CENTRE FOR INTELLIGENT MACHINES
(CIM)

Centre de recherche sur les machines intelligentes

www.cim.mcgill.ca

Annual Report 2014

Director
Professor James J. Clark

Contents

Summary

The McGill Centre for Intelligent Machines (CIM) is a multi-disciplinary, inter-departmental, inter-faculty research group formed in 1985 to provide an enriched mentoring and training environment for graduate students studying in the field of robotics and intelligent systems.

For almost 3 decades, CIM has been a pioneering force in cross-disciplinary research. The Centre is primarily located in contiguous space where labs and student offices are shared. CIM's membership and students have been universally recognized over the years for their highest standards of excellence – exceptional scientific achievements and outstanding contributions to society and industry.

The Centre is comprised of 20 full members from both the Faculties of Engineering and Science -- the Department of Electrical and Computer Engineering, Department of Mechanical Engineering and the School of Computer Science. CIM also has associate members representing a diversity of research collaborations, such as within the Faculty of Medicine --the Royal Victoria Hospital and the Montreal Neurological Institute.

The Centre is home to a diverse population of researchers: in addition to the 20 full members, at the end of 2014 the centre boasted a complement in excess of 200 graduate students, post-docs and undergraduate students, as well as visiting scholars, research assistants and associates from various disciplines.

Ph.D	Masters (Thesis)	Masters (non-thesis)	U/Grads	Post-Docs	**Total**
84	63	7	70	20	**244**

The 2014 calendar year brought a number of noteworthy events for the Centre. These include:
- Addition of two new associate members, Professor Jackie Chi Kit Cheung in McGill's School of Computer Science and Aditya Paranjape in Mechanical Engineering
- Awarding of a number of significant honours
- CIM researchers were very productive, having presented their research results and developments in nearly 200 publications in major conferences and journals.

Section I – Membership

Full Members

Angeles, Jorge	James McGill Professor, Mechanical Engineering
Arbel, Tal	Associate Professor, Electrical and Computer Engineering
Boulet, Benoit	Associate Professor, William Dawson Scholar, ECE
Caines, Peter	MacDonald Professor, Electrical and Computer Engineering
Clark, James	Professor, Electrical and Computer Engineering
Cooperstock, Jeremy	Associate Professor, Electrical and Computer Engineering
Cortelezzi, Luca	Associate Professor, Mechanical Engineering
Dudek, Gregory	James McGill Professor, Computer Science
Ferrie, Frank	Professor, Electrical and Computer Engineering
Kovecses, Jozsef	Associate Professor, Mechanical Engineering
Kry, Paul	Assistant Professor, Computer Science
Langer, Michael	Associate Professor, Computer Science
Levine, Martin	Professor, Electrical and Computer Engineering
Mahajan, Aditya	Assistant Professor, Electrical and Computer Engineering
Michalska, Hannah	Associate Professor, Electrical and Computer Engineering
Nahon, Meyer	Professor, Mechanical Engineering
Pineau, Joelle	Associate Professor, William Dawson Scholar, Computer Science
Sharf, Inna	Professor, Mechanical Engineering
Siddiqi, Kaleem	Professor, Computer Science
Zsombor-Murray, Paul	Associate Professor, Mechanical Engineering

Associate Members

Adamchuk, Viacheslav	Associate Professor, Bioresource Engineering, McGill University
Cecere, Renzo	Associate Professor, Cardiac Surgery (RVH), McGill University
Cheung, Jackie Chi Kit	Assistant Professor, School of Computer Science, McGill University
Collins, Louis	Professor, Neurology & Neurosurgery/Biomedical Engineering
Dimitrakopoulos , Roussos	Professor, Mining and Materials Engineering, McGill University
Forbes, James	Assistant Professor, Aerospace Engineering, University of Michigan
Hamann, Marco	Professor, Math/Informatics, Dresden University of Applied Sciences
Hayward, Vincent	Professor, ISIR, Université Pierre et Marie Curie, Paris France
Husty, Manfred	Professor, Geometry and CAD, University of Innsbruck, Austria
Liu, Xue	Associate Professor, Computer Science, McGill University
Misra, Arun	Professor, Mechanical Engineering, McGill University
Mongrain, Rosaire	Associate Professor, Mechanical Engineering, McGill University
Musallam, Sam	Associate Professor, CRC chair in Bioengineering, ECE, McGill University
Panangaden, Prakash	Professor, Computer Science, McGill University
Paranjape, Aditya	Assistant Professor, Mechanical Engineering, McGill University
Pike, Bruce	Professor, Faculty of Medicine, University of Calgary
Precup, Doina	Associate Professor, Computer Science, McGill University
Zeng, Haibo	Assistant Professor, Electrical and Computer Engineering, Virginia Tech

New Members

Cheung, Jackie Chi Kit
Assistant Professor, School of Computer Science, McGill University
Dr. Cheung is a recent graduate of the University of Toronto, where he obtained his doctoral and master's degrees in Computer Science. He began teaching at McGill University in January 2015, as an Assistant Professor. He is interested in understanding the meaning of text and speech (semantic analysis) to generate fluent language that is contextually appropriate. He has published on topics that include computational semantics, parsing and discourse analysis, and automatic summarization. He was the recipient of a Facebook Fellowship in 2013-2014 and has worked as in intern with Microsoft Research in the Speech group and the Natural Language Processing group.

Paranjape, Aditya
Assistant Professor, Mechanical Engineering, McGill University
Professor Paranjape became an associate member of CIM in October 2014. He started teaching at McGill in January 2014, with courses in aircraft performance and stability as well as systems and dynamics. Before coming to Montreal, he was a Postdoctoral Research Associate in the Department of Aerospace Engineering at the University of Illinois at Urbana-Champaign, where he also completed his Ph.D. The title of his dissertation was "Dynamics and Control of Robotic Aircraft with Articulated Wings". He received his B.Tech and M.Tech from the Indian Institute of Technology Bombay, Mumbai, India, in Aerospace Engineering (Dynamics and Control). His research interests include flight dynamics, aeroelasticity, nonlinear dynamics and control and control of multi-agent systems. His current projects involve the control of UAV flocks, the modeling of flapping aircraft and the control of infinite-dimension systems, among others.

Visitors

The following researchers were long-term (one month or longer) visitors to CIM, working in the labs of one or more CIM members:

Guido Gerig   University of Utah, USA – hosted by Kaleem Siddiqi
Prateek Murgai   Delhi Technological University, India – hosted by Jeremy Cooperstock
Guofan Yin   Beijing Normal University, China – hosted by Jeremy Cooperstock
Qiang Zhang   XiDian University, China – hosted by Martin Levine
Tadasuke Furuya   Japan – hosted by Frank Ferrie
Fanxiang Zeng   Beijing University of Posts and Telecommunications, China – hosted by Martin Levine
Amir Ali Forough Nassiraei
                         Kyushu Institute of Technology, Japan – hosted by Jorge Angeles

Advisory Board

The Centre board consists of the following people:
- Prof. James Clark, Director of the centre (chair of the board)
- Prof. James Nicell, Dean of the Faculty of Engineering (or delegate)
- Prof. Bruce Lennox, Dean of the Faculty of Science (or delegate)
- Dr. Rosie Goldstein, Vice-Principal (Research and International Relations) (or delegate)
- Prof. Chris Manfredi, Provost (or delegate)
- Prof. Greg Dudek, centre member
- Prof. Frank Ferrie , centre member
- Jason Taylor, PhD. candidate, graduate student member
- Dr. Pierre Breton, XLCAP Investments Inc., external member

Section II – Awards

Dr. Zahra Karimaghaloo was the winner of the *CIPPRS Doctoral Dissertation Award* 2014. Her thesis was supervised by Prof. Tal Arbel and is titled: "Hierarchical Adaptive Voxel and Textural Conditional Random Field for Enhanced Pathology Segmentation".
The Canadian Image Processing and Pattern Recognition Society (CIPPRS) Doctoral Dissertation Award is given annually to the top PhD thesis in the areas covered by the Conference on Computer and Robot Vision (CRV).

Dr. Yogesh Girdhar was the 2014 *Honourable Mention for the CIPPRS Doctoral Dissertation Award* 2014. His thesis was supervised by Prof. Greg Dudek and is titled: "Unsupervised Semantic Perception, Summarization, and Autonomous Exploration for Robots in Unstructured Environments"

Professor **Paul Zsombor-Murray** is the recipient of the *C.N. Downing Award* for his distinguished service to the Canadian Society for Mechanical Engineering over the years. He is the editor of the Transactions of the Canadian Society for Mechanical Engineering, an archival journal dedicated to the broad field of mechanical engineering.

Professor **James Clark**, Director of CIM, was awarded the 2014 *Award for Research Excellence* from the Canadian Image Processing and Pattern Recognition Society (CIPPRS) at the annual Canadian Conference on Computer and Robot Vision (CRV) (held in Montreal from May 7-9, 2014). The award is given out once per year to a Canadian researcher and recognizes leadership and outstanding performance in research related to computer vision and/or robotics. Prof. Frank Ferrie, Associate Director of REPARTI, and Prof. Greg Dudek, both former directors of CIM, also received this award previously.

Professor **Jorge Angeles** won 2014 ASME Advanced Vehicle Technology *Best Paper Award* for "Dynamics simulation of rovers on soft terrain: theory, algorithms, and experimental validation," at ASME 2014 Int. Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE 2014, August 17-20 in Buffalo, NY, with A. Azimi, D. Holz, J. Kövecses and M. Teichmann.
He was also awarded *Best Paper Award Honorable Mention*, of the Mechanisms & Robotics Committee for "The role of the orthogonal helicoid in the generation of the tooth flanks of involute-gear pairs with skew axes,'' at ASME 2014 Int. Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE 2014, August 17-20 in Buffalo, NY, with G. Figliolini and H. Stachel.

