed in 1985 as the McGill Research Centre for Intelligent Machines (McRCIM). At that time, it reported to the Dean of the Faculty of Engineering and the Vice-Principal Graduate Studies and Research. Members from the Department of Electrical Engineering, the Department of Mechanical Engineering, the Department of Biomedical Engineering, the Department of Mining and Materials Engineering and the School of Computer Science contributed to the Centre's early formation.

As of 2009-2010

Today, the Centre is comprised of 29 faculty members and associate members, about 150 graduate and honors-undergraduate students, post-doctoral fellows and visitors and 13 topical laboratories. The Centre for Intelligent Machines (CIM) currently spans 2 faculties with members from the Departments of Electrical and Computer Engineering, Mechanical Engineering and the School of Computer Science. It also has associate members and collaborators in related disciplines, such as the Montreal Neurological Institute, and other universities both within Québec and Canada.

Research Objectives

Our fundamental research objectives and philosophy have remained the same for over 20 years – to push forward the boundaries of intelligent systems through scientific discovery and to educate new generations of students to apply this knowledge to the development of technologies that address the complex needs of modern society.

Research Themes

The main research themes within the Centre are:

- Artificial perception
- Robotics
- Systems and control
- Human-Machine interfaces

Interactive Environment

The operation of the Centre is driven by our collective needs with an eye towards synergy and economies of scale. Resources are fully shared among all users in the CIM community. This open, collaborative environment encourages academic debate and the free exchange of ideas.

Academic Recruitment

CIM's global reputation as a dynamic and multidisciplinary research environment has attracted the interest of many top scientists. Over the past decade, 12 academic hires in the Faculties of Science and Engineering accepted positions at McGill largely because of the presence of the Centre and the opportunity to interact with CIM members.

Funding Diversity

We have been successful over the years in attracting funding from numerous sources: NSERC, NCE, CFI, FQRNT, DRES, DARPA, Canadian, U.S. and foreign industries. We have used this funding, in part, to support the acquisition of state of the art research facilities.

Physical Resources

The physical resources of CIM comprise about 14,000 sq. ft. in the McConnell Engineering Building on McGill's main campus. This represents a nearly contiguous collection of offices, laboratories, a small meeting room and space dedicated to house an extensive information system. This proximity creates a working community where we naturally and regularly meet and interact with each other.

Laboratories

Our diverse research culture is home to 13 interdisciplinary laboratories specializing in the areas of:

- Robotics
- Mechatronics
- Aerospace
- Systems and Control
- Haptics
- Vision
- Medical Imaging
- Shared Reality

RESEARCH HIGHLIGHTS

New Member

We are most pleased to report the following:

Our colleague, Professor Joelle Pineau from the School of Computer Science, joined CIM as a full member in May 2009, after having been a CIM Associate member for four years. Joelle is also a member of Regroupement REPARTI.

Professor Pineau is doing work of significant importance to CIM in various facets of Artificial Intelligence and its applications in robotics, machine learning and medical treatments. Her research expertise is broad,ranging from the themes of planning, learning and decision-making, mobile robotics, human computer interaction and adaptive treatment design.

Professor Pineau is co-director of the Reasoning and Learning Laboratory and founder of the SmartWheeler project.

In one of the areas that her research spans, Professor Pineau's group studies planning and learning under model uncertainty and its applications in robotics-human interaction. Most methods for robot planning assume a known model describing the robot's dynamics and perception system. Specifying such a model by hand can be time-consuming and error-prone. Learning techniques can be used to alleviate this problem - however they often require large amounts of data. In certain task domains, such as human-robot interaction, it is not feasible to acquire such large amounts of data.

Professor Pineau studies a new framework for learning and planning under model uncertainty. The method relies on a bayesian formulation of the Partially Observable Markov Decision Process. In this framework, prior knowledge of the domain can be combined with small amounts of data to infer a posterior over model parameters.

New Associate Members

Paul Kry, Assistant Professor in the School of Computer Science, joined CIM as an Associate member this past year.

Professor Kry’s research interests largely involve problems related to computer animation, with an important aspect of the research being the combination of real world measurements, approximate models, and physically based simulation. Recent projects concern interactive simulation of linear elastic objects, animation of locomotion, capture and physically based reuse of interaction, physically based sound synthesis, and skin deformations of articulated characters. His group is specifically interested in simulated motor control of virtual humans and animals, in part, to better understand how humans and animals produce movement, but also to create improved (and interactive) animations of motions such as balance, locomotion, climbing, grasping, and anipulation.

Professor Kry's Computer Graphics Lab has a twelve camera motion capture system and a collection of force sensors, which allow a wide range of real world scenarios to be measured and used for improving the state of the art in interactive human motion models. His research has a variety of possible applications, including video games, movies, training simulations, ergonomics, and robotics.

Dr. Renzo Cecere has recently been accepted as a new Associate Member of CIM.

Dr. Cecere is a cardiothoracic surgeon specializing in heart failure, heart transplantation and mechanical circulatory support. He trained in surgery and cardiothoracic surgery at McGill University and did his fellowship training at Loma Linda University and Stanford University in heart failure, transplantation and mechanical circulatory support. He is the surgical director of the Heart Failure and Heart Transplant Centre at the McGill University Health Centre and the Director of the Mechanical Circulatory Support program. Through many clinical trials, Dr. Cecere has brought multiple new technologies to the MUHC. His research interests include new technologies and treatments for the management of heart failure.

Dr. Cecere is currently collaborating with CIM members Professors Jorge Angeles and Jozsef Kovecses, and PhD candidate Toufic Azar to develop percutaneous techniques for mitral valve repair. Their novel procedure relies on a highly manoeuverable catheter, fitted with an anchoring mechanism, intended to reshape the entire perimeter of the mitral-valve annulus to dimensions suitable for the effective support of the valve leaflets. The focus of the research is the development of an instrument, to be placed at the catheter distal end, that will sequentially insert, around the valve annulus, a set of anchors supporting a wire; tension supplied to the latter, similar to a purse-string, would reduce the lumen of the valve until regurgitation is fully stopped.

OUTSTANDING SCIENTIFIC CONTRIBUTIONS

CIM 25th Anniversary Seminar Series

The Centre for Intelligent Machines, CIM, was recognized by the McGill University Senate as a university centre on November 13th, 1985. CIM will thus celebrate its 25th anniversary in 2010.

CIM is planning three events in celebration of the 25th:

- Seminar series under the title "Brain, Body and Machine" throughout 2010 up to October 2010.
- A public lecture featuring a world-renowned researcher in the areas of CIM's interest
- A Symposium on "Brain, Body and Machine" on November 10-12, 2010.

The year-long seminar series on the topic of "Brain, Body and Machine" will host at least 5 public lectures, each by a prominent international academic. These seminars will take place throughout the year and up to October 2010.

Prof. Robert D. Howe — February 2, 2010

School of Engineering and Applied Sciences
Harvard University, Cambridge, Massachusetts, USA
11:30 a.m., Room G-10, Macdonald-Harrington Building

Fixing the Beating Heart: Ultrasound Guidance for Robotic Intracardiac Surgery

To treat defects within the heart, surgeons currently use stopped-heart techniques. These procedures are highly invasive and incur a significant risk of neurological impairment. We are developing methods for performing surgery within the heart while it is beating. New real-time 3-D ultrasound imaging allows visualization through the opaque blood pool, but this imaging modality poses difficult image processing challenges, including poor resolution, acoustic artifacts, and data rates of 30 to 40 million voxels per second. To track instruments within the heart we have developed a Radon transform-based algorithm, which is readily implemented in real-time on graphics processor units. For manipulation of rapidly moving cardiac tissue we have created a fast robotic device that can track the tissue based on ultrasound image features. This allows the surgeon to interact with the heart as if it was stationary. To integrate ultrasound imaging with the robotic device we have developed a predictive controller that compensates for the 50-100 ms imaging and image processing delays to ensure good tracking performance. In vivo studies show that this approach enhances dexterity and lowers applied forces. Clinical applications of this technology include atrial septal defect closure and mitral valve annuloplasty.

Prof. Dr. Wolfram Burgard — April 9, 2010

Faculty for Applied Sciences
University of Freiburg, Germany
11:30 a.m., Room MD280, Macdonald Engineering Building

The Future of Robotics - An Artificial Intelligence Perspective:

Over the past years, the robotics community has steadily grown; an impressive number of systems, techniques, and applications have been developed. In this presentation, the broad vision of robotics will be first introduced, then, the principles and basis of several problems and example solutions in the development of autonomous robots will be given. Potential innovations that can be expected in the near future in this area will also be outlined. Several aspects of outstanding problems which make the development of truly autonomous robots challenging will be discussed, and key technologies that can have significant influence on the field of robotics will be highlighted.

Prof. Oussama Khatib — April 23, 2010

Department of Computer Science
Stanford University, Stanford, CA, USA
6:00 p.m. Room G-10, Macdonald-Harrington Building

Robots Among Us

Robotics is rapidly expanding into the human environment and vigorously engaged in its new emerging challenges. From a largely dominant industrial focus, robotics has undergone, by the turn of the new millennium, a major transformation in scope and dimensions. This expansion has been brought about by the maturity of the field and the advances in its related technologies to address the pressing needs for human-centered robotic applications. Interacting, exploring, and working with humans, the new generation of robots will increasingly touch people and their lives, in homes, workplaces, and communities, providing support in services, entertainment, education, health care, and assistance. The discussion focuses on new design concepts, novel sensing modalities, efficient planning and control strategies, modeling of human motion and skills, which are among the key requirements for safe, dependable, and competent robots.

Prof. Friedrich Pfeiffer — September 10, 2010

Technical University Munich
Angewandte Mechanik, Germany

On Biological and Artificial Walking

Walking is a fascinating invention of nature. It is versatile, flexible and perfectly adapted to a natural environment. Walking in its various realizations enables the biological systems to have access to all natural structures of the earth. Walking realizes motion, and motion with motion planning is the basis for intelligence, as modern biologists say. If intelligence is defined as the ability to deal with unknown and new situations biological motion, both mental and physical, can be considered as a manifestation of intelligence. Walking has been detected by engineers some 20-30 years ago, although before that time numerous trials had been made to realize some mechanisms with walking capabilities. Nowadays the computer age and a large variety of sophisticated technologies give walking machine realizations a high probability of success, which can best be seen in Japan. My group at the Technical University of Munich started in 1989 to design and to realize walking machines, partly in cooperation with neurobiologists specialized in biological walking problems. The presentation will touch some problems connected with machine walking, especially in the fields of design, dynamics, control and stabilization. It will also discuss some of the open questions connected with walking, especially stabilization problems. Finally, the chances of walking machines will be discussed.

Prof. Philip Holmes — October 7, 2010

Department of Mechanical and Aerospace Engineering
Princeton University, Princeton, NJ, USA

The neurodynamics of simple decisions: Drift-diffusion equations as models for single brains, and for group behaviors

I will describe how simple stochastic differential equations can model evidence accumulation and decision making, sketching their derivation from biophysically-detailed models of spiking neurons, and relating them to the sequential probability ratio test from statistical decision theory. This connection yields a speed-accuracy tradeoff that optimizes rewards in a simple two-alternative perceptual decision task. I will compare the resulting model predictions with human behavior and advance explanations for failures to optimize. Finally, I will show how drift-diffusion models can be extended to describe choices in a social gambling task in which players receive limited information regarding other group members' choices and rewards. The talk will draw on joint work with Fuat Balci, Rafal Bogacz, Jonathan Cohen, Philip Eckhoff, Deborah Prentice, Andrea Nedic, Patrick Simen, Damon Tomlin, Marieke van Vugt, KongFatt Wong-Lin and Miriam Zacksenhouse

Prof. Roger Brockett — October 29, 2010

School of Engineering and Applied Sciences
Harvard University, Cambridge, Massachusetts, USA
Sponsored by:
Beatty Committee
Faculty of Engineering and Faculty of Science
6:00 p.m. Room G-10 , Macdonald-Harrington Building

What is an Intelligent Machine?

