



About CIM Venue

Welcoming Message

Mot de bienvenue

Program

Thursday - Morning
Thursday - Afternoon
Thursday - Banquet
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Restaurants

Map

McGill Centre for Intelligent
Machines

McConnell Engineering Building
3480 University Street

Montreal, Quebec, Canada

H3A 2A7

Phone: (514) 398-6319

Fax: (514) 398-7348

Email: cim@cim.mcgill.ca

Symposium on Brain, Body and Machine

November 10 - 12, 2010

Montreal, Canada

About CIM

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

CIM's Mission Statement:

To excel in the field of intelligent machines, stressing basic research, technology development, and education. CIM seeks to advance the state of knowledge in such domains as robotics, automation, artificial intelligence, computer vision, systems and control theory, and speech recognition.

A year-long seminar series on the topic Brain, Body and Machine was organized where we hosted six public lectures, each by a prominent international academic, namely, Professors R.D. Howe, W. Burgard, O. Khatib, F. Pfeiffer, P. Holmes and Brockett. A seventh lecture will be presented by Professor Alan Tannenbaum in January 2011.

As part of the 25th anniversary celebration, CIM is hosting the International Symposium on "Brain, Body and Machine", on November 10th -12th. In this symposium, 35 researchers will present their original research in the areas of artificial intelligence, computer vision, haptics, multibody system dynamics, medical imaging, robot design and control, systems and control, and human-machine interaction.

Venue

Ex-Centris

3536 Boul. Saint-Laurent

Montreal, Quebec , Canada

H2X 2V1

Phone: (514) 847-2206





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Science and technology are currently evolving at an unprecedented pace, which, we hope, will be for the benefit of society. Intelligent systems, at the core of this technological revolution, allow us for example, to produce a car by means of a fully automated process, or to target swiftly the interests of consumers who want to buy goods on the Internet. Nowadays, this revolution pervades the biomedical and health-care domains, where highly precise surgical operations are supported by robotic and computer-vision systems in real-time mode. Soon, the aged or mobility-challenged population will be assisted by robotic systems of quite another type. In the energy domain, the growing use of renewable sources and electric vehicles favour the emergence of intelligent systems needed to control these vehicles and the power networks to integrate their novel functions, thereby reducing the environmental impact of our society.



Our research community is thus quite active and faces extremely interesting challenges. As Director of the Centre for Intelligent Machines (CIM), I am pleased to welcome you to the Symposium on Brain, Body and Machine, with which we celebrate CIM's 25th anniversary, and where some of these challenges, and many others, will find means to overcome them. Papers will be presented by researchers of an international calibre in the domain of intelligent systems and machines. The richness of the symposium papers is a faithful image of the ongoing research effort in this domain. I hope that the symposium will open new horizons to the participants. Last, but not least, I would like to thank the CIM 25 Committee members as well as all those within the CIM family who contributed to the symposium organization. They have all done an outstanding job, which, no doubt, will lead to a highly successful symposium.

Benoit Boulet,

Director, Centre for Intelligent Machines

Montreal, November, 2010



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La science et la technologie évoluent à un rythme effréné et ce, nous le souhaitons, pour le plus grand bénéfice de la société. Les systèmes intelligents sont au cœur de cette révolution technologique qui nous permettent déjà par exemple de construire une voiture de façon automatisée, ou de cibler rapidement les intérêts des consommateurs qui veulent acheter un bien sur Internet. Maintenant, cette révolution s'étend aux domaines biomédical et des soins où certaines chirurgies fines sont assistées par des robots et de l'imagerie en temps réel, alors que bientôt des personnes âgées ou ayant certains handicaps seront aidés par des robots d'un tout autre type. Dans le domaine environnemental, l'utilisation accrue de sources d'énergies renouvelables et de véhicules électriques favorisent l'émergence de systèmes intelligents permettant de contrôler les véhicules et les réseaux électrique pour bien intégrer leurs nouvelles fonctions et permettre ainsi de réduire l'impact environnemental de notre société.



Notre communauté de recherche est donc en effervescence et fait face à des défis extrêmement intéressants. En tant que directeur du Centre de recherche sur les machines intelligentes, Je suis très heureux de vous accueillir au symposium Cerveau, corps et machine célébrant le 25ème anniversaire du CIM où quelques un de ces défis, et bien d'autres, auront des pistes de solution présentées par des chercheurs de calibre international en systèmes et machines intelligents. La diversité des communications du symposium reflète bien la recherche dans ce domaine. J'espère que le symposium ouvrira d'autres horizons pour les participants. Finalement, j'aimerais remercier les membres du comité du 25ème anniversaire ainsi que tous ceux dans la famille du CIM qui ont contribué à l'organisation du symposium. Ils ont fait un travail formidable et nul doute que le symposium s'avèrera un grand succès.