Professor **Jozsef Kovecses** won the *best paper award* of the 16th ASME International Conference on Advanced Vehicle Technologies, Buffalo, New York, August 17-20. (ASME: American Society of Mechanical Engineers). He worked in collaboration with Professor Angeles.

Professor **Jeremy Cooperstock** won the *US Ignite Best App in Education* (Training Tools for First Responders).
His paper, "Vibrotactile Rendering of Splashing Fluids", was selected as one of "*Best Papers*" from IEEE Transactions on Haptics for presentation at special session at IEEE Haptics Symposium.

Professor **Peter Caines** was designated a *NCMIS Distinguished Lecturer* at the National Center for Mathematics and Interdisciplinary Sciences, Chinese Academy of Sciences, October 2014.
He is also a *Kwan Chao-Chih Distinguished Lecturer* at the Institute of Systems Science, Academy of Mathematics and Systems Science, Chinese Academy of Sciences, October 2014.

Jalal Arabneydi, a PhD student under the supervision of Professor **Aditya Mahajan**, won the IEEE Conference on Decision and Control *Best Student-Paper Award* 2014. His paper was titled "Team Optimal Control of Coupled Subsystems with Mean-Field Sharing" by Jalal Arabneydi and Aditya Mahajan.

Professor **Paul Kry** was the recipient of the *Tomlinson Science award*, assistant professor category, McGill, May 2014. This award is intended to recognize excellence in research and nominations are made by the faculty of each Science department.
In addition, he sent PhD **Sheldon Andrews** to the Symposium on Computer Animation to present the poster "Computational climbing for physics-based characters", a collaboration with a visiting MSc student **Tim Olson**. The work received the *best poster award*.

Professor **Joelle Pineau** won the *Tomlinson Science award, associate professor category*, McGill University, Faculty of Science. This brings a total of two of these prestigious awards this year to professors at CIM, along with Professor Kry.
Joelle was also named as a *William Dawson Scholar*, which recognizes a McGill Professor developing into an outstanding and original researcher of world-class caliber who is poised to become a leader in his or her field, similar to that of a CRC Tier 2.

Professor **Kaleem Siddiqi**'s research intern from École Polytechnique, Palaiseau, **Arthur Mensch**, was awarded a "*Félicitations du jury*" award by a committee of researchers at his home university, for his summer research project carried out under his supervision. École polytechnique is regarded as France's top engineering school. Arthur is presently doing a masters in applied mathematics at École Normale Superieur.

Lucas Lehnert, who carried out a summer NSERC USRA under Professor Siddiqi's supervision, was awarded a runners-up prize (shared with **Ehsan Kia**) at the fall undergraduate computer science research symposium. Lucas is presently pursuing a master's under CIM Associate Member Prof. **Doina Precup**'s supervision.

Section III – Events

First Annual Student Research Showcase

On September 23, 2014, the first annual CIM Student Research Showcase was held in the Zames seminar room. It featured short one-slide presentations in the areas of Robotics, Systems and Control, Human-Computer Interaction, Machine Vision and Medical Image Analysis. Over fifty students participated in the event, and several professors and other students attended as spectators. A number of people from local industry also attended. It was a great opportunity for everyone to learn about the research in other CIM labs and network. Due to its great success, this will be an annual event and will serve to foster ties in the community for years to come.

McGill-IEEE Symposium on Advanced Electric Vehicle Drivetrains

This event organized by the APC brought together electric vehicle researchers from eastern Canada. This day-long event on November 14, 2014 featured two IEEE Distinguished Lecturers, seven speakers from academia and industry, and a plenary by the VP of Hydro-Québec responsible for the electrification of transportation. Close to 100 people attended, including academic researchers, government engineers, business leaders, and graduate students. The purpose was to disseminate knowledge and information on advanced electric and hybrid electric drivetrains and infrastructure to the Québec and Eastern Canada EV community. The symposium was a great success.

GPU Computing with MATLAB Seminars at McGill

Students were presented with an opportunity to learn about GPU computing from MathWorks engineers on January 30, 2015. A full day workshop was organized and hosted by the Centre for Intelligent Machines, REPARTI and CREATE-MIA with the support of the School of Computer Science. Participants learned to optimize and accelerate their MATLAB code in a seminar that covered topics such as leveraging the power of vector and matrix operation in MATLAB, identifying and addressing bottlenecks in code and utilizing additional processing power available in multicore machines, clusters and grids. A pizza lunch was followed by a presentation of exercises that showed how to use GPU-enabled MATLAB functions to accelerate large matrix operations and integrate CUDA kernels in MATLAB. Participants were able to access these hands-on exercises after the event and will be able to apply their newfound knowledge to their research. This workshop came at an opportune time as CIM has received a number of new GPUs, donated by nVidia, that will enable ever more complex applications.

Forest Machine Technology Conference Tour

CIM hosted a tour on April 23, 2015 for participants of the Robotics in the Forest Workshop, a local conference organized by FPInnovations. Several labs opened their doors and presented demos to welcome the thirty attendees, including artificial perception, applied dynamics, mobile robotics, reasoning and learning, robotic mechanical systems, and aerospace mechatronics. There was also a demonstration of a simulator produced by CM Labs, an industrial collaborator with CIM. The workshop covered topics as diverse as the technologies used in mines, robotics in manufacturing plants and in the field, aerospace, remote operations, self-learning systems, automation of repetitive tasks and new high-performance sensors now available on the market, and usable, in particular, by overhead or land drones. Many of these subjects are investigated in the labs at CIM so

it was a valuable opportunity for students and researchers to interact with industry members from all over the world and learn from each other.

Informal Systems Seminars

Organized by Profs. Aditya Mahajan and Peter Caines every Friday, this seminar series brings together researchers from many universities. Speakers come from all over the world to present on various topics of importance in the field of systems and control, and these events are well attended by faculty and grad students alike.

Research Seminars hosted by CIM

Ali Khanafer	University of Illinois at Urbana-Champaign
Mehrsan Javan	SPORTLOGiQ, Canada
Saber Jafarpour	Queen's University, Canada
Jenna Wiens	Massachusetts Institute of Technology, USA
Julian McAuley	Stanford University, USA
Anqi Xu	McGill University, Canada
Georgios D. Mitsis	McGill University, Canada
Peter E. Caines	McGill University, Canada
Derek Wang	McGill University, Canada
Josh A. Taylor	University of Toronto, Canada
Kevin Whittingstall	University of Sherbrooke, Canada
Aaron Fenster	Western University, Canada
Jie Fu	University of Pennsylvania, USA
Emma Brunskill	Carnegie Mellon University, USA
Ather Gattami	Ericsson Research, Sweden
Jonathan Kelly	University of Toronto, Canada
Jeff S. Shamma	Georgia Institute of Technology, USA
Kazuya Yoshida	Tohoku University, Japan
Purang Abolmaesumi	University of British Columbia, Canada
Arthur Mensch	École Polytechnique, France
Roman Marchant	University of Sydney, Australia
James Richard Forbes	University of Michigan, USA
Hongbo Fu	City University of Hong Kong, Hong Kong
Silvia Ferrari	Duke University, USA
Angelia Nedich	University of Illinois at Urbana-Champaign
Gábor Vásárhelyi	Eötvös University, Hungary
Luis Rodrigues	Concordia University, Canada
François Pomerleau	University of Toronto, Canada
Damien Ernst	Univerite de Liege, Belgium
Aditya Paranjape	McGill University, Canada
Nir Sochen	University of Tel Aviv, Israel
Michael Rabbat	McGill University, Canada
Bruce Pike	University of Calgary, Canada

Terry Peters and Maged Goubran   Western University, Canada
Anqi Xu   McGill University, Canada
Serdar Yüksel   Queen's University, Canada
Michael Langer   McGill University, Canada
Robert Biddle   Carleton University, Canada
Andrew Phan   McGill University, Canada
Alan Yuille   University of California, Los Angeles, USA

Section IV – Research Funding

The research carried out in the Centre is funded from a wide range of sources, including the Governments of Canada and Quebec (primarily through NSERC Discovery and Partnership grants and FRQNT grants) as well as industry (through research contracts and contributions to governmental partnership programs). These programs are too numerous to list individually. However, there are some large programs that affect a significant proportion of the researchers in the Centre, and we provide some details on these in the following section.

REPARTI

Regroupement pour l'étude des environnements partagés intelligents répartis

Regroupement REPARTI is a $4M inter-institutional, interdisciplinary collaborative venture comprised of 8 Quebec institutions, 35 members and over 300 students. The McGill node of REPARTI is represented by 13 members from the McGill Centre for Intelligent Machines (CIM). The members of the McGill node collaborate in grants and contracts valued in excess of $5M annually. This FRQNT regroupement is a primary funding source for the McGill Centre for Intelligent machines (CIM).

The institutions participating in REPARTI are: Université Laval (host institution), McGill University, Université de Sherbrooke, École Polytechnique, Université de Montréal, Université du Québec à Chicoutimi and École de technologie supérieure (ÉTS).

Supported by the Quebec government's Fonds de recherche Nature et technologies (FQRNT), this regroupement stratégique builds on some unique precedents:

(1) The historical and concrete partnership that developed over the past 25 years between prominent researchers in U. Laval and McGill (CIM) as a result of the NSERC National Centres of Excellence program, the interuniversity-industrial consortium IRIS-Precarn, and the FQRNT Réseau QERRAnet.

(2) The long and productive relationship established between the McGill Centre for Intelligent Machines (CIM) and the Quebec government through the former FCAR Centre de recherche programme.

The regroupement REPARTI was successfully renewed in 2013 for 6 years until 2019.