One of the weak points of the long debated Turing definition of machine intelligence is that it is based completely on language. Even though animals that appear not to use language exhibit behavior thought to be intelligent, Turing's definition leaves them out of the picture. Of even more importance, Turing's test occurs in an entirely sterile environment, providing no acknowledgment of the skills required to make use of the environment to solve problems. In this talk it will be argued that a definition of machine intelligence based on the degree to which machines are able to solve problems by partnering with their environment serves us better in our efforts to understand "intelligence" in a robotic context. This partnership may include using the environment to supplement motor skills, to calibrate capabilities, to test the accuracy of memory, and to experiment with possible courses of action. We intend to give arguments that support the idea that a machine can be said to be intelligent if, when it is placed in a partially unknown environment, it is able to extract sufficient tools and information from the environment to enable it to achieve its goals. The practical implications of this point of view for the design of robots will be emphasized.

CIM in the News

CIM-MRL GROUP and AQUA ROBOT at G-20 SUMMIT!

Huge KUDOS go out to our own Mobile Robotics Lab and its Director, Professor Gregory Dudek. The AQUA robot was front row centre at the G-20 Summit in June 2010.

The Honourable Peter Van Loan, Minister of International Trade, showcased Canadian innovations and leading-edge technologies during a tour of Canadian business displays at the Experience Canada pavilion in Toronto, Ontario.

The Minister's tour of the Experience Canada pavilion featured interactive displays of Canadian innovations from across the country, including:

> AQUA - the world's first amphibious robot, which was developed by McGill University's Centre for Intelligent Machines. The robot can carry out a wide range of tasks related to environmental inspection and reclamation, aquaculture, and national defence. It also has the capacity to work in a teleoperational mode using an Ethernet connection, and is equally at home under the ocean as on land.

http://www.international.gc.ca/media_commerce/comm/news-communiques/2010/202.aspx?lang=eng

CIM-MRL ROBOTIC DRONE FEATURED IN IEEE SPECTRUM!

Several members of the Mobile Robotics Laboratory of CIM, led by Professor Gregory Dudek, were also featured in the recent IEEE Spectrum.

http://spectrum.ieee.org/automaton/robotics/robotics-software/robotic-drone-flies-itself

Spectrum is the flagship publication of the IEEE, the world's largest professional technology association. IEEE Spectrum is read by over 385,000 technology professionals and senior executives worldwide in the high technology sectors of industry, government, and academia.

Well done!

Kudos

Congratulations go out to the following:

CIM founding member ***Professor Peter Caines*** for being awarded a SIAM Fellow 2009.
The Society for Industrial and Applied Mathematics honorific designation is conferred on members distinguished for their outstanding contributions to the fields of applied mathematics and computational science.
"The announcement of the first class of SIAM Fellows is an important milestone for the applied mathematics and computational science community," said SIAM President Douglas N. Arnold. "Reflecting the diversity of the SIAM membership, these men and women come from five continents, and work in academia, industry, and government laboratories. Advancing the frontiers of research in branches of mathematics as distinct as number theory and partial differential equations, these professionals have applied their work to endeavors ranging from mining to medicine. They have designed algorithms to make computing possible and written textbooks to train the next generation of mathematicians. Their contributions are truly outstanding."

CIM founding member, ***Professor Peter Caines***, has also been awarded the 2009 Hendrik W. Bode Lecture Prize from the IEEE Control Systems Society.
This award is given annually in recognition of distinguished contributions to control systems science or engineering. The lecture will be delivered and the award presented at the IEEE Conference on Decision and Control to be held in Shanghai in December, 2009.

Junaed Sattar, PhD candidate with Professor Gregory Dudek, Director of the Mobile Robotics Laboratory, won the Best Robotics Paper Award at the Conference on Computer and Robot Vision. This conference was held in Kelowna, British Columbia May 25-27, 2009, and is sponsored by the Canadian Image Processing and Pattern Recognition Society.
The paper is entitled: "A Vision-based Control and Interaction Framework for a Legged Underwater Robot". (Junaed Sattar and Gregory Dudek). To view the abstract or obtain a complete text please click here.

CIM member ***Professor Gregory Dudek***, who won the Reginald Fessenden Prize in Science Innovation, May 2009, for "Underwater Robotics Vehicle System".
The Fessenden Prizes recognize achievements in innovative research with commercialization potential by students, at both undergraduate and graduate levels, and by professors. One award (sometimes shared) is available each calendar year to an appropriate candidate from each of the three categories.

One of CIM's founding members, ***Professor Paul Zsombor-Murray***, has won the International Society of Geometry and Graphics' (ISGG) Steve M. Slaby Award. The award, which was founded in 1991 by former President of Graphics and Science Promotion and Publications (GRASP), Professor Harold Santo, acknowledges the lifetime achievements and contributions of a scholar in the Graphics Education field. Professor Zsombor-Murray, who has made a significant impact to Engineering Graphics Education and maintains a respected international reputation, received this distinction at the 14th International Conference on Geometry and Graphics (ICGG 2010) in Kyoto. CIM extends our sincere congratulations to Professor Zsombor-Murray.

CIM is very pleased and proud to announce that ***Torsten Liesk,*** a PhD student co-supervised by Professors Meyer Nahon and Benoit Boulet, has won a best paper award at the AIAA Guidance, Navigation and Control (GNC) Conference. Torsten presented his work at the Graduate Student Paper Competition held at the Sheraton Centre in Toronto on August 1st, 2010. His winning paper was titled "Integral Backstepping Control of an Unmanned, Unstable, Fin-less Airship."

CIM member ***Professor Gregory Dudek*** was awarded the "Prix Acfas -J.-Armand-Bombardier 2010" (the J. Armand- Bombardier honorary prize) for technology innovation by l'Association francophone pour le savoir (AFCAS), the principal French-language learned society in Canada.
The announcement was made in Le Devoir in October 2010.
http://www.ledevoir.com/societe/science-et-technologie/297743/ce-que-notre-monde-est-devenu
Bravo Greg!

REPARTI

http://reparti.gel.ulaval.ca/en/REPARTI/index.chtml

Centre REPARTI is an inter-institutional, interdisciplinary collaborative venture between McGill University, represented by the Centre for Intelligent Machines (CIM), and members from Université Laval, Université de Sherbrooke, Ēcole Polytechnique, Université de Montréal, Université du Québec à Rimouski and Université du Québec à Chicoutimi.

REPARTI

http://reparti.gel.ulaval.ca/en/REPARTI/index.chtml

BACKGROUND

Supported by the Quebec government's *Fonds québécois de la recherche sur la nature et les technologies (FQRNT),* this regroupement stratégique builds on several unique historical precedents:

1. The evolution of the FQRNT Network Réseau québécois de recherche en réalité artificielle distribuée (QERRAnet) under the McGill domain (2002-2006) into a research centre in 2006 hosted by Université Laval.
2. The historical and concrete partnership that has developed over a period of 20 years between prominent researchers in this centre as a result of the NSERC National Centres of Excellence program, and the interuniversity-industrial consortium IRIS-Precarn.
3. The long and productive relationship established between the Centre for Intelligent Machines (CIM) and the Quebec government through the former FCAR Centre de recherche programme.

The lead institution in this enterprise is Université Laval under the Directorship of Professor Denis Laurendeau. The McGill node is comprised of 11 members by virtue of their membership in the Centre for Intelligent Machines.

RESEARCH PROGRAM

The research program of REPARTI is composed of three main themes:

- Perception
- Modeling – assessment – learning
- Interaction

OBJECTIVES

The objectives of REPARTI are to: i) conduct advanced research on intelligent environments, ii) improve the quality of life of individuals by reducing the effects of their geographic disparities iii) train highly qualified personnel iv) create opportunities for technology transfer and economic development and v) promote and enhance Quebec's leadership and role in this key technological sector.

Centre REPARTI is part of the REGROUPEMENT STRATEGIQUE program of the Quebec Government's FQRNT. It submits annual reports to the Vice Principal (Research and International Relations) of McGill University. Activities relating to REPARTI can be found at:
http://reparti.gel.ulaval.ca/fr/index.chtml

Appendices

FACULTY MEMBERS

Name	Email	Phone	Department
Angeles, Jorge	angeles	6315	Mechanical Engineering
Arbel, Tal	arbel	8204	Electrical and Computer Engineering
Boulet, Benoit	boulet	1478	Electrical and Computer Engineering
Caines, Peter	peterc	7129	Electrical and Computer Engineering
Clark, James	clark	2654	Electrical and Computer Engineering
Cooperstock, Jeremy	jer	5992	Electrical and Computer Engineering
Cortelezzi, Luca	crtlz	6299	Mechanical Engineering
Dudek, Gregory	dudek	4325	School of Computer Science
Ferrie, Frank	ferrie	6042	Electrical and Computer Engineering
Hayward, Vincent	hayward	5006	Electrical and Computer Engineering
Kovecses, Jozsef	kovecses	6302	Mechanical Engineering
Langer, Michael	langer	3740	School of Computer Science
Levine, Martin	levine	7115	Electrical and Computer Engineering
Mannor, Shie	shie	1467	Electrical and Computer Engineering
Michalska, Hannah	michalsk	3053	Electrical and Computer Engineering
Nahon, Meyer	mnahon	2383	Mechanical Engineering
Pineau, Joelle	jpineau	5432	School of Computer Science
Sharf, Inna	isharf	1711	Mechanical Engineering
Siddiqi, Kaleem	siddiqi	3371	School of Computer Science
Zsombor-Murray, Paul	paul	6311	Mechanical Engineering

ASSOCIATE MEMBERS

Name	Email	Phone (514) 398-	Department
Cecere, Renzo	renzo.cecereATmuhc.mcgill.ca	842-1231 ext. 3	Heart Failure and Heart Transplant Centre
Collins, Louis	louis.collinsATmcgill.ca	4227	Neurology Neurosurgery / Biomedical Engineering
Kry, Paul	kryATcs.mcgill.ca	2577	School of Computer Science
Liu, Xue	xueliuATcs.mcgill.ca	1819	School of Computer Science
Misra, Arun	misraATcim.mcgill.ca	6288	Mechanical Engineering
Mongrain, Rosaire	rosaire.mongrainATmcgill.ca	1576	Mechanical Engineering
Musallam, Sam	sam.musallamATmcgill.ca	1702	Electrical and Computer Engineering / Physiology
Panangaden, Prakash	prakashATcs.mcgill.ca	7074	School of Computer Science
Pike, Bruce	bruce.pikeATmcgill.ca	1929	Neurology Neurosurgery / Biomedical Engineering
Precup, Doina	dprecupATcs.mcgill.ca	6443	School of Computer Science