Benoit Boulet,

Directeur, Centre de recherche sur les machines intelligentes



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Wednesday, November 10, Registration at Ex-Centris, 5pm to 9pm

Program

Thursday, November 11 – Morning

	Keynote Lecture & Morning Session 1	
	Author(s)	Title
9:00	Keynote speaker : Bruno Siciliano	Force and Visual Control for Safe Human-robot Interaction
9:40	Yi Gao, Benjamin W. Corn, Dan Schifter, Allen Tannenbaum	3D Automatic Segmentation of the Hippocampus Using Wavelets with Applications to Radiotherapy Planning
10:00	Laurence Mercier, Vladimir Fonov, Rolando F. Del Maestro, Kevin Petrecca, Lasse R. Østergaard and D. Louis Collins	Rigid Registration of 3D Ultrasound and MRI: Comparing Two Approaches on Nine Tumor Cases
10:20	Coffee Break	
	Morning Session 2	
	Author(s)	Title
10:40	Carmen E. Au and James J. Clark	A New Approach to Virtual Mirroring for View Integration
11:00	Karim T. Abou-Moustafa, Fernando De La Torre and Frank P. Ferrie	Designing a Metric for the Difference Between Gaussian Densities
11:20	James J. Clark	Physical Asymmetries and Brightness Perception
11:40	Chen-Rui Chou, C. Brandon Frederick, Sha X. Chang and Stephen M. Pizer	A learning-based Patient Repositioning Method from Limited-angle Projections
12:00	Jian Li, Martin Levine, Xiangjing An, Zhenping Sun and Hangen He	Image and Video Region Saliency Based On Space and Motion



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Program

Thursday, November 11 – Afternoon

	Afternoon Session 1	
	Author(s)	Title
2:00	Sungkyu Jung, Xiaoxiao Liu, J. S. Marron and Stephen M. Pizer	Generalized PCA Via the Backward Step-wise Approach in Image Analysis
2:20	Fahim Mannan and Michael Langer	Performance of MRF-based Stereo Algorithms for Cluttered Scenes
2:40	Svetlana Stolpner, Paul Kry and Kaleem Siddiqi	Medial Spheres for Shape Approximation
3:00	Jorge Solis, Atsuo Takanishi and Kunimatsu Hashimoto	Development of an Anthropomorphic Saxophone-Playing Robot
3:20	Guy Gauthier, Mathieu Beauchemin-Turcotte and Benoit Boulet	Robust Design of 2nd order Terminal ILC Using μ -analysis and a Genetic Algorithm Approach
3:40	Coffee Break	
	Afternoon Session 2	
	Author(s)	Title
4:00	Eric Barnett, Jorge Angeles, Damiano Pasini, and Pieter Sijkkes	A Heuristic Algorithm for Slicing in the Rapid Freeze Prototyping of Sculptured Bodies
4:20	Martin J.-D. Otis, Sylvain Comtois, Denis Laurendeau and Clément Gosselin	Human Safety Algorithms for a Parallel Cable-driven Haptic Interface
4:40	Josep Font-Llagunes, Ana Barjau, Rosa Pàmies-Vilà, Jozsef Kovecses	Two Approaches for the Dynamic Analysis of Impact in Biomechanical Systems
5:00	Gabor Stepan	Human Balancing and Vision
5:20	Timothy D Barfoot, Paul T Furgale, Braden E Stenning, Patrick J F Carle, John P Enright, and Pascal Lee	Devon Island as a Proving Ground for Planetary Rovers



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Program

Banquet, Thursday November 11 – Evening

Please notice that the banquet will be held at 7:00 pm at the McGill Faculty Club :

3450 McTavish Street

Montreal, Quebec H3A 1X9

<http://www.mcgill.ca/facultyclub/>

The McGill Faculty Club is located within walking distance of Ex-Centris (15 – 20 min.). Coming out of Ex-Centris, you should turn right and take, after 50 – 100 m, Milton Street. This leads you to the McGill University campus. The McGill Faculty Club is on the other side of the campus at 3450 McTavish Street. A map showing walking directions is provided on the last page.