CREATE-MIA

NSERC Collaborative Research and Training Experience in Medical Image Analysis

The CREATE-MIA, funded by NSERC, was started in 2012, with the aim of training students for research careers in both academia and industry. The program employs a collaborative and multi-faceted approach including:

- experts from academia, industry and/or medicine to oversee a trainee's progress throughout the program
- a selection of advanced courses from different academic departments to provide a comprehensive background in medical imaging
- internships with our industrial partners on company premises to give first-hand real-world industry experience
- participation in events such as seminars, workshops, and a summer school to broaden and enrich their knowledge-base
- participation in SKILLSETS training seminars offered by McGill University to gain professional skills that will be useful when entering the workforce or starting businesses of their own.

The institutions participating in CREATE-MIA are: McGill University (host institution), Université de Sherbrooke, and École de technologie supérieure (ÉTS). Currently, the program supports 16 graduate students, 4 of whom are currently supervised by CIM members.

The director of the CREATE-MIA program is CIM member **Kaleem Siddiqi**. The program faculty includes CIM member **Tal Arbel**, CIM associate members **Louis Collins, Bruce Pike**, and CIM alumni **Catherine Laporte** (now assistant professor at ETS) and **Maxime Descoteaux** (now an assistant professor at Universite de Sherbrooke).

APC

Automotive Partnership Canada

CIM is home to a three-year, $4.7 million project, funded by the NSERC Automotive Partnership Canada program. The goal of this project is to combine electric motor technology obtained from Quebec-based TM4 Electrodynamic Systems with a multi-speed drive train from Ontario-based Linamar Corporation. This project aims to improve electric vehicle efficiency, speed and driving range without increasing drains on batteries. The research will reduce costs of electric vehicle engines through the development of multi-speed drivetrains that are smaller and lighter than the single-speed drivetrains currently in use.

The McGill APC project was announced in February 2013, and is led by CIM member Professor **Benoit Boulet**.

NCFRN

NSERC Canadian Field Robotics Network

The NCFRN is a Canada-wide network spanning 8 universities and 14 partner organizations. The network brings together academic, government, and industrial researchers in the area of field robotics, to develop the science and technologies to eventually allow teams of heterogeneous robots (on land, in the air, on the surface of or under water) to work collaboratively in outdoor environments, and to communicate critical information to humans who operate them or use them.

The NCFRN supports the work of 11 researchers from 8 different universities. It connects the academic participants with 10 industrial partners and 4 government agencies to leverage their complementary experience and capabilities. The network investigates fundamental issues in robotics science as well as develops technologies developed addressing particularly Canadian problems such as environmental monitoring and maintenance, border surveillance, cleanup of environmental disasters, and assisting and caring for senior citizens.

The NCFRN primarily provides direct support for students, thereby training highly qualified new researchers, engineers and technicians able to work in robotics-related industry.

The NCFRN network management is hosted by McGill and CIM, with CIM member **Greg Dudek** serving as scientific director. CIM member **Joelle Pineau** serves as the leader of the thematic area "Human". CIM member **Inna Sharf** is also a research member of the NCFRN.

Section V – Centre Infrastructure

The Centre maintains its own research infrastructure. This infrastructure includes research lab space, student, staff and professor offices, mainly located on the 3rd floor of the McConnell Engineering building, with some space on the 3rd and 5th floors and also in the McDonald Engineering building.

CIM's research activities and computing needs are supported by locally managed data center which hosts data storage and compute servers, and all essential networking infrastructure. High availability of the data and network services is secured by employment of redundant technologies in disk storage, network access, and electrical power and cooling.

The Centre offers to its students, faculty and staff a wide range of computing services. This includes fully managed network of Linux and Windows computers and compute servers, data storage, backup, archiving and restore services. The Centre provides email services and mailing lists management, web server hosting and personal and research group website disk space, printing services, commercial software licenses management and network services and connectivity to McGill backbone and the Internet. The Centre locally manages user access to the Lenel Security System that controls card reader access to many labs and offices. CIM technical staff provides project consultation, assists in technical planning, computing equipment and hardware selection and procurement, and technical support.

The following activities were done in the past year to upgrade or maintain the Centre's infrastructure:
- Card Readers were installed in graduate student offices MC426-MC432. This was done to upgrade accessibility and improve safety and control.
- Card reader access was also installed in the Ambulatory Robotics Lab MC411.
- Reorganization of MC438: In collaboration with McGill central Facilities, this room, which previously housed the Tactile Sensors lab of former CIM member Vincent Hayward, was repurposed for the new lab of CIM member Prof. Aditya Mahajan of the Department of Electrical and Computer Engineering. Work is currently in progress by Facilities.
- Project No. 12-182: McConnell Engineering Valve Replacement – CIM staff synchronized and coordinated work on 4th floor of the McConnell Engineering building for a large Facilities infrastructure project. The scope of the work on the 4th floor included several labs, student offices and offices of professors.
- Lighting and Heating Improvements: CIM staff oversaw activities of the Intelligent Light Control Project headed by McGill Facilities, which involved the installation of centrally managed heating controls in all offices and labs on the 4th floor of McConnell. This allows users to control their own personal comfort level inside their office and lab.

Section VI – Plans for the Coming Year

Some activities that are planned for 2015-16 include:

- Advisory board meeting (targeted for September).
- 2nd Annual student research showcase for students. This will include short 3-minute presentations by graduate student members of CIM as well as a networking event with industrial partners (targeted for September).
- Half-day research showcase, including presentations by representative of the main research groups in the centre (targeted for February).
- Start-up of the industrial affiliate membership category. Contacting of select companies with long-standing interaction with the Centre to become inaugural affiliate members.
- Institution of an annual industry recruitment fair for CIM students and industrial affiliates.

Section VII – Industrial Partners

Many of the centre's research activities are carried out in collaboration with industrial partners. A (partial) list of these partners is given in the following table.

- Alta Precision Inc.
- Bombardier Inc.
- CAE
- Canadian Space Agency
- Cirque du Soleil
- Clear Path Robotics
- CMLabs
- CMLabs Simulations
- ConsumerReport
- Crosswing
- Disney Research Zurich
- Elekta
- Google
- General Motors Canada
- Genetec
- Hewlett-Packard
- HoloLabs Studio Inc.
- Imeka
- Immersion
- Independent Robotics
- Infolytica
- Intelerad
- IREQ - HydroQuebec
- Kinsol
- Linamar
- Macdonald Dettwiler & Associates
- MDA
- Mokko Studios
- National Oilwell Varco
- Neptec
- NeuroRX
- Nokia
- Nuance
- Object Research Systems
- Open Source Robotics Foundation
- ORS
- Placage Unique Inc.
- 22

- Pratt and Whitney Canada
- Rogue Research
- Synaptive Medical
- TandemLaunch Inc.
- Technospin Inc.
- Telemars
- Thermo FS
- TM4
- True Positive
- Vecna
- Wellbore Technologies

Section VIII – Publications

(note: publications listed are those that appeared during the calendar year of 2014)
*indicates graduate student

ANGELES, Jorge
Articles in Refereed Publications
1. Bai, S. and Angeles, J., 2014, "Synthesis of RCCC linkages to visit four given poses," ASME Journal of Mechanisms and Robotics, DOI: 10.1115/1.4028637.
2. Ghotbi, B., González, F., Kövecses, J. and Angeles, J., 2015, "A novel concept for analysis and performance evaluation of wheeled rover," Mechanism and Machine Theory, Vol. 83, pp. 137-151.
3. Zargarbashi, S.H.H. and Angeles, J., 2014, "Identification of error sources in a five-axis machine tool using FFT analysis," The International Journal of Advanced Manufacturing Technology, DOI: 10.1007/s00170-014-6323-4.
4. Zou, T. and Angeles, J., 2014, "Isotropic accelerometer strapdowns and related algorithms for rigid-body pose and twist estimation," ASME J. Applied Mechanics, Vol. 81, pp. 111001-1--111001-13, DOI: 10.1115/1.4028405.
5. Javid, F., Pasini, D. and Angeles, J., 2014, "A new surgical barbed staple for minimally invasive surgery," ASME J. Medical Devices, Vol. 8, No. 3, pp. 030951-1{030951-2.
6. Harada, T. and Angeles, J., 2014, "Kinematics and singularity analysis of a CRRHHRRC parallel Schönflies motion generator," CSME Transactions, Vol. 38, No. 2, pp. 173-183.
7. Taghvaeipour, A, Angeles, J. and Lessard, L., 2014, "Optimum structural design of a two-limb Schönflies motion generator," Mechanism and Machine Theory, Vol. 80, pp. 125-141.
8. Taghvaeipour, A., Angeles, J. and Lessard, L., 2014, "Elastodynamics of a two-limb Schönflies motion generator," Proc. IMechE Part C, J. Mechanical Engineering Science, DOI: 10.1177/0954406214538781.
9. Al-Widyan, K. and Angeles, J., 2014, "The synthesis of spherical motion generators in the presence of an incomplete set of attitudes, " ASME J. Mechanisms and Robotics, Vol. 6, pp. 031008-1--031008-8.
10. Zou, T. and Angeles, J., 2014, "Structural and instrumentation design of a microelectromechanical systems biaxial accelerometer, " Proc. IMechE Part C, J. Mechanical Engineering Science, DOI:10.1177/0954406213518745.
11. Zou, T. and Angeles, J., 2014, "The decoupling of the Cartesian stiffness matrix in the design of microaccelerometers, " Multibody System Dynamics, pp. 1-21, DOI: 10.1007/s11044-014-9408-9.

Other refereed contributions
12. Ghotbi, B., González, F., Kövecses, J. and Angeles, J., 2014, "Effect of normal force dispersion on the mobility of wheeled robots operating on soft soil," Proc. 2014 IEEE Int. Conf. Robotics & Automation, Hong Kong, China, May 31-June 5, pp. 6338-6344.
13. Harada, T., Friedlaender, T. and Angeles, J., 2014, "The development of an innovative two-dof cylindrical drive: design, analysis and preliminary tests," Proc. 2014 IEEE Int. Conf. Robotics & Automation, Hong Kong, China, May 31-June 5, pp. 6612-6617.