STUDENT AWARDS AND RECOGNITION

2009 – 2010

Supervisor	Name	Award	Organisation
Benoit Boulet	Hamed Azarnoush	Canada Graduate Scholarship- Doctoral	
		Paper presented: **Azarnoush, H**., Boulet, B.,: Quadratic Stability of a Thermoforming Process with Two Time-varying Uncertainties	**Proc. Society for Industrial and Applied Mathematics *Conference on Control and its applications*, Denver CO, 6th – 8th July, 2009**
		Azarnoush, H., Lamouche, G., Bisaillon, C.-E., deGrandpre, C., Boulet, B., *Evaluation of a Technique to Estimate the Compliance of Atherosclerotic Intima*	**Proc of ISBMS 2010 5th *International Symposium on Biomedical Simulation*, Phoenix, AZ, USA, Jan 23-24, 2010.**
		Azarnoush, H., Bourezak, R., Vergnole, S., Lamouche, G., Boulet, B., *Optical Coherence Tomography Characterization of Balloon Diameter and Wall Thickness* Natural Sciences and Engineering Research Council of Canada	***Design of Medical Devices Conference,* Minneapolis, MN, USA Apr 13-15, 2010**
		Paper published: **H. Azarnoush**, S. Vergnole, R. Bourezak, B. Boulet, and G. Lamouche, *Optical coherence tomography monitoring of balloon inflation*	***Review of Scientific Instruments*, vol. 81(8), 083101, August 2010; doi:10.1063/1.3465556 (The most downloaded paper in the month of publication)**
		H. Azarnoush, R. Bourezak, S. Vergnole, B. Boulet, and G. Lamouche, *Optical coherence tomography characterization of balloon diameter and wall thickness*	***Journal of Medical Devices*, vol 4(2), 027523, August 2010; doi:10.1115/1.3443219**
		Paper presented: **H. Azarnoush,** S. Vergnole, M. Hewko, B. Boulet, M. Sowa and G. Lamouche, *Detection of inflating balloon in optical coherence tomography images of a porcine artery in a beating heart experiment*	**International Society for Optics and Photonics, International Conference on Medical Imaging, *Visualization, Image-Guided Procedures, and Modeling*, Lake Buena Vista, FL, USA, February 12-17, 2011**
		H. Azarnoush, S. Vergnole, C.É. Bisaillon, B. Boulet, G. Lamouche, *Optical coherence tomography layer thickness characterization of a mock artery during angioplasty balloon deployment*	**International Society for Optics and Photonics, International Conference on Medical Imaging, Computer-Aided Diagnosis, Lake Buena Vista, FL, USA, February 12-17, 2011**
		H. Azarnoush, B. Boulet, *Angioplasty balloon deployment Control*	**ACC2010, *American Control Conference*, Baltimore MD, June 30- 02 July 2010**
Benoit Boulet	Md. Muminul Islam Chy	MEDA- Doctoral Award	**McGill University**
		Geoff Hyland Fellowship	**McGill University**
		Book Chapter: **Muminul Islam Chy**, Benoit Boulet and Guy Gauthier *Estimation and Control of Sheet Temperature in Thermoforming* Md	**In: *Thermoforming Process Control***

Supervisor	Name	Award	Organisation
Benoit Boulet	Osama Abulgasem Mohamed Alkefer	Libyan Scholarship	**Government of Libya**
Benoit Boulet	Seyed-Rahi Modirnia	Principal's Graduate Fellowship Award	**McGill University**
Frank Ferrie	John Harrison	Paper published: **Harrison, J.** W., Ferrie, F., Hefford, S. W., Samson, C., Kusevic, K. Mrstik, P. and Iles, P. J. W.; *Finding Anomalies in High-Density LIDAR Point Clouds*	**GEOMATICA Vol. 63, No. 4, pp. 109 to 118, 2009**
		Hefford, S.W., Samson, C., **Harrison, J.W**., Ferrie, F.P., Kusevic, K., Mrstik, P., Iles, P.J.W.; *Augmenting the Iterative Closest Point (ICP) Alignment Algorithm with Intensity*	**GEOMATICA Vol. 63, No. 4, 2009**
Frank Ferrie	Karim T. Abou-Moustafa	Award for International Training Visiting scholar	**Les Fonds québécois de la recherche sur la nature et les technologies** **Robotics Institute of Carnegie Mellon University, Pittsburgh, PA, USA**
		Paper presented: **K. T. Abou-Moustafa**, F. de la Torre and F. P. Ferrie, *Pareto Discriminant Analysis*",	**Proc. CVPR 2010, Institute of Electrical and Electronics Engineers 23rd *Conference on Computer Vision and Pattern Recognition* San Francisco, CA, USA, June 13-18, 2010.**
		Paper presented: **Karim T. Abou-Moustafa**, Fernando De La Torre and Frank P. Ferrie, *Designing a Metric for the Difference Between Two Gaussian Densities*	**In *Brain, Body, and Machine:* Proceedings of an International Symposium on the Occasion of the 25th Anniversary of the McGill University Centre for Intelligent Machines Springer Series on Advances in Intelligent and Soft Computing,J. Angeles, B. Boulet, J. Clark, J. Kovecses and K. Siddiqi (Eds.),Vol. 83, pp. 57-70, Springer, 2010**
Frank Ferrie	Michael Sokolnicki	Provost's Graduate Fellowship	**McGill University**
Frank Ferrie	Shufei Fan	Presented paper: **Shufei Fan** and Frank Ferrie *Context-Consistent Stereo Matching*	**Proc. of Institute of Electrical and Electronics Engineers *Workshop on 3-D Digital Imaging and Modeling*, in conjunction with ICCV,, The *Twelfth International Conference on Computer Vision,* pp.1694-1701, Kyoto JAPAN, Oct.3-4, 2009**
		Shufei Fan and Rupert Brooks and Frank Ferrie *Better Correspondence by Registration*	**Proc. of ACCV 2009 The *Ninth Asian Conference on Computer Vision*, Xi'an, CHINA Sep 23-27, 2009**

Supervisor	Name	Award	Organisation
Gregory Dudek	Anqi Xu	Vanier CGS Scholar (2009-2012)	**Natural Sciences and Engineering Research Council of Canada**
		Molson and Hilton Hart Fellowship	**McGill University**
		Max E. Binz Fellowship	**McGill University**
		Paper presented : Sattar, J., **Xu, A.**, Dudek, G., Charette, G. *Graphical State-Space Programmability as a Natural Interface for Robotic Control*	**Proc. ICRA '10, *International Conference on Robotics and Automation* Anchorage, Alaska, USA May 3 -8,2010**
		Anqi Xu and Gregory Dudek, *A Vision-Based Boundary Following Framework for Aerial Vehicles*	**Proc. IROS 2010, the Institute of Electrical and Electronics Engineers/Robotics Society of Japan 23rd International Conference on Intelligent Robots and Systems, Taipei, TAIWAN, October 18-22, 2010**
Gregory Dudek	Yasmina Schoueri	Master's Award	**Natural Sciences and Engineering Research Council of Canada**
Gregory Dudek	Yogesh Alok Girdhar	Paper presented: **Girdhar, Yogesh** and Dudek, Gregory, *Optimal Online Data Sampling or How to Hire the Best Secretaries*	**Proc. of CRV 2009: of the Sixth *Canadian Conference on Computer and Robot Vision,* Kelowna, BC, CANADA May 25-27, 2009**
		Yogesh Girdhar and Gregory Dudek, *Online Navigation Summaries*	**Proc. ICRA 2010 Institute of Electrical and Electronics Engineers *International Conference on Robotics and Automation* Anchorage AK, USA, May 3-8, 2010**
Gregory Dudek	Malika Meghjani	Paper presented: **Meghjani, M.**; Ferrie, F.; Dudek, G.; , *Bimodal information analysis for emotion recognition*	**WACV.2009 Institute of Electrical and Electronic Engineers *Workshop on Applications of Computer Vision* 2009, vol., no., pp.1-6, 7-8 Snowbird, UT, Dec. 2009.**
		Best Presentation Award, Cognition and Brain Category *Multimodal Information Analysis for Emotion Recognition*	**McGill University 6th Interdisciplinary Graduate Student Research Symposium March 26-27, 2010,**

Supervisor	Name	Award	Organisation
Hannah Michalska	Melita Hadzagic	**M. Hadzagic**, E.Lefebvre, E. Bosse, *Information Quality Assessment in Fusion Systems*	**Proc. of COGIS'09 *COGnitive Systems with Interactive Sensors*, Paris, FRANCE 16-18 November, 2009**
		M. Hadzagic, H. Michalska, *A linear stochastic process and a genetic algorithm for ship trajectory modeling*,	***Signal Processing,***
		M. Hadzagic, H. Michalska, *A linear stochastic process and a genetic algorithm for ship trajectory modeling*,	**Proc. of SPIE (International Society for Optics and Photonics) *Sensor Fusion, and Target Recognition XIX*, Orlando, FL USA, April 5-9, 2010,**
		Paper submitted: **M. Hadzagic,** H. Michalska, *Batch stochastic trajectory estimation using the Ornstein-Uhlenbeck process and a genetic algorithm*	**ELSEVIER *Journal on Information Fusion,* January 2010, in review**
Hannah Michalska	Shahram Tabandeh	1) **S. Tabandeh** and H. Michalska, *Stochastic Learning of the Optimum Bid in Auction Markets*,	**The 2009 *International Conference of Financial Engineering*, London, U.K., 1-3 July, 2009. Paper is accepted and candidate for the best paper award.**
		2 **S. Tabandeh** and H. Michalska, *An Evolutionary Random Search Algorithm For Double Auction Markets*,	**Institute of Electrical and Electronics Engineers *Congress on Evolutionary Computation*, pp. 2948 - 2955, Trondheim NORWAY, May 18th – 21st, May 2009.**
James J. Clark	Amin Haji Abolhassani	Leon and Suzanne Fattal Fellowship	**McGill University**
		McGill Engineering Doctoral Award	**McGill University**
		Doctoral Scholarship	**Les Fonds québécois de la recherche sur la nature et les tecnologies**
		Awarded: 3-month internship from September to December	**Deutsche Telekom, T-Labs, Berlin, GERMANY**
Jeremy Cooperstock	Dalia El-Shimy	Engineering Recruitment fund	**McGill University**
Jeremy Cooperstock	Jessica Wai Yan Ip	Paper presented: Visell, Y., Law, A., **Ip, J.**, Rajalingham, R., Smith, S. and Cooperstock, J.R. *Interaction Capture in Immersive Virtual Environments via an Intelligent Floor Surface*	**Institute of Electrical and Electronics Engineers *Virtual Reality* ,2010 Waltham, MA. March 20-24, 2010**
		Visell, Y., Law, A., **Ip, J.**, Rajalingham, R., Smith, S. and Cooperstock, J.R. *Contact Sensing and Interaction Techniques for a Distributed, Multimodal Floor Display*	**Proc. Institute of Electrical and Electronics Engineers 3DUI, 2010 – *Symposium on 3D User Interfaces 2010.*Waltham MA, USA Mar 20-21, 2010**
		Bérard, F., **Ip, J.,** Benovoy, M., El-Shimy, D., Blum, J. and Cooperstock, J.R. *Did Minority Report Get it Wrong? Superiority of the Mouse over 3D Input Devices for a 3D Placement Task,*	**IFIP TC13 INTERACT 2009 12th *International Conference in Human-Computer Interaction*, Uppsala, Sweden, August 24-28, 2009**
		Law, A., **Ip, J**., Peck, B. Visell, Y., Kry, P., and Cooperstock, J.R., *Multimodal floor for immersive environments*	**SIGGRAPH '09: Association for Computing Machinery SIGGRAPH 2009 *Emerging Technologies*, New Orleans LA USA, August 3-7, 2009**

Supervisor	Name	Award	Organisation
Jeremy Cooperstock	Mitchel Benovoy	Award received: 2009-2010 Centre for Interdisciplinary Research in Music Media and Technology Student Award	**McGill University**
		Paper presented: Salimpoor V.N., **Benovoy M.,** Longo G., Larcher, K., Dagher, A., Cooperstock J.R., Zatorre R.J., *The Rewarding Aspects of Music Listening Involve the Dopaminergic Striatal Reward Systems of the Brain: An Investigation with [C11] Raclopride PET and fMRI",*	**The 15th Annual *Human Brain Mapping Conference,* San Francisco, Jun 18-23, 2009**
		Bérard, F. Ip, J. **Benovoy, M.** El-Shimy, D. Blum, J. R. Cooperstock, J. R. *Did "Minority Report" Get it Wrong? Superiority of the Mouse over 3D Input Devices in a 3D Placement Task,*	**IFIP TC13 INTERACT 2009 12th *International Conference in Human-Computer Interaction*, Uppsala, Sweden, August 24-28, 2009**
Jeremy Cooperstock	Negar Ghourchian	McGill Engineering Doctoral Award	**McGill University**
Jeremy Cooperstock	Rajkumar P. Viswanathan	Principal's Graduate Fund	**McGill University**
		Provost Graduate Fund	**McGill University**
Jeremy Cooperstock	Trevor Knight	Student Award: Centre for Interdisciplinary Research in Music Media and Technology	**McGill University**
Jeremy Cooperstock	Yon Visell	Paper Published: **Y. Visell,** A. Law, J. Cooperstock, *Touch is Everywhere: Floor Surfaces as Ambient Haptic Interfaces*	**Institute of Electrical and Electronics Engineers *Transactions on Haptics,* 2 (3), July-September, 2009**
		Y. Visell, F. Fontana, B. Giordano, R. Nohrdahl, S. Serafin, R. Bresin, *Sound Design and Perception in Walking Interactions*	***International Journal of Human-Computer Interaction Studies,* 67 (11), Elsevier, 2009.**
		Y. Visell, *Tactile Sensory Substitution: Models for Enaction in Human-Computer Interaction* Paper presented:	***Interacting with Computers,* 21 (1-2), Elsevier, 2009.**
		Y. Visell, A. Law, S. Smith, R. Rajalingham, J. Cooperstock, *Contact Sensing and Interaction Techniques for a Distributed, Multimodal Floor Display* (Tech note).	**Proc. Institute of Electrical and Electronics Engineers 3DUI, 2010 – *Symposium on 3D User Interfaces 2010.*Waltham MA, USA Mar 20-21, 2010**
		Y. Visell, A. Law, S. Smith, J. Ip, J. Cooperstock, *Interaction Capture in Immersive Environments via an Intelligent Floor Surface*	**Proc. Institute of Electrical and Electronics Engineers *Virtual Reality, 2010* Boston, MA, USA Mar 20 – 26, 2010**
		Y. Visell, J. Cooperstock, *Optimized Design of a Vibrotactile Device via a Rigid Surface*	**Proc. Institute of Electrical and Electronics Engineers *Haptics Symposium*, 2010. Waltham MA, USA Mar 20-21, 2010**
Joëlle Pineau	Robert Durham. Vincent	Winter 2009: Visiting student Pineau, J., Guez, A., **Vincent, R.**, Panuccio, G. and Avoli, M. *Treating epilepsy via adaptive neuro-stimulation: a reinforcement learning approach.*	**Computational Neurobiology Laboratory, Salk Institute, San Diego, California. *International Journal of Neural Systems* 19(4) 227-240, August 2009:**

Supervisor	Name	Award	Organisation
Joëlle Pineau	Robert Kaplow	Optimization Canadian Graduate Student Scholarship	**Natural Sciences and Engineering Research Council of Canada**
		Paper presented: **R. Kaplow,** A. Atrash, J. Pineau. *Variable Resolution Decomposition For Robotic Navigation Under a POMDP Framework*	**Proc. ICRA2010 Institute of Electrical and Electronics Engineers *International Conference on Robotics and Automation* Anchorage AK USA, May 3-8, 2010**
		A. Atrash, **R. Kaplow,** J. Villemure, R. West, H. Yamani, J. Pineau. *Development and Validation of a Robust Speech Interface for Improved Human-Robot Interaction*	***International Journal of Social Robotics, 2009***
Joëlle Pineau	Amin Atrash	Paper presented: Kaplow, R., **A. Atrash,** and J. Pineau. *Variable Resolution Decomposition for Robotic Navigation Under a POMDP Framework.*	**Institute of Electrical and Electronics Engineers *International Conference on Robotics and Automation.* Anchorage AK, May 3-8, 2010.**
		Paper published: **Atrash, A**., R. Kaplow, J. Villemure, R. West, H. Yamani, J. Pineau. *Development and Validation of a Robust Interface for Improved Human-Robot Interaction*	***International Journal of Social Robotics.* 2009. Vol 1a**
		Paper presented: **Atrash, A**. and J. Pineau. *A Bayesian Reinforcement Learning Approach for Customizing Human-Robot Interfaces.*	**Proc. of IUI 2009 International Conference on Intelligent User Interfaces. Feb 8 – 11, Sanibel Island, FL, USA, 2009.**
Joëlle Pineau	Robert West	Paper presented: **Robert West**, Joelle Pineau, and Doina Precup. *Wikispeedia: An Online Game for Inferring Semantic Distances between Concepts*	**Proc.IJCAI-09 the 21st *International Joint Conference on Artificial Intelligence*, pp. 1598–1603, Pasadena, CA USA, Jul 11-17, 2009.**
		Robert West, Doina Precup, and Joelle Pineau. Completing *Wikipedia's Hyperlink Structure through Dimensionality Reduction.*	**Proc. CIKM-09 the 18th Association for Computing Machinery Conference on *Information and Knowledge Management*, pp. 1097–1106, Hong Kong, Nov 2-6 2009.**
		Amin Atrash, Robert Kaplow, Julien Villemure, **Robert West,** Hiba Yamani, and Joelle Pineau. *Development and Validation of a Robust Speech Interface for Improved Human-Robot Interaction.*	***International Journal of Social Robotics*, 1(4):345–356, 2009.**
		Best educational video' AI Video Competition, Cosmin Paduraru, **Robert West,** and Imad Khoury: *Reinforcement Learning by Example*	**Proc.IJCAI-09 the 21st *International Joint Conference on Artificial Intelligence*,**
Joëlle Pineau	Julien Villemure	Canada Graduate Scholarship- Masters Amin Atrash, Robert Kaplow, **Julien Villemure,** Robert West**,** Hiba Yamani, and Joelle Pineau. *Development and Validation of a Robust Speech Interface for Improved Human-Robot Interaction.*	**Natural Sciences and Engineering Research Council of Canada *International Journal of Social Robotics*, 1(4):345–356, 2009.**
Jorge Angeles	Afshin Taghvaeipour	McGill Engineering Doctoral Award	**McGill University**
Jorge Angeles	Ali Azimi	Sheryl and David Kerr Award	**McGill University**

Supervisor	Name	Award	Organisation
Jorge Angeles/Damiano Pasini	Eric Barnett	Awards: Alexander Graham Bell CGS D scholarship	**Natural Sciences and Engineering Research Council of Canada**
		McGill Engineering Doctoral Award	**McGill University**
		Provost's Graduate Fellowship	**McGill University**
		Paper presented: **Barnett, E.,** Angeles, J., Pasini, D., and Sijpkes, P., *Trajectory Control for an Innovative Rapid Freeze Prototyping System*	**Proc. IDETC 2010American Society of Mechanical Engineers *International Design Engineering Technical Conferences*, Montreal, QC, CANADA, Aug.15-18, 2010,**
		Paper accepted: Ossino, A., **Barnett, E.**, Angeles, J., Pasini, D., and Sijpkes, P., *Path planning for robot-assisted rapid prototyping of ice structures*	***Transactions of the Canadian Society of Mechanical Engineers-2010***
		E. Barnett, J. Angeles, D. Pasini, P. Sijpkes. *A Heuristic Algorithm for Slicing in the Rapid Freeze Prototyping of Sculptured Bodies*	**In *Brain, Body, and Machine:* Proceedings of an International Symposium on the Occasion of the 25th Anniversary of the McGill University Centre for Intelligent Machines, J. Angeles, B. Boulet, J.J. Clark, J. Kovecses, K. Siddiqi (Eds.), Springer-Verlag: Berlin, pp. 149-162, 2010**
Jorge Angeles	Ting Zou	Paper presented: **T. Zou,** J. Angeles and P. Zsombor-Murray, *A Comparative Study of Architectures for Uniaxial Accelerometers*	**Proceedings of The Canadian Society for Mechanical Engineering Forum 2010, Victoria, British Columbia, CANADA: June 7-9, 2010**
Joszsef Kövecses and Javad Dargahi	Masoud Kalantari	Paper presented: **Masoud Kalantari**, Mohammadreza Ramezanifard, Roozbeh Ahmadi, Javad Dargahi, and Jozsef Kovecses, *Design, Fabrication, and Testing of a Piezo-Resistive Sensor for Use in Minimally Invasive Surgery*	**2010 Institute of Electrical and Electronics Engineers *Haptics Symposium* Waltham MA,Mar 25-26, 2010**
		Roozbeh Ahmadi, **Masoud Kalantari**, Javad Dargahi, Muthukumaran Packirisamy, and Jozsef Kovecses," *Finite Element Modeling of Bio-Tissue for Optimal Flexible Membrane Design of a MEMS Tactile Sensor for use in Minimally Invasive Surgery*	**11th Pan-American Congress of Applied Mechanics - PACAM XI, 2010, Foz do Iguaçu, Paraná – *BRAZIL,* Jan 4-8, 2010**
		Roozbeh Ahmadi, **Masoud Kalantari**, Javad Dargahi, and Muthukumaran Packirisamy, *Catheter-tissue interaction to design an optical MEMS force sensor for use in minimally invasive heart surgery*	***World Congress on Science, Engineering and Technology,* June 24-26, 2009, Paris, FRANCE**
Jozsef Kövecses	Arash Mohtat	Lorne Trottier Engineering Graduate Fellowship	**McGill University**
		McGill Engineering Doctoral Award	**McGill University**
Jozsef Kövecses	Bahareh Ghotbi	Graduate Scholarship	**Agency for Science, Technology and Research, SINGAPORE**
Jozsef Kövecses	Bilal Ruzzeh	Paper accepted**: B. Ruzzeh,** *J. Kövecses, A Penalty Formulation for Dynamics Analysis of Redundant Mechanical Systems*	**American Society of Mechanical Engineers *Journal of Computational and Nonlinear Dynamics***