14. Figliolini, G., Stachel, H. and Angeles, J., 2014, "A study on spatial cycloid gears,'' in Schröcker, H.-P. and Husty, M. (eds.), Proc. 16th International Conference on Geometry and Graphics, Innsbruck, Austria, Aug. 4-8, pp. 1192-1205.
15. Azimi, A., Holz, D., Kövecses, J., Angeles, J. and Teichmann, M., 2014, "Dynamics simulation of rovers on soft terrain: theory, algorithms, and experimental validation,'' Paper DETC2014-35548, Proc. ASME 2014 Int. Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE 2014, August 17-20, Buffalo, NY, 10 pp.This paper received the 2014 AVT Best Paper Award.
16. Figliolini, G., Stachel, H. and Angeles, J., 2014, "The role of the orthogonal helicoid in the generation of the tooth flanks of involute-gear pairs with skew axes,'' Paper DETC2014-34932, Proc. ASME 2014 Int. Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE 2014, August 17-20, Buffalo, NY, 10 pp.This paper received the Best Paper Award Honorable Mention, of the Mechanisms & Robotics Committee.
17. Zou, T., Shaker, M., Angeles, J. and Morozov, A., 2014, "Optimization of tooth root profile of spur gears for maximum load-carrying capacity,'' Paper DETC2014-34568, Proc. ASME 2014 Int. Design Engineering Technical Conferences & Computers and Information in Engineering Conference IDETC/CIE 2014, August 17-20, Buffalo, NY, 8 pp.
18. Figliolini, G., Stachel, H. and Angeles, J., 2014, "Synthesis of the base curves of non-circular gears via the return circle,'' Proc. International Gear Conference, August 26-28, Lyon Villeurbanne, France, pp. 540-550.
19. Leger, J. and Angeles, J., 2014, "A solution to the approximate spherical Burmester problem," Fifth IFToMM-FeIbIM International Symposium on Multibody Systems and Mechatronics-MUSME 2014, 21-24 October,Huatulco, Oaxaca, Mexico, DOI: 10.1007/978-3-319-09858-6, pp. 521-529.
20. Shan, X., Zou, T., Forbes, J.R. and Angeles, J., 2014, "Design of biaxial navigation-grade MEMS accelerometers,'' Paper IMECE2014-37280, ASME 2014 International Mechanical Engineering Congress & Exposition IMECE2014, November 14-20, Montreal.
21. Morozov, A., Humphries, K., Zou, T., Martins, S. and Angeles, J, 2014, ``Design and optimization of a drivetrain with two-speed transmission for electric delivery step van,'' 2014 IEEE International Electric Vehicle Conference, Florence, IT, December 17-19, Paper TS.6-6.

Non-refereed contributions
22. Keynote Speaker at Parallel 2014, The Third International Workshop on Fundamental Issues and Future Research Directions for Parallel Mechanisms and Manipulators, Tianjin, China, July 7-8: "SDelta: a Novel Three-limb Six-dof Parallel-kinematics Machine."

23. Keynote Speaker at MESA 2014, The 10th IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications, Senigallia, Italy, September 10-12: "The Development of a Fast Pick-and-Place Robot with an Innovative Cylindrical Drive."

Contributions to industrially relevant research and development
24. Advisor to The Coca-Cola Company on matters of rapid prototyping to produce soft-drink bottles made of ice. "Multi-speed Transmission Methods and Systems," Patent Application No. 6180, submitted to the U.S. Patents and Trademarks Office on December 17, 2014.

ARBEL, Tal
Articles in refereed publications
25. Z. Karimaghaloo*, H. Rivaz, D. L. Arnold, D. L. Collins and T. Arbel, "Temporal Hierarchical Adaptive Texture CRF for Automatic Detection of Gadolinium-Enhancing Multiple Sclerosis Lesions in Brain MRI", IEEE Transactions on Medical Imaging, Dec. 2014 (recent acceptance, currently only eprint available).
26. R. Harmouche*, N. Subbanna*, D. L. Collins, D. L. Arnold and T. Arbel, "Probabilistic Multiple Sclerosis Lesion Classification based on Modelling Regional Intensity Variability and Local Neighbourhood Information", IEEE Transactions on Biomedical Engineering", Dec. 2014 (recent acceptance, currently only eprint available).
27. B. H. Menze, A. Jakaby, S. Bauery, J. Kalpathy-Cramery, K. Farahaniy, J. Kirbyy, Y. Burreny, N. Porzy, J. Slotboomy, R. Wiesty, L. Lancziy, E. Gerstnery, M. Webery, T. Arbel, B. B. Avants, N. Ayache, P. Buendia, D. L. Collins, N. Cordier, J. J. Corso, A. Criminisi, T. Das, H. Delingette, C. Demiralp, C. R. Durst, M. Dojat, S. Doyle, J. Festa, F. Forbes, E. Geremia, B. Glocker, P. Golland, X. Guo, A. Hamamci, K. M. Iftekharuddin, R. Jena, N. M. John, E. Konukoglu, D. Lashkari, J. A. Mariz, R. Meier, S. Pereira, D. Precup, S. J. Price, T. Riklin Raviv, S. M. S. Reza, M. Ryan, D. Sarikaya, L. Schwartz, H. Shin, J. Shotton, C. A. Silva, N. Sousa, N. K. Subbanna*, G. Szekely, T. J. Taylor, O. M. Thomas, N. J. Tustison, G. Unal, F. Vasseur, M. Wintermark, D. Hye Ye, L. Zhao, B. Zhao, D. Zikic, M. Prastaway, M. Reyesyz, K. Van Leemput, "The Multimodal Brain Tumor Image Segmentation Benchmark (BRATS)", IEEE Transactions on Medical Imaging, Dec. 2014 (recent acceptance, currently only eprint available).

Papers in Refereed Conference Proceedings
28. C. Elliott*, D. L. Arnold, D. L. Collins and T. Arbel, "A Generative Model for Automatic Detection of Resolving Multiple Sclerosis Lesions", in Proceedings of the First Workshop on Bayesian and Graphical Models for Biomedical Imaging held in conjunction with the 17th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI '14), Boston, Mass., U.S.A., September 2014, Lecture Notes in Computer Science, Springer, Vol. 8677, pp. 118-129.
29. M. Demirkus*, D. Precup, J.J. Clark and T. Arbel, "Hierarchical Temporal Graphical Model for Head Pose Estimation in Real-World Videos", In Proceedings of the 13h European Conference on Computer Vision (ECCV 2014), Zurich, Switzerland, September 2014, Springer International Publishing, Part I, LNCS 8689, pp. 328-344.
30. M. Demirkus*, D. Precup, J.J. Clark and T. Arbel, "Multi-layer Temporal Graphical Model for Head Pose Estimation in Real-World Videos", In Proceedings of the 21st IEEE International Conference on Image Processing (ICIP 2014), Paris, France, October 2014.

31. N. Subbanna*, D. Precup and T. Arbel, "Iterative Multilevel MRF Leveraging Context and Voxel Information for Brain Tumour Segmentation in MRI", in Proceedings of the 27th IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2014), Columbus, Ohio, U.S.A., June 2014, pp. 400-405.
32. *D. De Nigris*, D. L. Collins and T. Arbel, "SymBA: Diffeomorphic Registration Based on Gradient Orientation Alignment and Boundary Proximity of Sparsely Selected Voxels", in Proceedings of the 6th International Workshop on Biomedical Image Registration (WBIR), Springer Vol. 8545, University College London, U.K., July 2014, pp. 21-30*

Invited presentations

33. Poster Presentation: C. Elliott* and T. Arbel, "A Generative Model for Automatic Detection of Resolving Multiple Sclerosis • Lesions", at the First Workshop on Bayesian and Graphical Models for Biomedical Imaging held in conjunction with the 17th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI '14), Boston, Mass., U.S.A., September 2014.
34. Poster Presentation: M. Demirkus* and T. Arbel, "Hierarchical Temporal Graphical Model for Head Pose Estimation in Real-World Videos", at the 13h European Conference on Computer Vision (ECCV 2014), Zurich, Switzerland, September 2014.
35. Poster Presentation: T. Arbel, "Iterative Multilevel MRF Leveraging Context and Voxel Information for Brain Tumour Segmentation in MRI", at the 27th IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2014), Columbus, Ohio, U.S.A., June 2014.

Invited Presentations:
36. Invited talk about my research program at the IEEE Conference on Computer Vision and Pattern Recognition (CVPR) Area Chair Meeting: "Workshop on Current Trends in Computer Vision", University of Maryland, Feb. 2014.

Presentations for Outreach and Promotion of Engineering:
37. Invited talk at "Women of Power" - The Israel Experience Centre, Bronfman Jewish Education Committee, hosted an evening of empowerment for young women, May, 2014.
38. Invited speaker and panelist at McGill Engineering First "Forum on Diversity and Inclusivity in Engineering", Oct. 2014. "Addressing the Gender Imbalance in Engineering at McGill and in the Region of Quebec".