Supervisor	Name	Award	Organisation
Jozsef Kövecses	Farnood Gholami	University Student Bursary for McGill International Students,	**McGill University**
		Paper presented: **F. Gholami,** J. Kovecses, and J. Apkarian, *Sensitivity and Parametric Analyses of Multibody Systems with Application to Contact Dynamics*,	**Proc. The 1st Joint American Society of Mechanical Engineers *International Conference on Multibody System Dynamics*, Lappeenranta, FINLAND, May 25–27, 2010**
Jozsef Kövecses	Kamran Gharrari Toiseran	Prize awarded: First Prize Student	**IEEE HCIMA 2009 -The 2009 Institute of Electrical and Electronics Engineers International Hand-on Competition via Internet on Intelligent Mechatronics and Automation, Taipei, TAIWAN, December 5, 2009**
		K.**Ghaffari**, J. Kövecses, *Improving stability and performance of digitally controlled systems: the concept of modified hold*	**Proc. ICRA '10, *International Conference on Robotics and Automation* Anchorage, Alaska, USA May 3 -8,2010**
Jozsef Kövecses	Martin Cameron Hirschkorn	Industrial Innovation Scholarship	**Les Fonds québécois de la recherche sur la nature et les technologies**
		McGill Engineering Doctoral Award	**McGill University**
		Provost Fellowship	**McGill University**
		Sheryl and David Kerr Award	**McGill University**
		M. Hirschkorn, A. Aximi, B. Ghotbi, J. Kövecses, J. Angeles, P. Radziszewski, M. Teichmann, M. Courchesne, *Dynamics Performance Evaluation of Planetary Rover Concepts*	**Ist European Space Agency *Workshop on Multibody Dynamics for Space Application,* Noordwijk, The NETHERLANDS, Feb 2-3, 2010**
		M.Hirschkorn, A.Azimi, B.Ghotbi, J.Kovecses, J.Angeles, P.Radziszewski, M.Teichmann, M.Courchesne, Y. Gonthier *Simulation-Based Rover Performance Evaluation and Effects of Terrain Modelling*	**ASTRO2010 Canadian Aeronautics and Space Institute *15th Astronautics Conference*, Toronto On, CANADA, May 4th – 6th ,2010 May**
		M.Hirschkorn, A.Azimi, B.Ghotbi, J.Kovecses, J.Angeles, P.Radziszewski, M.Teichmann, M.Courchesne, Y. Gonthier *Terrain Modelling in Simulation-based Performance Evaluation of Rovers*	***Canadian Aeronautics and Space Journal,* December 2010**
Jozsef Kövecses	Sara Shayan Amin	McGill Engineering Doctoral Award	**McGill University**
Kaleem Siddiqi	Maxime Boucher	**Maxime Boucher**, Alan Evans, Kaleem Siddiqi, *Oriented Morphometry of Folds on Surfaces*,	**Proc. IPMI 2009, *Information Processing in Medical Imaging*, Williamsburg, VA USA, Jul-5- 10, 2009**
		KJ Worsley, JE Taylor, F Carbonell, MK Chung, E Duerden, B Bernhardt, O Lyttelton, **M Boucher**, AC Evans, ***SurfStat****: A Matlab toolbox for the statistical analysis of uni-variate and multi-variate surface and volumetric data using linear mixed effects models and random field theory*	**15th Annual Meeting of *Organization for Human Brain Mapping* San Francisco, CA USA, Jun 18 – 22, 2009** .

Supervisor	Name	Award	Organisation
Kaleem Siddiqi	Parya MomayyezSiahkal	Doctoral Scholarship:	**Les Fonds québécois de la recherche sur la nature et les technologies**
		Paper presented: **Parya Momayyez** and Kaleem Siddiqi. *3D Stochastic Completion Fields for Fiber Tractography*,	**In: Proceedings *of MMBIA 2009*,Institute of Electrical and Electronics Engineers Computer Society Workshop in *Mathematical Methods in Biomedical Image Analysis* Miami, FL, USA, June 20th 2009**
		Parya MomayyezSiahkal, Jennifer S.W.Campbell, Peter Savadjiev, G.Bruce Pike,and Kaleem Siddiqi. *Beyond crossing fibres: Probabilistic tractography of complex subvoxel fibre geometries*	**Proc. DMFC2009 Medical Image Computing and Computer Assisted Intervention 2009 *Workshop on Diffusion Modelling* and the *Fibre Cup* London, United Kingdom. Sep 20 – 24, 2009**
		Parya MomayyezSiahkal, Kaleem Siddiqi. *Probabilistic Connectivity in Fibre Tractography*	**International Society for Magnetic Resonance in Medicine *19th Scientific Meeting and Exhibition,* Stockholm, Sweden, May 1-7, 2010**
		Award: Alexander Graham Bell Canada Graduate Scholarship	**Natural Sciences and Engineering Research Council of Canada**
		Principal's Graduate Award Student Travel Grant	**McGill University**
		Great Award for Poster Presentation	**Medical Image Computing and Computer Assisted Intervention Society**
		Paper presented: **Parya Momayyez** and Kaleem Siddiqi, *Probabilistic Anatomical Connectivity Using Completion Fields*.	**MICCAI 2010 *International Conference On Medical Image Computing and Computer Assisted Intervention*, Beijing, CHINA, September 20-24, 2010**
		Parya Momayyez and Kaleem Siddiqi, *Probabilistic Connectivity in Fibre Tractography*.	**ISMRM2010, *International Society For Magnetic Resonance in Medicine Scientific Meeting* Stockholm, SWEDEN, May 1-7, 2010**
Kaleem Siddiqi	Svetlana Stolpner	Paper presented : **Svetlana Stolpner** and Sue Whitesides, *Medial Axis Approximation with Bounded Error*	**ISVD2009- Sixth Annual *International Symposium on Voronoi Diagrams*, in science and engineering, Copenhagen, DENMARK, 23rd- 26th June 2009**
		S. Stolpner, S. Whitesides, K. Siddiqi. *Sampled Medial Loci and Boundary Differential Geometry*,	**Proc. ICCV 2009-Institute of Electrical and Electronics Engineers *Twelfth International Conference on Computer Vision Workshop on 3D Imaging and Modeling*, Kyoto, JAPAN Oct 3 – 4, 2009**

Supervisor	Name	Award	Organisation
Luca Cortelezzi	Oleg Gubanov	Awards: Post Graduate Scholarship	**Natural Sciences and Engineering**
		Doctorate 3 scholarship (NSERC)2007	**Research Council of Canada**
		Les Vadasz Doctoral Fellowship	**McGill University**
		Book Chapter**: O. Gubanov** and L. Cortelezzi, 2009, *Sensitivity of mixing optimization to the geometry of the initial scalar field'*	**in *Analysis and Control of Mixing with Application to Micro and Macro Flow Processes''*, L. Cortelezzi and I. Mezic (editors),Springer-Verlag, in press**
		O. Gubanov and L. Cortelezzi, *Toward the design of an optimal mixer*, Paper presented: **O. Gubanov** and L.	**In press *Journal of Fluid Mechanics*.2010**
		Cortelezzi, *Development of an optimal mixer: a conceptual study*	**62nd Annual Meeting of the American Physical Society *Division of Fluid Dynamics,* Minneapolis, MN.USA, Nov 22-24, 2009;**
Martin Levine	Mehrsan Javan Roshtkhari	Award: Clifford Pang Doctoral	**McGill University**
Martin Levine	Mohannad Elhamod	Principal's Graduate Fellowship	**McGill University**
		Provost's Graduate Fellowship	**McGill University**
Meyer Nahon	Lianzhen Luo	Paper presented: Lianzhen Lu**o**, Meyer Nahon, *Development and Validation of Geometry-based Compliant Contact Models*	**Proc. of IDETC/CIE 2009 the American Society of Mechanical Engineers 2009 *International Design Engineering Technical Conferences & Computers and Information in Engineering Conference* August 30 - September 2, 2009, San Diego, CA USA**
Meyer Nahon	Nicolas Plamondon	Mechanical Engineering Doctoral Award	**McGill University**
		Doctoral Award	**Natural Sciences and Engineering Research Council of Canada**
		Doctoral Award	**Le Fonds québécois de la recherche sur la nature et les technologies**
Meyer Nahon	Torsten Liesk	Best Student Paper Award: Torsten Liesk, *Integral Backstepping Control of an Unmanned, Unstable, Finless Airship*	**GNC 2010 American Institute of Aeronautics and Astronautics Guidance Navigation and Control Toronto, CANADA, AUGUST 2ND – 5TH, 2010,**
Peter E. Caines	Carl Christian Mueller-Roemer	Graduate Research Assistantship	**McGill University**
Peter E. Caines	Mojtaba Nourian	Papers presented: **M. Nourian**, P.E. Caines, R.P. Malhame, and M. Huang. *Derivation of consensus algorithm dynamics from mean field stochastic control NCE equations*".	**Proc. of NecSys'09 1st International Federation of Automatic Control *Workshop on Estimation and Control of Networked Systems* Venice, ITALY, Sep.24th – 26th 2009**
		Paper submitted: **M. Nourian**, R.P. Malhame, M. Huang, and P.E. Caines. *A mean field (NCE) formulation of estimation based leader-follower collective dynamics".*	***International Journal of Robotics and Automation.* provisionally accepted Jan. 2010**

Supervisor	Name	Award	Organisation
Peter E. Caines	Peng Jia	Paper presented: **Jia, P.** and Caines, P. E., *Auctions on Networks: Efficiency, Consensus, Passivity, Rates of Convergence*	**in Proc. of the Institute of Electrical and Electronics Engineers 48th *International Conference on Decision and Control*, Shanghai, China, Dec 16-18, 2009**
		Jia, P. and Caines, P. E., *Analysis of Quantized Auctions in Competitive Electricity Markets*	**presented at the *Third Workshop on Game Theory in Energy, Resources and Environment*, Montreal, Canada, December,10, 2009**
		Jia, P. and Caines, P. E., *Equilibria and Convergence of Auctions on Networks*	**in Proc. of *International Conference on Game Theory for Networks*, Istanbul, Turkey, May, 13-15, 2009.**
		Paper published: **Jia, P**., Qu, C. W. and Caines, P. E., *On the Rapid Convergence of a Class of Decentralized Decision Processes: Quantized Progressive Second Price Auctions*	**Institute of Mathematics and its Applications *Journal of Mathematical Control and Information*, 26 (3), 325-355.Sep 2009**
Peter E. Caines	Ye Zi	Graduate Assistantship	**McGill University**
Peter E. Caines/Shie Mannor	Arman Cagdas Kizilkale	McGill Engineering Doctoral Award	**McGill University**
Shie Mannor	Yu Jia Yuan	Papers published; **Yu Jia Yuan**, Shie Mannor and Nahum Shimkin. *Markov decision processes with arbitrary reward processes*	**Accepted to *Mathematics of Operations Research***
		Shie Mannor, John N. Tsitsiklis and **Jia Yuan Yu**, *Online learning with sample path constraints*.	***Journal of Machine Learning Research* pp. 569-590, 10 March 2009.**
		Paper presented: **Yu Jia Yuan** and Shie Mannor, *Piecewise-stationary bandit problems with side observations*	**ICML 2009 26th *International Conference on Machine Learning*, Montreal QC, CANADA, June 14 – 18th 2009**
		Yu Jia Yuan and Shie Mannor *Online learning in Markov decision processes with arbitrarily changing rewards and transitions*,	**GameNets 2009, I*nternational Conference on Game Theory for Networks*, Istanbul TURKEY, 13th – 15th May 2009.**
Tal Arbel	Colm Elliott	Award: Doctoral Research Fellowship- Graduate Research Enhancement	**Le Fonds québécois de la recherché sur la nature et les technologies**
		Paper presented: **Colm Elliott,** Simon J. Francis, Douglas L. Arnold, D. Louis Collins and Tal Arbel, *Bayesian Classification of Multiple Sclerosis Lesions in Longitudinal MRI Using Subtraction Images*	**Proc. MICCAI 2010, *Medical Image Computing and Computer-Assisted Intervention* Beijing, CHINA Sept 20-24, 2010**
Tal Arbel	Dante De Nigris Moreno	Award: Programa Alban Alumni	**Programme Alßan (European Community)**

Supervisor	Name	Award	Organisation
Tal Arbel	Meltem Demirkus	Awards: McGill Engineering Doctoral Award	**McGill University**
		McGill International Doctoral Award	**McGill University**
		Paper presented: **M. Demirkus**, M. Toews, J. Clark, T. Arbel, *Gender Classification from Unconstrained Video Sequences*	**Institute of Electrical and Electronics Engineers Conference on Computer Vision and Pattern Recognition 2010, AMFG 2010 Workshop on Analysis and Modelling of Faces and Gestures San Francisco, CA,USA June 13-18, 2010**
Tal Arbel	Nagesh Koundinya Subbana	Provost's Graduate Fellowship	**McGill University**
		SR Telecom Fellowship	**McGill University**
		Paper presented: **N.K. Subbanna,** M. Shah. S.J. Francis, S. Narayanan, D.L. Collins, D.L. Arnold, and T. Arbel, *MS Lesion Segmentation using Markov Random Fields*	**Proc. of MICCAI 2009 12th International Conference on Medical Image Computing and Computer Assisted Intervention Workshop on *Medical Image Analysis on Multiple Sclerosis (Segmentation and Validation Issues),*London, UK, Sep 20 – 24, 2009**
		Paper submitted: **N.K. Subbana,** M. Shah, S.J. Francis, S. Narayanan, D.L. Collins, D.L. Arnold, and T. Arbel, *MRF-based MS Lesion Segmentation using Wavelet Decompositions of Multimodal MRI Volumes*	**MICCAI 2010 13th International Conference on Medical Image Computing and Computer Assisted Intervention , Beijing CHINA Sep 20 – 24, 2010**
		M. Shah, **N.K. Subbanna,** P. Jannin, D.L. Collins, D.L. Arnold, and T. Arbel, *Agreement and Evaluation Measures for Medical Image Analysis*	**MICCAI 2010 13th International Conference on Medical Image Computing and Computer Assisted Intervention Beijing, CHINA Sep 20 – 24, 2010**
Vincent Hayward/Hannah Michalska	Xinjilefu	Canada Graduate Scholarships Michael Smith Foreign Study Supplements	**Natural Sciences and Engineering Research Council of Canada**
		Paper presented: **Xinjilefu,** Vincent Hayward, and Hannah Michalska, *Stabilization of the spatial double inverted pendulum using stochastic programming seen as a model of standing postural control*	**Proc. of Humanoids 2009 - the Institute of Electrical and Electronics Engineers –Robotics and Automation Society 9th *International Conference on Humanoid Robots*, Paris, FRANCE, Dec 7-10, 2009.**
Meyer Nahon	Hashim Mazhar	Principal's Graduate Fellowship	**McGill University**
Jozsef Kövecses	Majid Sheikholeslami	Paper presented:**: M. Sheikholeslami**, K. Ghaffari, J. Kovecses, P. Karam, C. Lange, J.Ros, *A unified framework for the modelling, simulation, and control of force feedback mechanisms*,	**The International Conference on Multibody System Dynamics, Lappeenranta, FINLAND, May 25-27, 2010,.**

STUDENT DISTRIBUTION

Department	Name	Ph.D	Masters	Post-Doc	Foreign student	Researcher	Visiting Prof /Researcher	Project/ U-Grads	
Subtotal ME		**19.0**	**8.0**	**2.0**	**2.0**	**0.0**	**5.0**	**3.0**	**39.0**
Subtotal ECE		**38.5**	**18.0**	**10.5**	**4.0**	**8.0**	**4.0**	**8.0**	**91.0**
Subtotal SOCS		**11.0**	**10.5**	**3.0**	**0.0**	**0.0**	**0.0**	**3.0**	**27.5**
TOTAL		**68.5**	**36.5**	**15.5**	**6.0**	**8.0**	**9.0**	**14.0**	**157.5**

STUDENT RESEARCH TOPICS

Name	Degree	Supervisor	Thesis/Topic
Bélanger-Roy, Thierry	M.Eng	Arbel	Medical Image Analysis
Chopra, Vikram	M.Eng	Angeles	Advanced Clutch Design for Hybrid Vehicles
Dallal, Eric	M.Eng	Mannor	A learning approach to distributing social utility.
Dietz, George Ernest	M.Eng	Levine	Face Recognition in Crowds
Elhamod, Mohannad	M.Eng	Levine	Identifying and Labelling Background and Foreground Objects
Gholami, Farnood	M.Eng	Kövecses	Sensitivity and Parametric Analyses of Multi-body Systems
Ip, Wai Yan (Jessica)	M.Eng	Cooperstock	Augmented Reality Board Games
Knight, Trevor Alexander	M.Eng	Cooperstock	Human-Computer Interaction
Law, Alvin	M.Eng	Cooperstock	Haptic Interaction through Walking
Li, Xiao Dong	M.Eng	Boulet	Structure-Borne Noise Reduction Through Active Control of Vehicle Suspension
Mohamed Alkefer, Osama Abulgasem	M.Eng	Boulet	Robust Control Systems for Twin Roll Casting Process
Ng Yow Thow, Stefan	M.Eng	Caines	Hybrid Control Systems
Ni, Jie	M.Eng	Michalska	Control Systems
Shariatfar, Mahya	M.Eng	Zsombor-Murray	Generalized Aronhold-Kennedy Theorem
Sheikholeslami, Majid	M.Eng	Kövecses	Simulation and Analysis Environment for Force-controlled Multi-body Systems.
St-Martin Cormier, Olivier	M.Eng	Ferrie	Artificial Perception
Tang, Ying	M.Eng	Levine	Ensemble On-line Tracking using Boosted Random Forest
Türker, Korhan	M.Eng	Sharf	Dynamic Behaviours for PAW
Viswanathan, Rajkumar Parasuraman	M.Eng	Cooperstock	Human-Computer Interaction
Weston, Kyle Micheal	M.Eng	Levine	Exploring the boundaries of Object Representation
Xinjilefu, Xinjilefu	M.Eng	Michalska/Hayward	Control of Human Balance
Zaaroui, Kamel	M.Eng	Boulet	Closed-loop Control of Plasmaosmolality in Patients with Central Diabetes Insipidus
Zhao, Bin	M.Eng	Levine	TBA
Fard, Mahdi Milani	M.Sc	Pineau	Machine Learning and Probabilistic Reasoning.
Frank, Jordan	M.Sc	Mannor/Precup	Machiine Learning and Probabilistic Reasoning
Guez, Arthur	M.Sc	Pineau	Adaptive Stimulation Design for the Treatment of Epilepsy
Kaplow, Robert	M.Sc	Pineau	Point-based POMDP Solvers: Survey and Comparative Analysis
Mazhar, Hashim	M.Sc	Nahon	Mechatronics
Piuze-Phaneuf, Emmanuel	M.Sc	Siddiqi	Generalized helicoid for modeling the shape of natural fibers.
Pomerantz, Daniel	M.Sc	Dudek	Context-Dependent Movie Recommendations: A Hierarchical Bayesian Approach

Name	Degree	Supervisor	Thesis/Topic
Rezanejad, Morteza	M.Sc	Siddiqi	Computer Vision, Shape Modelling
Scaccia, Milena	M.Sc	Dudek/Rekleitis	State Estimation in Six Degrees of Freedom
Schoueri, Yasmina	M.Sc	Dudek/Rekleitis	Detecting and retrieving magnitude and orientation of motion blur in images
Shkurti, Florian	M.Sc	Dudek	Mobile Robotics and Computer Vision
Villemure, Julien	M.Sc	Pineau	User interaction within a robotic wheelchair framework
West, Robert	M.Sc	Pineau	Extracting Semantic Information from Wikipedia Using Human Computation and Dimensionality Reduction
Mannan, Fahim	M.Sc.	Langer	Smoothness Priors for Cluttered Scene Stereo
Ouyang, Yue	M.Sc.	Langer	Image Analysis
Thomson, Travis	M.Sc.	Sharf	Control systems of the PAW robot
Abolhassani, Amin Haji	Ph.D	Clark	Task Inference and its Influence on Human Attention
Abou-Moustafa, Karim T.	Ph.D	Ferrie	Unsupervised metric learning with some applications to Computer Vision
Alizadeh, Danial	Ph.D	Angeles/Nokleby	Optimization of Schönflies-motion Generators
Atrash, Amin	Ph.D	Pineau	A Bayesian Framework for Online Parameter Learning in Partially Observable Markov Decision Processes
Au, Carmen E.	Ph.D	Clark	View Integration and Display
Azar, Toufic	Ph.D	Angeles/Kövecses	Percutaneous Mitral Valve Repair
Azarnoush, Hamed	Ph.D	Boulet	Characterization of Angioplasty Balloon Deployment inside Mock Arteries
Azimi, Ali	Ph.D	Angeles/Kövecses	The Mathematical Modelling of Wheel-ground Interaction in Rovers for Unstructured Environments
Barnett, Eric	Ph.D	Angeles/Pasini	Robot-Assisted Rapid Prototyping for Ice Structures
Benovoy, Mitchel	Ph.D	Cooperstock	Physiological Data Analysis for Clinical and Artistic Applications
Boucher, Maxime	Ph.D	Siddiqi	Texture flow patterns on manifolds
Chy, Md. Muminul Islam	Ph.D	Boulet	Estimation and Control of Sheet Temperature in Heating Phase of Thermoforming Process
Cushon, Kevin	Ph.D	Mannor/Gross	Machine Learning
Danak, Amir	Ph.D	Mannor	Learning in Repeated First-Price Auctions
De Nigris Moreno, Dante	Ph.D	Arbel	Medical Imaging: Registration of multimodal images
Demirkus, Meltem	Ph.D	Arbel/Clark	Robust face classification from free-form video sequences
Elliott, Colm	Ph.D	Arbel	Classification of Multiple Sclerosis Lesions in Longitudinal MRI
El-Shimy, Dalia	Ph.D	Cooperstock	Distributed performance in 3-D Virtual environments
Fan, Shufei	Ph.D	Ferrie	Wide-baseline stereo for 3-D urban scenes
Ganine, Vladislav	Ph.D	Michalska/Pierre	Modelling of Mistuned Bladed Disk Assemblies, Model-order Reduction of Systems with Parametric Uncertainties
Germaine, Emmanuel	Ph.D	Cortelezzi/Mylardski	Analysis of Scalar Mixing from a Concentrated Source in Turbulent Channel Flow
Ghaffari Toiserkan, Kamran	Ph.D	Kövecses	Improvement and control of digitally controlled systems
Ghotbi, Bahareh	Ph.D	Kövecses/Angeles	Mobile Robotics Development and Validation Platform Using Vortex
Ghourchian, Negar	Ph.D	Cooperstock	Human-Computer Interaction
Giguère, Philippe	Ph.D	Dudek	Unsupervised learning of terrain for mobile robots, using tactile or visual cues