BOULET, Benoit
Articles in Refereed Publications
39. A Haidar, C Pinaroc, V Messier, T M Mitre, C Leroux, B Boulet, L Legault, R Rabasa-Lhoret, "Understanding the Benefits of Glucagon in the Artificial Pancreas: Randomized Crossover Trial" Canadian Journal of Diabetes, Volume 38, Issue 5, October 2014, Pages S16.
40. A Haidar, D Farid, A St-Yves, V Messier, V Chen, D Xing, A-S Brazeau, C Duval, B Boulet, L Legault, R Rabasa-Lhoret, "Post-breakfast closed-loop glucose control is improved when accompanied with carbohydrate-matching bolus compared to weight-dependent bolus" Diabetes and Metabolism, Volume 40, Issue 3, June 2014, Pages 211–214.
41. Haddadi, A., Yazdani, A., Joos, G., Boulet, B., A Gain-Scheduled Decoupling Control Strategy for Enhanced Transient Performance and Stability of an Islanded Active Distribution

Network, IEEE Trans. on Power Delivery, Vol. 29, No. 2, Apr. 2014, pp. 560-569. (prev. epub Nov. 2013: doi 10.1109/TPWRD.2013.2278376)

42. A. Salehiomran, R. Modirnia, B. Boulet, M. Rochette, Optical parametric oscillator longitudinal modes suppression based on Smith predictor control scheme, IEEE Trans. on Control Systems Technology, Vol. 22, No. 5, Sept. 2014, pp. 2064-2072. (prev. epub: Vol. PP, No. 99, Nov. 2013. doi 10.1109/TCST.2013.2289934)

Other Refereed Contributions

43. S. Bhattacharya, D. Mascarella, B. Boulet, G. Joos, "Interleaved PWM control for neutral point balancing in dual 3-level traction drives" 2014 IEEE Energy Conversion Congress and Exposition, Sept. 14-18, 2014, Pittsburgh, PA. pp. 1715-1721. 44.

44. D. Wu, H. Zeng, B. Boulet, "Neighborhood Level Network Aware Electric Vehicle Charging Management with Mixed Control Strategy" IEEE International Electric Vehicle Conference, Dec. 16-19, 2014, Florence, Italy.

45. M. S. Rahimi Mousavi, A. Pakniyat, B. Boulet, "Dynamic Modeling and Controller Design for a Seamless Two-Speed Transmission for Electric Vehicles" IEEE Multi-Conference on Systems and Control, Oct 8-10, 2014, Antibes, France.

46. H. Vahid Alizadeh, B. Boulet, "Robust Control of Synchromesh Friction in an Electric Vehicle's Clutchless Automated Manual Transmission" IEEE Multi-Conference on Systems and Control, Oct 8-10, 2014, Antibes, France.

47. H. Vahid Alizadeh, M. K. Helwa, B. Boulet, "Constrained Control of the Synchromesh Operating State in an Electric Vehicle's Clutchless Automated Manual Transmission" IEEE Multi-Conference on Systems and Control, Oct 8-10, 2014, Antibes, France.

48. R. Tahmasebi, H. Vahid Alizadeh, B. Boulet, "Robust H∞ Force Control of a Solenoid Actuator Using Experimental Data and Finite Element Method" IEEE Multi-Conference on Systems and Control, Oct 8-10, 2014, Antibes, France.

49. M. S. Rahimi Mousavi, B. Boulet, "Modeling, Simulation and Control of a Seamless Two-Speed Automated Transmission for Electric Vehicles" American Control Conference, June 4-6, 2014, Portland, Oregon, pp. 3826-3831.

Invited presentations

50. Boulet, B., Dynamical models of plasma glucose concentration for artificial pancreas control design. Diabetes Workshop Fields Institute, March 25th, 2014.

CAINES, Peter

Articles in refereed publications

51. M. Nourian*, P. E. Caines, R. P. Malhame, A Mean Field Game Synthesis of Initial Mean Consensus Problems: A Continuum Approach for Non-Gaussian Behaviour. IEEE Trans. on Automatic Control, vol. 59, no. 2, 2014, pp. 449-455

Encyclopedia Contribution:

52. P. E. Caines, "Mean Field Games", Encyclopedia of Systems and Control, Eds. T. Samad and J. Ballieul. Springer Verlag; London; 2014l

Articles in Refereed Conference Proceedings:

53. Pakniyat* and P. E. Caines, The Gear Selection Problem for Electric Vehicles: An Optimal Control Formulation" ICARCV, Singapore, 10-12 December, 2014, pp 1261-1266

54. M. Aziz and P. E. Caines, Computational Investigations of Decentralized Cellular Network Optimization Via Mean Field Control, IEEE Conference on Decision and Control , Los Angeles, USA, 15-17 December, 2014, pp 5560-5567

55. M. K. Helwa and P. E. Caines, In-Block Controllability of Ane Systems on Polytopes, IEEE Conference on Decision and Control , Los Angeles, USA, 15-17 December, 2014, pp 3937-3942

56. M. K. Helwa and P. E. Caines, Relaxed In-Block Controllability of Ane Systems on Polytopes, IEEE Conference on Decision and Control , Los Angeles, USA, 15-17 December, 2014, pp 3943-3949

57. M. K. Helwa and P. E. Caines, Hierarchical Control of Piecewise Ane Hybrid Systems, IEEE Conference on Decision and Control , Los Angeles, USA, 15-17 December, 2014.pp 3950-3956

58. N. Sen and P. E. Caines, Mean Field Games with Partially Observed Major Player and Stochastic Mean Field, IEEE Conference on Decision and Control , Los Angeles, USA, December, 2014, pp 2709-2715

59. Pakniyat* and P. E. Caines, On the Relation between the Minimum Principle and Dynamic Programming for Hybrid Systems, IEEE Conference on Decision and Control , Los Angeles, USA, December, 2014,pp. 19-24

60. Pakniyat* and P. E. Caines, On the Minimum Principle and Dynamic Programming for Hybrid Systems, Proceedings of the 19th IFAC World Congress, 2014, Cape Town, South Africa ISBN: 978-3-902823-62-5, ISSN: 1474-6670, 24 - 29 August, 2014, pp 9629-9634

61. P. E. Caines and A. C. Kizilkale, Mean Field Estimation for Partially Observed LQG Systems with Major and Minor Agents , Proceedings of the 19th IFAC World Congress, 2014, Cape Town, South Africa ISBN: 978-3-902823-62-5, ISSN: 1474-6670, 24 - 29 August, 2014, pp 8705-8709

62. N. Sen and P. E. Caines, Nonlinear Filtering for McKean-Vlasov Type PDEs with Application to Mean Field Games, : Proc. 21st International Symposium on Mathematical Theory of Networks and Systems (MTNS), Groningen, Netherlands, 7 - 11 July, 2014,ISBN: 978-90-367-6321-9, pp 1344 – 1351

Invited presentations: Panel Discussion

63. P. E. Caines, "Challenges for Systems and Control in the 21st Century", Panel Session 1, ICARCV, Singapore, 10-12 December, 2014

CLARK, James

Articles in Refereed Publications

64. *Haji-Abolhassani, A. and Clark, J.J., ``An Inverse Yarbus Process: Predicting Observers' Task From Eye Movement Patterns", Vision Research, Vol. 103, pp 127-142, October 2014.

65. *Rezagholizadeh, M. and Clark, J.J., ``Image Sensor Modeling: Color Measurement at Low Light Levels", Journal of Imaging Science and Technology, Vol. 58, No. 3, pp 30402:1-30402:11, May-June 2014.

66. *Demirkus, M., Clark, J.J. and Arbel, T., ``Robust Semi-automatic Head Pose Labeling for Real-world Face Video Sequences '', Multimedia Tools and Applications. Vol. 70, No. 1, pp 495-523, 2014.

Other Refereed Contributions
67. *Rezagholizadeh, M. and Clark, J.J., ``Image Sensor Modeling: Color Measurement at Low Light Levels", 22nd Color and Imaging Conference, Boston USA, November 2014.
68. *Demirkus, M., Precup, D., Clark, J.J. and Arbel, T., ``Multi-Layer Temporal Graphical Model for Head Pose Estimation in Real-World Videos.'', 2014 International Conference on Image Processing, October 2014.
69. *Demirkus, M., Precup, D., Clark, J.J. and Arbel, T., ``Probabilistic temporal head pose estimation using a Hierarchical Graphical model", European Conference on Computer Vision, Zurich Switzerland, pp 328-344, September 2014.
70. Ziat, M., Fridstrom, J., Kilpela, K., Fancher, J. and Clark, J.J., ``InGrid: Interactive Grid Table'', CHI Interactivity 2014., Paris France, April 2014
71. *Rezagholizadeh, M. and Clark, J.J., ``Photon Detection and Color Perception at Low Light Levels'', 11th Conference on Computer and Robot Vision (CRV), Montreal Canada, pp 283-290, May 2014

Non-refereed contributions
72. *Nazzar, Y., *Bouchard, J., and Clark, J.J., ``Detection of Stereo Window Violation in 3D Movies", poster presentation at SIGGRAPH 2014, Vancouver Canada, August 2014.
73. Clark, J.J., ``Active Sensor (Eye) Movement Control", in Computer Vision: A Reference Guide, ed K. Ikeuchi, Springer US, New York, pp 5-8, 2014.

Invited presentations
74. November 5, 2014, "Spectral models for color perception", School of Engineering and Applied Sciences, Harvard University.

COOPERSTOCK, Jeremy
Articles in Refereed Publications
75. *J. Blum, *A. Eichhorn, *S. Smith, *M. Sterle-Contala, and J. R. Cooperstock. "Real- Time Emergency Response: Improved Management of Real-Time Information During Crisis Situations." In: Multimodal User Interfaces 8.2, Springer. JMUI-D-13-00047R3, pp. 161– 173, (2014).

Papers in Refereed Conference Proceedings:
76. P. Fortin, M. Otis, V. Duchaine, and J. R. Cooperstock. "Event-based haptic vibration synthesis using a recursive filter for lower limb prosthetics." In: International Symposium on Haptic, Audio and Visual Environments and Games (HAVE). Dallas, TX, Oct. 2014.
77. *D. El-Shimy and J. R. Cooperstock. "EmbodiComp: Embodied Interaction for Mixing and Composition." In: Sound and Music Computing Conference (ICMC — SMC). Athens, Greece, Sept. 2014.
78. *Tordini and J. R. Cooperstock. "Auditory salience modeling via streaming: A behavioural view." In: Milestones in Music Cognition: BKN 25. Montreal, Canada, July 2014.