Name	Degree	Supervisor	Thesis/Topic
Girdhar, Yogesh	Ph.D	Dudek	Summarizing the visual experience of a mobile robot using only a few select summary images
Gubanov, Oleg	Ph.D	Cortelezzi	Fluid Dynamics / Optimization of Laminar Mixing of Fluids
Hadzagic, Melita	Ph.D	Michalska	Bayesian Approach to Trajectory Estimation
Haidar, Ahmad	Ph.D	Boulet	Closed-loop Glucose Control for People with Type 1 Diabetes
Harrison, John	Ph.D	Ferrie	Segmentation of 3D Point Cloud Data
Hirschkorn, Martin	Ph.D	Kövecses	Validation and Performance Characterization in Multi-body Simulations
Javan Roshtkhari, Mehrsan	Ph.D	Levine	Synopsizing Human Behaviours using Multiple Cameras
Javid, Farhad	Ph.D	Angeles/Pasini	Design Modelling and Optimization of an Anchoring System for Percutaneous Mitral Valve Repair
Jia, Peng	Ph.D	Caines	Dynamical auctions and their potential applications in decentralized systems
Kalantari, Masoud	Ph.D	Kövecses/Dargahi	Performing Teletaction in Minimally invasive Robotic Surgery by using a Novel Piezo Tactile Sensor
Karim Aghaloo, Zahra	Ph.D	Arbel	Multiple Sclerosis lesion detection in MRI
Kizilkale, Arman Cagdas	Ph.D	Caines/Mannor	Nash Certainty Equivalence Stochastic Adaptive Control Systems
Lala, Prasun	Ph.D	Ferrie	Saliency and Active Vision using Psychophysical Correlates
Laporte, Catherine	Ph.D	Arbel	Statistical Methods for Out-of-Plane Ultrasound Transducer Motion Estimation
Leduc-Primeau, François	Ph.D	Mannor/Gross	Integrated Microsystems
Lévesque, Vincent	Ph.D	Hayward	Virtual display of Tactile Graphics and Braille by Lateral Skin Deformation
Liesk, Torsten	Ph.D	Nahon	Control of an unstable, Un-finned Airship under Wind Influence
Luo, Lianzhen	Ph.D	Nahon	Development and Validation of a Geometry-Based Compliant Contact Model
Masciola, Marco	Ph.D	Nahon	Dynamics and Control of Offshore Tension Leg Platform
Meghjani, Malika	Ph.D	Dudek	Multi-Robot Co-ordination
Modirnia, Seyed-Rahi	Ph.D	Boulet	Modelling,Control and Optimization of Hydrogen Internal Combustion Engine
Momayyez Siahkal, Parya	Ph.D	Siddiqi	Stochastic Completion Fields for Fibre Tractography.
Motat, Arash	Ph.D	Kövecses	General Dynamics and Control
Nong, Yulin	Ph.D	Sharf	Mechatronics
Nourian Aval Noghabi, Mojtaba	Ph.D	Caines	Mean Field (NCE) Theory and Consensus
Pelletier, Stéphane	Ph.D	Cooperstock	Preconditioning for Super-resolution
Phan, Andrew Minh Tri	Ph.D	Ferrie	Active Multi-Sensor Human Tracking
Plamondon, Nicolas	Ph.D	Nahon	Modelling and control of an underwater vehicle
Raissi Dehkordi, Vahid	Ph.D	Boulet	Managing Uncertainty in Robust Controller Implementation
Ruzzeh, Bilal	Ph.D	Kovecses	Dynamic Analysis of Redundantly Constrained and Actuated Mechanical Systems Using Penalty and Projection Techniques

Name	Degree	Supervisor	Thesis/Topic
Sahambi, Harkirat Singh	Ph.D	Levine	Face Tracking in Crowds
Sattar, Junaed	Ph.D	Dudek	A vision-based interaction framework for mobile robots in arbitrary environments
Selman, AbdulRazzak	Ph.D	Michalska/Hayward	Human Posture Control
Shayan Amin, Sara	Ph.D	Kövecses	Dynamics and Design of Mechanical Systems for Interaction with Real and Virtual Environments
Shen, JingShen	Ph.D	Angeles	Contact Mechanics
Stolpner, Svetlana	Ph.D	Siddiqi/Whitesides	Shape Representation via the Union of Medial Spheres
Subbanna, Nagesh Koundinya	Ph.D	Arbel	Multiple Sclerosis Lesion Segmentation using Probabilistic Techniques
Tabandeh, Shahram	Ph.D	Michalska	Random Search Algorithms in Financial and Engineering Applications
Taghvaeipour, Afshin	Ph.D	Angeles	The Elasto-dynamic Analysis of the McGill Schönflies-Motion Generator
Tang, Yao	Ph.D	Clark	The tracking and trace inference of human attention
Taringoo, Farzin	Ph.D	Caines	Control Systems
Tilton, Nils	Ph.D	Cortelezzi	The Effects of Wall Permeability on the Linear Stability of Channel Flows and the Asymptotic Suction Boundary Layer
Vincent, Robert D.	Ph.D	Pineau	Reinforcement learning applications for adaptive medical therapies
Visell, Yon	Ph.D	Cooperstock	Vibro-tactile display and interaction via floor surfaces
Xu, Anqi	Ph.D	Dudek	Human-Robotics Interaction for Aerial and Aquatic Robots
Xu, Huan	Ph.D	Mannor	Robust Decision Making and its Applications in Machine Learning
Yao, Hsin-Yun	Ph.D	Hayward	Vibro-tactile Haptic Devices and Their use in Ambient Haptic Systems
Yu, Jia Yuan	Ph.D	Mannor	Sequential decision making in non-stationary environment
Zou, Ting	Ph.D	Angeles	Pose-and-Twist Estimation Using a Strap-down of Bi-axial Accelerometers

VISITORS

Date	Name	Type	Supervisor
2009.06.01-2009.08.21	Henna Eveliina Warma	Foreign Student: Helsinki University of Technology Otakaari ! Helsinki, FINLAND	**Meyer Nahon**
2009.06.02 – 2009.08.30	Giuseppe Cannella	Visiting Student: Università di Cassino Via di Biasio Cassino (FR), ITALY	**Jorge Angeles**
2009-06.16 – 2011.06.30	Seyedhossein Hajzargarbashi	Post-Doctoral Fellow	**Jorge Angeles**
2009.06.18 – 2009.08.16	Luis Gracia	Visiting Professor: Universidad Politécnica de Valencia, Camino de Vera s/n 46022 Valencia, SPAIN	**Jorge Angeles**
2009.07.01 – 2009.10.01	Hassan Rivaz	Visiting Student Johns Hopkins University Baltimore Md USA/ Queens University , Kingston On CANADA	**Tal Arbel**
2009.08.03 – 2009.09.03	Arthur Lazarte	Visiting Student: Universidade de São Paulo, Av. Luciano Gualberte São Paulo /SP BRAZIL	**Peter Caines**
2009.08.17– 2009.08.29	Josep Maria Font Llagunes	Lecturer: Escola Tècnica Superior d'Enginyeria Industrial de Barcelona Av. Diagonal 647 08028 Barcelona, Catalunya, SPAIN	**Jozsef Kövecses**
2009.09.14 – 2009.10.16	David Levanony	Visiting Professor Dept. of Electrical and Computer Engineering Ben Gurion University Beer Sheva 84105 ISRAEL	**Peter Caines**
2009.09.01 – 2010.08.31	Jing Jin Shen	Academic Trainee: Nan Jing University of Aeronautics and Astronautics No 29 Yudao, Nan Jing, CHINA	**Jorge Angeles**
2009.10.05 – 2009.11.05	Alessandro Cammarata	Visiting Researcher: University of Catania Department of Mechanical and Industrial Engineering Viale Andrea Doria 6-95125 Catania, CT ITALY	**Jorge Angeles**
2009.11.02 – 2010-11.02	Dmitry Gromov	Post-Doctoral Fellow: Technische Universitt Berlin Fachgebiet Regelungssysteme Sekretariat EN11 Einsteinufer 17 D-10587 Berlin GERMANY,	**Peter Caines**
2009 – 11.24 – 2010.11.23	Changsheng Zhang	Visiting Professor: Automation Dept, Faculty of Information Engineering and Automation Kunming University of Science and Technology Xinying Campus Huanchongdonglu50 Kunming 650051, CHINA	**Benoit Boulet**

Date	Name	Type	Supervisor
2010.01.04- **2010.03.26**	Javier Andrés de la Esperanza	Visiting Student : Instituto de Diseño y Fabricación Universidad Politecnica Ciudad Politecnica de la Innovacion : Edificio 8 G – Bajo CP 46022 Valencia SPAIN	**Jorge Angeles**
2010.01.10 – **2011.01.09**	Li Jian	Visiting Student : Room 303 Institute of Automation NUOT, Hunan Province CHINA, 410073	**Martin Levine**
2010.01.18 – **2010.07.23**	Ignacio Garcia-Dorado	SPAIN	**Jeremy Cooperstock**
2010.03.29 – **2010.09.29**	Jian Yang	Visiting Professor: 1# Grxianqiao Dongsan Road Chengdu University of Technology Dept. of Nuclear Technology and Automation Engineering	**Jorge Angeles**
2010.04.01 – **2010.08.01**	Rogelio Peña-Gallo	Universidad de Guanajuato. División de ingenieria Campus Irapuato-Salamanca Palo Blanco Salamanca Guanajuato, MEXICO	**Jorge Angeles**
2010.04.14 – **2010.09.10**	Nordhal Mabire	Ècole Supérieure d'Èlectricité, Campus de Metz Mets. Tehnopole 2, rue Edouard Belin 57070 Metz FRANCE	**Cooperstock**
2010.05.31 – **2011.04.30**	Zhifeng Lin	Beijing University of Technology Beijing CHINA 100124	**Angeles**

VISITING LECTURES

2009 – 2010

Seminars in Robotic Mechanical Systems

Kinemato-static Modelling of Compliant Parallel Mechanisms
Dr. Cyril Quennouelle, Laboratoire de Robotique, Univ. Laval, QC, CANADA, *June 17th, 2009*

AnimatLab: A Physics-based 3D Graphics Environment for Behavioural Neuro-biology Research
Dr. David W. Cofer, Dept of Biology Georgia State University, GA, USA, *October 7th 2009*

A Matrix Structural Analysis-Based Algorithm to Study the Elasto-dynamics of Parallel Kinematic Machines
Dr. Alessandro Cammarata, Dept. of Mechanical and Industrial Engineering, University .of Catania, ITALY, *October 9th 2009*

Mechatronic Design of an Automatic Wood-Handling System
Prof. Giorgio Figliolini, DiMSAT, University of Cassino, Cassino ,ITALY, *October 14th, 2009*

3D Inertia Transfer Concept and Symbolic Determination of the Base Inertial Parameters
Prof. Javier Ros, Dept. of ME, Public University of Navarre, Pamplona, SPAIN, *May 18th 2010.*

Cable Driven Redundant Parallel manipulator: From Need to Implementation
Prof. Hamid D. Taghirad, Advanced Robotics and Automated Systems, K.N. Toosi University of Technology, Tehran IRAN, *September 3rd 2010*

Challenges in the Design and Control of Advance Robotic Plaforms
Prof. Jorge Solis, Faculty of Science and Engineering, Waseda University, Tokyo JAPAN, *November 10th 2010*

The Mechatronics Lab at Politecnico di Torino and its activities in Space Robotics
Prof. Giancarlo Genta, Politecnico di Torino , Torino, ITALY, *November 19th 2010*

McGill Centre for Intelligent Machines and REPARTI Seminars

Recursive Compositional Models
Prof. A. L. Yuille, University of California, Los Angeles, USA, *June 19th 2009*

Self-Calibration of the Relative Pose of Visual and Inertial Sensors
Jonathan Kelly, PhD candidate, University of Southern California, *June 19th, 2009*

Joint Learning of Pose Estimator and Features for Object Detection
Karim Ali, École Polytechnique Fédérale de Lausanne, FRANCE, *July 6th 2009*

Cartesian Control of Cable-Driven Haptic Mechanism
Martin Otis, Ph.D student, Dept. of Electrical Engineering, Université Laval, *August 27th, 2009*

Active Learning in Networks
Marks Coates, Assoc. Prof. Dept. ECE, McGill University *November 12th 2009*

Context-consistent Wide-baseline Matching
Shufei Fan, Ph.D candidate, Artificial Perception Laboratory, Centre for Intelligent Machines, McGill University, *January 20th 2010*

Haptic perception and device for nanoscience
Guillaume Millet, Post-doctoral Fellow, SRE Lab/CIM, McGill University *February 3rd, 2010*

3D Stochastic Completion Fields for Fibre Tractography
Parya Momayyezsiahkal, PhD candidate, CVR Lab/CIM, McGill University, *February 10th 2010,*

Activity Recognition using Time-delay Embeddings
Jordan Frank, PhD. candidate, Research and Reasoning Lab, SOCS, McGill University, *March 3rd, 2010*

Algorithmic Robotics: Enabling Autonomy in Challenging Environments
Yiannis Rekleitis, Mobile Robotics Lab, SOCS/CIM, McGill University, *March 17th 2010*

Control Policies for Physics-based Grasping
Sheldon Andrew, Ph.D student, Computer Graphics Lab, SOCS, McGill University, *March 24th, 2010*