79. *M. Xie and J. R. Cooperstock. "Error-Compensation for Time-of-Flight Cameras Used in 3D Reconstruction Applications." In: Seventh International Symposium on Computational Intelligence and Design (ISCID). Hangzhou, China, 2014.
80. *M. Xie and J. R. Cooperstock. "Heterogeneous Sensor Data Fusion: How Many Cameras Are Needed For An Accurate 3D Reconstruction of Large Scene?" In: Seventh International Symposium on Computational Intelligence and Design (ISCID). Hangzhou, China, 2014.

All other publications
81. *Blum, Jeffrey and Cooperstock, Jeremy. "Summarizing motion data for remote implicit haptic communication." Peer reviewed research note, GRAND Annual Conference, May 2014.
82. *El-Shimy, Dalia and Cooperstock, Jeremy. "Embodied Interaction for Mixing and Composition." Peer reviewed research note, GRAND Annual Conference, May 2014.
83. *Xie, Meng and Cooperstock, Jeremy. "Error-Compensation for Time-of-Flight Cameras Used in 3D Reconstruction Applications." Peer reviewed research note, GRAND Annual Conference, May 2014.
84. *Erfani-Joorabchi, Minoo and Cooperstock, Jeremy. "Smart Emergency Response." Peer reviewed research note, GRAND Annual Conference, May 2014.
85. *Tordini, Francesco and Cooperstock, Jeremy. "Foreground-background selection of natural sounds: How salient is your loudness?" Peer reviewed research note, GRAND Annual Conference, May 2014.

Invited presentations
86. "Vibrotactile Rendering of Splashing Fluids", Presentation of Best Paper from IEEE Transactions on Haptics at special session at IEEE Haptics Symposium, February 24, 2014.
87. Special lecture, "Delivering a Compelling User Experience in a Computer-Mediated Environment'', HCIN 5300, Interactive Entertainment Technologies, Carleton University, March 7, 2014.
88. Special lecture, "Multimedia as a Building Block: How audio, video and haptics integrate in a Shared Reality'', Multimedia Systems, GLIS 633, School of Information Studies, McGill University, February 13, 2014.

CORTELEZZI, Luca
Articles in Refereed Publications
89. E. Germaine, L. Mydlarski and L. Cortelezzi, "Evolution of the scalar dissipation rate downstream of a concentrated line source in turbulent channel flow", Journal of Fluid Mechanics, Vol. 749, pp. 227-274, 2014.
90. M Carminati, L. Pedalà, E. Bianchi, F. Nason, G. Dubini, L. Cortelezzi, Ferrari G., Sampietro M., "Capacitive detection of micrometric airborne particulate matter for solid-state personal air quality monitors", Sensors and Actuators A: Physical, Vol. 219, pp. 80-87, 2014.

Papers in Refereed Conference Proceedings
91. Dubini G., Carminati M., Pedalà L., Nason F., Bianchi E., Cortelezzi L., Ferrari G., Sampietro M., "Design of an air-flow microchamber for microparticles detection", 4th Micro and Nano Flows Conference: MNF2014, London, United Kingdom, 2014.

92. Carminati M., Pedalà L., Nason F., Bianchi E., Dubini G., Cortelezzi L., Ferrari G., Sampietro M., "Capacitive single-particle microdetector for real-time pervasive PM10 monitoring", DUST 2014 International Conference on Atmospheric Dust, Castellaneta Marina (Taranto), Italy, 2014

Non-refereed contributions
Papers on arXiv
93. M.E. Rosti, M. Quadrio, and L. Cortelezzi, "Direct Numerical Simulation of Turbulent Channel Flow Over Porous Walls", arXiv preprint arXiv:1410.7235, 2014

Specialized Publications
94. Bianchi* E., Nason* F., Carminati M., Pedala* L., Cortelezzi L., Ferrari G., Sampietro M., Dubini G., "Gold Microelectrodes for Impedance Measurements of Microparticles in Air", Projects at the EPFL Center of Micronanotechnology - May 2014, n° 174, pag 186, Lausanne

Conference Presentations
95. Bianchi* E., Nason* F., Carminati M., Pedala* L., Cortelezzi L., Ferrari G., Sampietro M., Dubini G., "Design of an Air-flow Microchamber for Microparticles Detection", 4th Micro and Nano Flows Conference (MNF2014), London, United Kingdom, 2014-09-07.
96. Carminati M., Pedala* L., Nason* F., Bianchi* E., Dubini G., Cortelezzi L., Ferrari G., Sampietro M., "Capacitive Single-particle Microdetector for Real-time Pervasive PM10 Monitoring", Conference on Atmospheric Dust (DUST 2014), Castellaneta Marina (Taranto), Italy, 2014-06-01

DUDEK, Gregory
Articles in Refereed Journals
97. Girdhar, Yogesh, Giguère, Philippe and Gregory Dudek, "Autonomous Adaptive Underwater Exploration using Online Topic Modelling," International Journal of Robotics Research (IJRR), Vol. 33, No. 4, April 2014 (published online November 2013), Digital Object Identifier (DOI):10.1177/0278, pp. 645-657.
98. Dudek, Gregory and Dieter Fox, "Special issue on robotics: science and systems" (editorial), Autonomous Robots, 37, 2014, DOI: 10.1007/s10514-014-9416-x, pp. 333334.
99. Desai, Jaydev, Gregory Dudek, Oussama Khatib, Vijay Kumar, "Special Issue of the Thirteenth International Symposium on Experimental Robotics, 2012" (editorial), The International Journal of Robotics Research, Vol. 33(4), 2014, av DOI: 10.1177/0278364913518697, pp. 487488.

Refereed Conference Proceedings
100. Girdhar, Yogesh and Gregory Dudek, "Exploring Underwater Environments with Curiosity," Proc. Conference on Computer and Robot Vision (CRV 2014), 7 pages, Montreal, Canada, June 2014.
101. Girdhar, Yogesh, Whitney, David and Gregory Dudek, "Curiosity Based Exploration for Learning Terrain Models," Proc. IEEE International Conference on Robotics and Automation (ICRA 2014), Chicago, IL, May 2014. 7 pages (also appears as a preprint on arXiv.org, arXiv: 1310.6767).

102. Xu, Anqi, Zhang, Qiwen, Meger, David and Gregory Dudek, "Interactive Autonomous Driving through Adaptation from Participation," To appear in Proceedings of the 10th International Conference on Intelligent Unmanned Systems (ICIUS '14), Montreal, Canada, September 2014.

103. Meger, David, Shkurti, Florian, Cortes Poza, David, Giguère, Philippe and Gregory Dudek, "3D Trajectory Synthesis and Control for a Legged Swimming Robot," In Proceedings of the 2014 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS '14), Chicago, USA, September 14-18, 2014.

104. Meghjani, Malika, Shkurti, Florian, Gamboa Higuera, Juan Camilo, Kalmbach, Arnold, Whitney, David and Gregory Dudek, "Asymmetric Rendezvous Search at Sea," To appear in Proceedings of the 11th International Conference on Computer and Robot Vision (CRV'14), Montreal, Canada, May 2014.

105. Meghjani, Malika and Gregory Dudek, "Multi-Agent Rendezvous on Street Networks," Proceedings of the IEEE International Conference on Robotics and Automation (ICRA2014), Hong Kong, May 2014.

106.	Xu, Anqi, Kalmbach, Arnold and Gregory Dudek, "Adaptive Parameter EXploration (APEX): Adaptation of Robot Autonomy from Human Participation," Proceedings of the IEEE International Conference on Robotics and Automation (ICRA2014), Hong Kong, China, May 2014, pages 3315-3322.
107.	Shkurti, Florian and Gregory Dudek, "Maximizing visibility in collaborative trajectory planning," Proceedings of the IEEE International Conference on Robotics and Automation (ICRA2014), Hong Kong, May 2014, pages 3771-3776.

Invited lectures or presentations
108.	Speaker, "Robot Teams to Assist Humans in Scientific Discovery," University of Nebraska Lincoln, February 28, 2014
109.	Keynote Speaker, "Environmental Assessment with Robotics," Robobusiness Conference, Boston, October 17, 2014
110.	Invited speaker, "Reducing the Distance between Them and Us," Concordia University, November 8, 2014
111.	Keynote speaker, "Human-guided Video Data Collection in Marine Environments," IROS 2014, Chicago, September 16, 2014

KOVECSES, Jozsef
Articles in Refereed Publications
112.	Hirschkorn, M. and Kövecses, J.: "Operational Space Formulation and Analysis for Rovers", ASME Journal of Computational and Nonlinear Dynamics, Vol. 9, No. 4, pp. 041005_1-12 (12 pages), 2014.
113.	Dopico, D., González, F., Cuadrado, J. and Kövecses, J.: "Determination of Holonomic and Nonholonomic Constraint Reactions in an Index-3 Augmented Lagrangian Formulation with Velocity and Acceleration Projections", ASME Journal of Computational and Nonlinear Dynamics, Vol. 9, No. 4, pp. 041006_1-9 (9 pages), 2014.