Detection of Gad-enhancing Lesions in Multiple Sclerosis using Conditional Random Fields
Zahra Karimaghaloo, Ph.D student, Medical Imaging Lab, ECE/CIM, McGill University , *April 7th, 2010*

Generalized Helicoids for Modelling and Interpolating Hair
Emmanuel Piuze-Phaneuf M.Sc. student, CV&R Lab, SOCS/CIM, McGill University, *April 7th 2010*

Medial Spheres for Object Approximation
Svetlana Stolpner, Ph.D student, CVR Lab, SOCS/CIM McGill University, *April 14th 2010*

Multi-Tasking SLAM(Simultaneous Localization and Mapping)
Arthur Guez, M.Sc. student, SOCS/CIM, McGill University

Oculo-motor decision, freedom and neurotransmitter
Dr**.** Aline Bompas, School of Psychology, Cardiff University, *April 21st 2010*

Curve pattern clustering and analysis in medical imaging
Maxime Boucher, Ph.D student, SOCS/CIM, McGill University*, April 28th 2010*

Feature-based Morphometry: Discovering Group-related anatomical patterns in Brian Imagery
Dr. Matthew Toews, Brigham and Women's Hospital. Boston, MA, USA, *May 5th 2010*

The I-Cubex challenge: enabling creativity while maintaining usability
SPC Lab, Schulich School of Music, McGill University, *May 12th 2010*

Segmentation of Image Ensembles via Latent Atlases
Tammy Riklin Raviv, Post –doctoral Fellow, Computer Science and Artificial Intelligence, Lab, MIT, Cambridge MA, USA, *May 20th 2010*

Gender Classification from Unconstrained Video Sequences
Meltem Demirkus, Ph.D candidate, Medical Imaging Lab ECE/CIM, McGill University, *May 26th 2010*

Using Hidden Markov Models for Visual-Task Inference and Allocation of Human Covert Attention
Amin H. Abolhassani, Ph.D candidate, Visual Motor Research Lab ECE/CIM, McGill University, *May 26th 2010*

Plane-Based Calibration: video projectors and push-broom cameras
Jamil Draréni, Ph.D student, U de Montreal/INRIA, *June 2nd, 2010*

Affective Ludology: Researching Fun, Affect, and User Experience in Games
Dr. Lennart Nacke, Department of Computer Science ,University of Saskatchewan SK, CANADA, *June 7th 2010*

Active Testing for Object Detection
Bruno Jedynak, Center for Imaging Science, Johns Hopkins University, Baltimore MD, USA, *June 22nd, 2010*

PDEs on Graphs: Unifying Local and Lnl-local Image Processing
Prof. Abderrahim Elmoataz,GREYC (Groupe de Recherche en Informatique, Iimage, Automatique et Instrumentation de Caen) Université de Caen FRANCE, *July 5th 2010*

Designing, Developing and Evaluating New multimodal systems
Dr. Thomas Pietrzak, Telecom Paris Tech, *July 9th 2010*

Google Maps Street View: Overview and Computer Vision Challenges
Luc Vincent, Google Inc, *July 23rd, 2010*

Navigation Summaries
Yogesh Girdhar, Ph.D student, Mobile Robotic Lab, CIM/SOCS, McGill University, *September 8th 2010*

Pareto Discriminant Analysis
Karim Abou-Moustafa, PhD student, Artificial Perception Lab ECE/CIM, McGill University, *September 15th 2010*

A Vision-Based Boundary Following Framework for Aerial Vehicles
Anqi Xu, Ph.D student, Mobile Robotics Laboratory, SOCS/CIM, McGill University, *October 13th 2010*

Multimodal Image Registration Based on Adaptive Local Mutual Information
Dante De Nigris Moreno, PhD student, Medical Imaging Lab, ECE/CIM, McGill University, *October 20th, 2010*

Bayesian Classification of Multiple Sclerosis Lesions in Longitudinal MRI using Subtraction Images
Colm Elliott, Ph.D student Medical Imaging Lab ECE/CIM, McGill University*, October 27th 2010*

6 DOF pose estimation using inertial and visual information
Florian Shkurti, MSc student, Mobile Robotics Lab, SOCS/CIM, McGill University, *November 17th 2010*

Reducing Uncertainty in human-robot Interaction: A Cost Analysis Approach
Junaed Sattar, Ph.D student, Mobile Robotic Laboratory, SOCS/CIM, McGill University, *December, 1st 2010*

Rich Photography on a Budget
Sam Hasinoff, Toyota Technological Institute, Chicago, IL, USA, *January 20th 2011*

Informal Systems Seminar

Linear Stochastic Systems: A White Noise Approach
David Levanony, Dept. of Electrical Engineering, Ben Gurion University, ISRAEL, *October, 9th 2009*

Piecewise Affine Control Systems
Luis Rodrigues, Dept of Mechanical and Industrial Engineering, Concordia University, CANADA, *October 16th 2009*

Quantized Dynamical Auctions in Competitive Markets and Social Networks
Peng Jia, Ph.D candidate, Dept. ECE/CIM, McGill University, *October, 30th 2009*

Analysis of Hierarchical Structures for Hybrid Control Systems
Dr. Dmitry Gromov, Post-Doctoral Fellow, ECE/CIM, McGill University, *November 6th 2009*.

Using the Crowd to Monitor the Cloud: Detecting Events from Edge Systems
David Choffnes, Ph.D candidate, Northwestern University, Il USA, *November 13th, 2009*

Optimal Control with Information Constraints under Centralized and Decentralized Settings
Dr. Serdar Yuksel, Queens' University, Kingston, ON, CANADA, 12th February, 2010

Mean Field LQG Games Involving A Major Player
Dr. Minyi Huang , School of Mathematics and Statistics, Carleton University, Ottawa, CANADA, *February 5th 2010*

Passivity based control: principles, applications and perspectives
Dr. Fernando Castanos, Centre for Intelligent Machines, McGill University, *May 7th 2010*

Resource Allocation with Supply Adjustment inDistributed Computing Systems
Amir Danak, Phd student, ECE/CIM, McGill University, *June 4th, 2010*

Initial Investigations of Hybrid Thermodynamic Control Systems with Phase Transitions
Dr. Dmitry Gromov, Post doctoral fellow, Dept. ECE and Centre for Intelligent Machines, McGill University, *August 5th 2010*

Stochastic Approximation for Consensus over Switching Networks: Proving convergence without Lyapunov Functions
Dr. Minyi Huang, School of Mathematics and Statistics, Carleton University, Ottawa CANADA, *October 8th 2010*

Optimal design of two user multiple access broadcast using dynamic team theory
Aditya Mahajan, ECE, McGill University, *October 15th 2010*

Fundamental Limitation of Adaptive Dynamical Systems: An information-theoretic meta-framework
Maxim Raginsky, Duke University Durham NC, USA, *October 26th 2010*

Finite State Markov Models in a Signals and Systems Context
Roger Brockett, Harvard University, Boston, MA, USA, *October 29th 2010*

Review of some papers on <<Flocking>>
Mojtaba Nourian Aval, Ph.D student, ECE/CIM, McGill University, *November 5th 2010*

3D Stochastic Completion Fields for Fiber Tractography
Parya Momayyez, Ph.D candidate, SOCS/CIM, McGill University, *November 26th, 2010*

Estimating Postprandial Glucose Fluxes using Bayesian Analysis
Ahmad Haidar, Ph.D candidate, ECE/CIM McGill University, *December 3rd 2010*

Inverse Optimal Control for a Class of Non-linear Systems
Dr. Luis Rodrigues, Dept. of ECE, Concordia University, Montreal QC, CANADA, *January 20th 2010*

Joint Informal Systems Seminar (CIM-McGill) – GERARD Université de Montréal Seminar

Mean Field Stochastic Games
Dr. Tembine Hamidou,Post-doc, Laboratoire des signaux et systèmes, CNRS-SUPELEC, Univ Paris-Sud 11, Paris FRANCE, *August 4th 2010*

Quasi-linear Control: Performance Analysis and Design of Feedback Systems with Non-linear Actuators and Sensors
Seymon M. Meerkov, University of Michigan, Ann Arbor, MI USA, *18th November, 2010*

Tracking and Predicting the Flow of Information in Networks
Prof. Jure Leskovec, Dept. Computer Science, Stanford University, CA, USA, *January 14th 2010*

CIM-ISS/MITACS Informal Systems Seminar

Engineering Complex Traffic Networks: The Stochastic Switched Networks Paradigm
Vijay Subramanaian, Hamilton Institute, NUIM, Ireland, *October 22nd, 2010*

CIM-School of Computer Science Seminar Series

Computation and Applications for Centroidal Voronoi Tessellations

Prof. Wenping Wang, Dept. of Computer Science, The University of Hong Kong, *July 14th, 2010*

CIM-REPARTI Invited Speaker Series

Designing intuitive and inherently safe robots for human/robot cooperation

Dr. Clément Gosselin, Robotics Laboratory, Université Laval, Québec CANADA, *December 3rd, 2009*

Finding Camera-Projector Matches with an Unstructured Video Stream

Marc-Antoine Drouin, National Research Centre, Ottawa, ON, *June 23rd, 2010*

CIM 25th Anniversary Seminars on Brain, Body & Machine

Fixing the Beating Heart: Ultrasound Guidance for Robotic Intra-cardiac Surgery

Prof. Robert D. Howe, School of Engineering and Applied Sciences, Harvard University, Boston, Massachusetts, USA, *February 2nd 2010*

The Future of Robotics: An Artificial Intelligence Perspective

Prof. Wolfram Burgard, Dept. of Computer science, Univ. of Freiburg, Freiburg, GERMANY, *April 9, 2010*

Robots Among Humans

Prof. Oussama Khatib, Dept. of Computer. Science, Stanford Univ. CA, USA, *April 23, 2010*

On Biological and Artificial Walking

Prof. Friedrich Pfeiffer, Institute for Applied Mechanics, Technical University of Munich, GERMANY, *10th September 2010*

The Neuro-dynamics of Simple Decisions: Drift-diffusion Equations as Models for Single brains, and for Group Behaviours

Prof. Philip Holmes, Dept. Of Mechanical and Aerospace Engineering, Princeton University, NJ, USA, *7th October, 2010*

CIM 25th Anniversary Beatty Lecture

What is an Intelligent Machine?

Prof. Roger Brockett, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA, USA, *October 29th 2010*

PUBLICATIONS

All departments file an annual report to the university that contains updated information on publications. Please see links below for CIM members and associates.

FACULTY OF SCIENCE

School of Computer Science

http://www.cs.mcgill.ca/research/publications

http://www.cs.mcgill.ca/about/reports

Full Members:

Gregory Dudek, Michael Langer, Joelle Pineau, Kaleem Siddiqi

Associate Members:

Paul Kry, Xue Liu, Prakash Panangaden, Doina Precup

FACULTY OF MEDICINE

Associate Members:

Dr. Renzo Cecere http://ct-surgery.mcgill.ca/faculty_rcecere.htm

Dr. Louis Collins http://www.bic.mni.mcgill.ca/PeopleFaculty/CollinsDLouis

Dr. Bruce Pike http://www.bic.mni.mcgill.ca/PeopleFaculty/PikeBruce

FACULTY OF ENGINEERING

Department of Electrical and Computer Engineering

http://www.mcgill.ca/ece/about/reports/

Full Members:

Tal Arbel, Benoit Boulet, Peter Caines, James Clark, Jeremy Cooperstock, Frank Ferrie, Vincent Hayward, Martin Levine, Hannah Michalska, Shie Mannor

Associate Member:

Sam Musallam

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