Other Refereed Contributions
114.	Ghotbi, B., Gonzalez, F., Kövecses, J. and Angeles, J.: "Effect of Normal Force Dispersion on the Mobility of Wheeled Robots Operating on Soft Soil", 2014 IEEE International Conference Robotics and Automation, Hong Kong, China, May 31-June 5, 2014. (Acceptance rate for this conference was 48%)
115.	Azimi, A., Holz, D., Kövecses, J., Angeles, J. and Teichmann, M.: "Dynamics Simulation of Rovers on Soft Terrain: Theory, Algorithms, and Experimental Validation", ASME 2014 International Design Engineering Technical Conferences (IDETC 2014), August 17-20, 2014, Buffalo, New York. (Best Paper Award of 16th ASME International Conference on Advanced Vehicle Technologies)
116.	Ghotbi, B., Gonzalez, F., Kövecses, J. and Angeles, J.: "Observative Models for Design and Operation of Wheeled Robots", ASME 2014 International Design Engineering Technical Conferences (IDETC 2014), Buffalo, NY, August 17-20, 2014. (refereed short paper with technical presentation)
117.	Ghotbi, B., Gonzalez, F., Kövecses, J. and Angeles, J.: "The Role of Normal Force Distribution in Rover Performance", ASME 2014 International Design Engineering Technical Conferences (IDETC 2014), Buffalo, NY, August 17-20, 2014. (refereed short paper with technical presentation)

118. Gonzalez, F., MacMahon, S. ,Ghotbi, B., Kövecses, J. and J., Angeles, J.: "Impact Analysis of Exploration Rovers", ASME 2014 International Design Engineering Technical Conferences (IDETC 2014), Buffalo, NY, August 17-20, 2014. (refereed short paper with technical presentation)

119. Mashayekhi, M. J., Kövecses, J.: "Comparative Study of Formulations and Algorithms for Rigid-Body Contact in Multibody Systems", ASME 2014 International Design Engineering Technical Conferences, Buffalo, New York, August 17-20, 2014. (refereed short paper with technical presentation)

120. Kovacs, L.L., Shayan Amin, S. and Kövecses, J.: "Human Operator Effects in the Stabilization of Haptic Interactions", ASME 2014 International Design Engineering Technical Conferences (IDETC 2014), Buffalo, New York, August 17-20, 2014. (refereed short paper with technical presentation)

121. Mashayekhi, M. J. and Kövecses, J.: "A Comparison Between Different Approaches to Model Multibody Systems with Contact", 11th World Congress on Computational Mechanics, Barcelona, Spain, 20-25 July 2014.

122. Ghotbi, B., Karpman, E., Gonzalez, F., Kövecses, J. and Angeles, J.: "Analysis of Obstacle Climbing Manoeuvres for Planetary Exploration Rovers", The 3rd Joint International Conference on Multibody System Dynamics, Busan, South Korea, June 30-July 3, 2014.

123. Gonzalez, F., Ghotbi, B., Kövecses, J. and Angeles, J.: "A Method for Modelling Normal Reaction Forces between Wheel and Soft Terrain for Planetary Exploration Rovers", The 3rd Joint International Conference on Multibody System Dynamics, Busan, South Korea, June 30-July 3, 2014.

124. Budai, C., Kovács, L.L. and Kövecses, J.: "Haptic Rendering and Human Stabilization in Presence of Structural Flexibility", Investigating Dynamics in Engineering and Applied Science (IDEAS), July 3-5, 2014, Budapest, Hungary (poster).

125. Mohtat, A., Gallacher, C. and Kövecses, J.: "Developing Immersive Virtual Worlds Through Realistic Contact Rendering and Improved Transparency, Eurohaptics 2014, Versailles, France, June 24-26. Physical Demo Presentation.

126. Mohtat, A., Gallacher, C. and Kövecses, J.: "High-fidelity Contact Rendering: Feel Realistic Forces from Virtual Objects", IEEE Haptics Symposium, Houston, TX, Feb. 23-26, 2014. Physical Demo Presentation.

Non-refereed contributions

127. Ghotbi, B., Gonzalez, F., MacMahon, S., Lou, Q., Kövecses, J. and Angeles, J.: "Modelling and Analysis Methods/Tools for Mobile Robotics Design and Control", Space Vision and Advanced Robotics Workshop (SVAR), MDA Space Missions, Brampton, ON, May 21, 2014.

Invited presentations

128. Kövecses, J.: "Contact Representation in Multibody System Models: Formulations and Algorithms", invited presentation at the Workshop on Computational Contact Mechanics: Advances and Frontiers in Modeling Contact, Banff International Research Station, Alberta, Feb. 16-21, 2014.

129. Kövecses, J.: "Mechanics and Interfacing in Kinesthetic Haptic Systems", presented at the University of British Columbia, Vancouver, May 28, 2014.

130.	Kövecses, J.: "Modelling and Analysis of Rovers Operating on Soft Soil", presented at Szent Istvan University, Godollo, Hungary, August 28, 2014.

KRY, Paul
Refereed Conference Proceedings
131.	Andrews, S., Teichmann, M., Kry P. G.: FORK-1S: Interactive compliant mechanisms with parallel state computation, ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games (I3D), pp. 71-76, 2014. doi>10.1145/2556700.2556717 (Selected for IEEE TVCG)
132.	Li, P., Kry, P. G.: Multi-layer skin simulation with adaptive constraints, ACM SIGGRAPH Conference on Motion in Games, pp. 171-176, 2014. doi>10.1145/2668084.2668089
133.	Rabbani, A., van de Panne, M., Kry, P. G.: Anticipatory balance control, ACM SIGGRAPH Conference on Motion in Games, pp. 71-76, 2014. doi>10.1145/2668064.2668083 (Selected for CAVW) Note that selection means that the paper had strong scores and was well received at the conference, and therefore receives an invitation to submit an extended version to a journal with partial continuity of reviewing

Invited Presentations
134.	Colloque REPARTI at Université Laval, Quebec, Quebec, Balancing Speed and Fidelity in Physics Based Animation and Control, May 23, 2014
135.	TWIG, Tristate workshop on Imagine and Graphics (TWIG) jointly with SIGGRPAH Papers committee Workshop, Princeton, New Jersey, Balancing Speed and Fidelity in Physics Based Animation and Control, March 22-23, 2014
136.	BIRS Computational Contact Mechanics: Advances and Frontiers in Modeling Contact, Banff, Alberta, Grasping Control, Reduced Simulation, and Approximate Contact Modelling, February 16-21, 2014.

LANGER, Michael
Conference abstract:
137.	M. S. Langer, R. Siciliano. "Are blur and disparity complementary cues to depth?" Journal of Vision August 22, 2014 vol. 14 no. 10 article 139

Invited Lectures
138.	"Depth from Blur" MIA (Medical Imaging Analysis) CREATE seminar series at McGill, Nov. 21, 2014
139.	"Depth from Blur" Center for Vision Research Colloquium, York University Dec. 5, 2014

Conference Presentations
140.	M. S. Langer, R. Siciliano "Are blur and disparity complementary cues to depth?" Vision Sciences Society Annual Meeting (VSS) St. Petes Beach FL, May 2014.

LEVINE, Martin
Articles in Refereed Publications

141.   Abd El Meguid, M.K. and Levine, M.D., "Fully automated recognition of spontaneous facial expressions in videos using random forest classifiers," IEEE Transactions on Affective Computing, vol.5, no.2, pp.141,154, April-June 1 2014

142.   Mehrsan Javan Roshtkhari and M. D. Levine, "Multiple Object Tracking Using Local Motion Patterns", British Machine Vision Conference (BMVC), 2014.

143.   Lin Su & Martin Levine, "High-Stakes Deception Detection Based on Facial Expressions", 22nd International Conference on Pattern Recognition, Stockholm Waterfront, Stockholm, Sweden, August 24-28, 2014.

MAHAJAN, Aditya

Articles in Refereed Publications

144.   Mahajan and A. Nayyar, "Sufficient statistics for linear control strategies in decentralized systems with partial history sharing," IEEE Transactions on Automatic Control, pp. 1-11, Aug 2015. (in print)

145.   Mahajan and M. Mannan* , "Decentralized stochastic control," Annals of Operations Research, pp. 1–18, 2014. (in print)

146.   J. Chakravorty* and A. Mahajan, "Multi-armed bandits, Gittins index, and its computation," in Methods and applications of statistics in clinical trials, Vol 2: Planning, analysis, and inferential methods, N. Balakrishnan, Eds., John Wiley & Sons, pp. 416–435, 2014

Other Refereed Contributions

147.   J. Chakravorty* and A. Mahajan, "On the optimal thresholds in remote state estimation with communication costs," 53rd IEEE Conference on Decision and Control (CDC), pp. 1041–1046, Los Angeles, CA, Dec 15-17, 2014

148.   J. Arabneydi* and A. Mahajan, "Team optimal control of coupled subsystems with mean field sharing," 53rd IEEE Conference on Decision and Control (CDC), pp. 1669–1674, Los Angeles, CA, Dec 15-17, 2014. (WINNER OF THE BEST STUDENT PAPER AWARD)

149.   J. Chakravorty* and A. Mahajan, "Average cost optimal threshold strategies for remote state estimation with communication costs," 52nd Allerton Conference on Communication Control, and Computing, Monticello, IL, Oct 1-3, 2014.

150.   M. Mannan* and A. Mahajan, "Simultaneous real-time transmission of multiple Markov sources over a shared channel," IEEE Symposium on Information Theory (ISIT), Honolulu, HI, Jun 29–Jul 4, 2014.

Non-refereed contributions

151.   Mahajan, "Sufficient conditions for dynamic programming in infinite-horizon dynamic teams with non-classical information structure," Workshop on Dynamic Games in Management Science, Montreal, QC, Nov 27-28, 2014.

152.   J. Arabneydi* and A. Mahajan, "Team optimal control of coupled subsystems with mean-field sharing," Meeting on System and Control Theory, Waterloo, ON, May 5–6, 2014, 2014.

153.   J Arabneydi* and A. Mahajan, "Team optimal control with mean-field sharing", McGill Engineering Research Showcase, Oct 2014.

154.   J Chakravorty* and A. Mahajan, "Optimal threshold strategies for remote estimation with communication costs", McGill Engineering Research Showcase, Oct 2014.

155.   M Mannan* and A. Mahajan, "Batch Q-learning for Energy Storage Management in Smart Grids", McGill Engineering Research Showcase, Oct 2014

Research reports or reports produced for the government

156. Mahajan and Nayyar, "Sufficient statistics for linear control strategies in decentralized systems with partial history sharing", GERAD Technical Report G-2014-86, Nov 2014.

157. Chakravorty and Mahajan, "Distortion-transmission trade-off in real-time transmission of Markov sources", GERAD Technical Report G-2014-104, Dec 2014.

158. Mahajan and Mannan, "Decentralized stochastic control", GERAD Technical Report G-2014-87, Nov 2014.

NAHON, Meyer
Articles in refereed publications

159. X. Liu, X. Chen and M. Nahon, 2014, 'Motion/force Constrainability Analysis of Lower-Mobility Parallel Manipulators', ASME Journal of Mechanisms and Robotics, Vol. 6, No. 3, pp. 031006-1-9.

160. N. Plamondon and M. Nahon, 2014 'Control of an Underwater Biomimetic Vehicle Using Floquet Theory', Ocean Systems Engineering, Vol. 4, No. 3, pp. 243-261.

Other refereed contributions

161. M. Nahon, I. Sharf, A. Harmat, W. Khan, M. Michini, N. Speal, M. Trentini, T. Tsadok and T. Wang, 2014, 'Ground Effect Experiments and Model Validation with Draganflyer X8 Rotorcraft', International Conference on Unmanned Aircraft Systems (ICUAS'14), Orlando, FL, May 27-30.

162. C. Wang and M. Nahon, 2014, 'Controller Development and Validation for a Small Quadrotor with Compensation for Model Variations', International Conference on Unmanned Aircraft Systems (ICUAS'14), Orlando, FL, May 27-30.

163. W. Khan and M. Nahon, 2014, 'Improvement and Validation of a Propeller Slipstream Model for Small Unmanned Aerial Vehicles', International Conference on Unmanned Aircraft Systems (ICUAS'14), Orlando, FL, May 27-30.

164. T. Nguyen, N. Hori and M. Nahon, 2014, 'A Discrete-Time Model of Nonlinear Non-Autonomous Systems', American Control Conference, Portland, OR, June 4-6.

165. M. Al-Solihat and M. Nahon, 2014, 'Mooring and Hydrostatic Restoring of Offshore Floating Wind Turbine Platforms', OCEANS'14 MTS/IEEE, St. John's, Nfld, Sept. 14-19.

PINEAU, Joelle
Publications in REFEREED Journals

166. J. Pineau, A.K. Moghaddam, H.K.Yuen, P. Archambault, F. Routhier, F. Michaud, P. Boissy. "Automatic Detection and Classification of Unsafe Events during Power Wheelchair Use". IEEE Journal of Translational Engineering in Health and Medicine (JTEHM). Accepted.

167. W. Hamilton, M.M. Fard, J. Pineau. "Efficient Learning and Planning with Compressed Predictive States". Journal of Machine Learning Research (JMLR). 14. pp.3395-3439. 2014.

168. S.M. Shortreed, E. Laber, T.S. Stroup, J. Pineau, S.A. Murphy. "A multiple imputation strategy for sequential multiple assignment randomized trials". Statistics in Medicine. vol.33(24). pp.4202-4214. 2014.

169.   A. Barreto, D. Precup, J. Pineau. "Policy Iteration Based on Stochastic Factorization". Journal of Artificial Intelligence Research (JAIR). 50. pp.763-803. 2014.
170.   P. Rushton, D. Kairy, P. Archambault, E. Pituch, C. Torkia, A. El-Fathi, P. Stone, F. Routhier, R. Forget, J. Pineau, R. Gourdeau, L. Demers. "The Potential Impact of Intelligent Power Wheelchair Use on Social Participation: Perspectives of Users, Caregivers, and Clinicians". Disability and Rehabilitation: Assistive Technology. 2014.
171.   D. Kairy, P. Rushton, P. Archambault, E. Pituch, C. Torkia, A. El Fathi, P. Stone, F. Routhier, R. Forget, L. Demers, J. Pineau, R. Gourdeau. "Exploring intelligent power wheelchair use: the users' and caregivers' perspective". International Journal of Environmental Research and Public Health. 2014.

Publications in Refereed Conference Proceedings
172.   B. Balle, W.L. Hamilton, J. Pineau, "Methods of Moments for Learning Stochastic Languages: Unified Presentation and Empirical Comparison". International Conference on Machine Learning (ICML). 2014.

Invited lectures or presentations
173.   "Learning Socially Adaptive Navigation Strategies: Lessons from the SmartWheeler Project". University of Pennsylvania, GRASP seminar series, Philadelphia, PA. January 31, 2014.
174.   "Learning Socially Adaptive Navigation Strategies: Lessons from the SmartWheeler Project". Conference on Computer and Robot Vision (CRV). Symposium on Assistive Technologies and Health. May 7 2014.
175.   "Learning Socially Adaptive Navigation Strategies: Lessons from the SmartWheeler Project". Workshop on Machine Learning for Interactive Systems. AAAI Conference. Quebec city, QC. July 28, 2014.
176.   "Discovery and optimization of dynamic treatment regimes through reinforcement learning". Institute for Computational Medicine Distinguised Seminar Series, Johns Hopkins University. Maryland, MD. August 4, 2014.
177.   "Learning Socially Adaptive Navigation Strategies: Lessons from the SmartWheeler Project". Robotics Institute Seminar Series, Carnegie Mellon University. Pittsburgh, PA. November 7, 2014.
178.   "Learning Socially Adaptive Navigation Strategies: Lessons from the SmartWheeler Project". Canadian Robotics Today. NCFRN Industry Workshop. McGill University. November 7, 2014.
179.   "Research Perspectives: Reinforcement Learning and Dialogue Management". Samsung Research Forum, Seoul, Korea. November 10, 2014.
180.   "Recent Advances in Reinforcement Learning". Samsung Tech Conference. Seoul, Korea. November 11, 2014.
181.   "Learning and planning in sparse dynamic systems with compressed predictive state representations". NIPS 2014 Workshop: From Bad Models to Good Policies. Montreal, QC. December 12, 2014. Publications in REFEREED Journals

SHARF, Inna
Articles in refereed publications

182.	S.M. Persson, I. Sharf, 'Sampling-based A* Algorithm for Robot Path-planning,' International Journal of Robotics Research, Vol. 33, 2014, pp. 1683-1708.

Other refereed contributions
183.	I. Sharf, M. Nahon, A. Harmat, W. Khan, M. Michini, N. Speal, M. Trentini, T. Tsadok and T. Wang, "Ground Effect Experiments and Model Validation with Draganflyer X8 Rotorcraft," ICUAS 2014 International Conference on Unmanned Aircraft Systems, May 27 - May 30, 2014, Orlando, FL, pp. 1158-1166.
184.	M. Zhang, A. Harmat and I. Sharf, "Autonomous Flight of a Quadrotor Using Multi-Camera Visual SLAM," 2014 International Conference on Intelligent Unmanned Systems, Sept. 29 - Oct. 1, 2014, Montreal.
185.	A. Harmat and I. Sharf, "Towards full omnidirectional depth sensing using active vision for small unmanned aerial vehicles," Proc. Conference on Computer and Robot Vision, CRV2014, May 6- 9, 2014, Montreal, pp. 24-31.
186.	F. Zhang, I. Sharf and A. K. Misra. "On-Line Mass Estimation for a Tethered Space Debris During Post-Capture and Retrieval," 24th AAS/AIAA Space Flight Mechanics Meeting, Spaceflight Mechanics 2014, January 2014, Santa Fe, NM, 12pgs.

Invited presentations
187.	"My Odyssey in Space Robotics: from UTIAS through UVic and at McGill," Annual GN Patterson Lecture, UTIAS (University of Toronto, Institute for Aerospace Studies), Toronto, December 9, 2014.
188.	"Autonomy for Small UAVs and Space Debris Removal," invited presentation, MIAE Guest Speaker Series, McGill University, Montreal, November 13, 2014
189.	"Autonomy for Small UAVs and Space Debris Removal," invited presentation at Toronto Students for the Advancement of Aerospace 2014 Conference, Toronto, November 8, 2014
190.	"Technologies for Active Space Debris Removal," invited lecture at Space Studies Program, International Space University, ETS, Montreal, July 11, 2014
191.	"Autonomy for Small UAVs and Space Debris Removal," invited presentation at SVAR 2014 Workshop, MDA, Toronto, May 21, 2014
192.	"Introduction to Mechanical Engineering," invited presentation at 2014 POWE Conference for Future Women in Engineering, February 21, 2014

SIDDIQI, Kaleem
Publications in Refereed Journals
193.	Jennifer S.W. Campbell, Parya Momayyez Siahkal, Peter Savadjiev, Kaleem Siddqi, Ilana R. Leppert and G. Bruce Pike Beyond Crossing Fibers: Bootstrap Probabilistic Tractography Using Complex Subvoxel Fiber Geometries Frontiers in Neurology, 28 October 2014

Publications in Refereed Conference Proceedings
194.	Arthur Mensch, Emmanuel Piuze, Lucas Lehnert, Adrianus J. Bakermans, Jon Sporring, Gustav J. Strijkers & Kaleem Siddiqi. Connection Forms for Beating the Heart. Statistical Atlases and Computational Models of the Heart – Imaging and Modeling Challenges (Boston, MA), 2014, LNCS Vol. 8896, pp. 83--92.

195.	"Heart Wall Myofibers are Arranged in Minimal Surfaces", Eindhoven Multiscale Institute (EMI) Colloquium, University of Eindhoven, Eindhoven, the Netherlands, Feb. 2014.
196.	"Heart Wall Fibers are Arranged in Minimal Surfaces", University of British Columbia, Department of Computer Science Colloquium, April 2014.
197.	"Texture Flows", Symposium on Shape, Canadian Conference on Robot Vision, Université de Montréal, May, 2014.

Conference presentations.
198.	Connection Forms for Beating the Heart. Statistical Atlases and Computational Models of the Heart – Imaging and Modeling Challenges (Boston, MA), 2014. Poster presentation by Arthur Mensch, Emmanuel Piuze and Lucas Lehnert