By Bus: Coming out of Ex-Centris, you should turn right toward Sherbrooke Street, take the number 24 bus (Sherbrooke) direction west (Ouest), getting on at the corner of Sherbrooke street and St. Laurent street and getting off at Mansfield Street. Then walk to the McGill Faculty Club (3 min.). The regular one-way fare is \$2.75.





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Program

Friday, November 12 – Morning

	Keynote Lecture & Morning Session 1	
	Author(s)	Title
9:00	Keynote speaker : <u>Jean-Claude Piedboeuf</u>	Canada's Space Exploration Core Program: Preparatory Activities
9:40	Xinjilefu, Vincent Hayward, and Hannah Michalska	Hybrid Stabilizing Control for the Spatial Double Inverted Pendulum
10:00	Kamel Zaarouri, Ahmad Haidar, Benoit Boulet	Closed-Loop Control of Plasma Osmolality
10:20	Coffee Break	
	Morning Session 2	
	Author(s)	Title
10:40	Ioannis M. Rekleitis, Robert Sim, and Gregory Dudek	Cooperative Exploration, Localization, and Visual Map Construction
11:00	Eric Lucet, Christophe Grand and Philippe Bidaud	Sliding-mode Velocity and Yaw Control of a 4WD Skid-steering Mobile Robot
11:20	Joelle Pineau, Amin Atrash, Robert Kaplow and Julien Villemure	On the Design and Validation of An Intelligent Powered Wheelchair: Lessons From the SmartWheeler Project
11:40	Michael T. Tolley and Hod Lipson	Three Dimensional Stochastic Fluidic Assembly of Minimalistic Modules
12:00	Mojtaba Nourian, Peter E. Caines, Roland P. Malhamé and Minyi Huang	Leader-Follower Cucker-Smale Type Flocking Synthesized via Mean Field Stochastic Control Theory



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Friday, November 12 – Afternoon

	Afternoon Session 1	
	Author(s)	Title
1:40	Farzam Ranjbaran	A Review of Selected Thematic Activities at the European Science Foundation
2:00	Inna Sharf	Dynamic Locomotion with a Wheeled-Legged Quadruped Robot
2:20	James Smith and Jamil Jivraj	Preliminary Energetics of Tripedal and Quadrupedal Gaits Using the GARP-4 Robot
2:40	Clément Gosselin, Simon Lefrançois and Nathaniel Zoso	Underactuated Cable-Driven Robots: Machine, Control and Suspended Bodies
3:00	Philippe Cardou	Computing the Rigid-Body Acceleration Field from Nine Accelerometer Measurements
3:20	Stéphane Caro, Guillaume Moroz, Thibault Gayral, Damien Chablat and Chao Chen	Singularity Analysis of a Six-dof Parallel Manipulator using Grassmann-Cayley Algebra and Gröbner Bases
3:40	Coffee Break	
	Afternoon Session 2	
	Author(s)	Title
4:00	James Smith and Jamil Jivraj	Analysis of Robotics Dynamixel AX-12+ Actuator Latencies
4:20	Oleg Gubanov and Luca Cortelezzi	Design of an optimal mixer
4:40	László L. Kovács and Ambrus Zelei	Servo Constraint Based Computed Torque Control of ACROBOTER
5:00	Benoît Boulet	Closing Remarks



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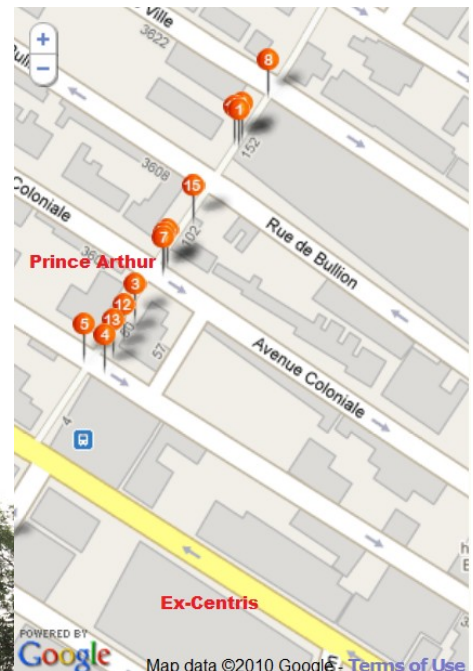
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In addition to Café Méliès and some restaurants close to Ex-Centris on both sides of Boul. Saint-Laurent, Prince-Arthur Street is also well known for its restaurants and cafés.



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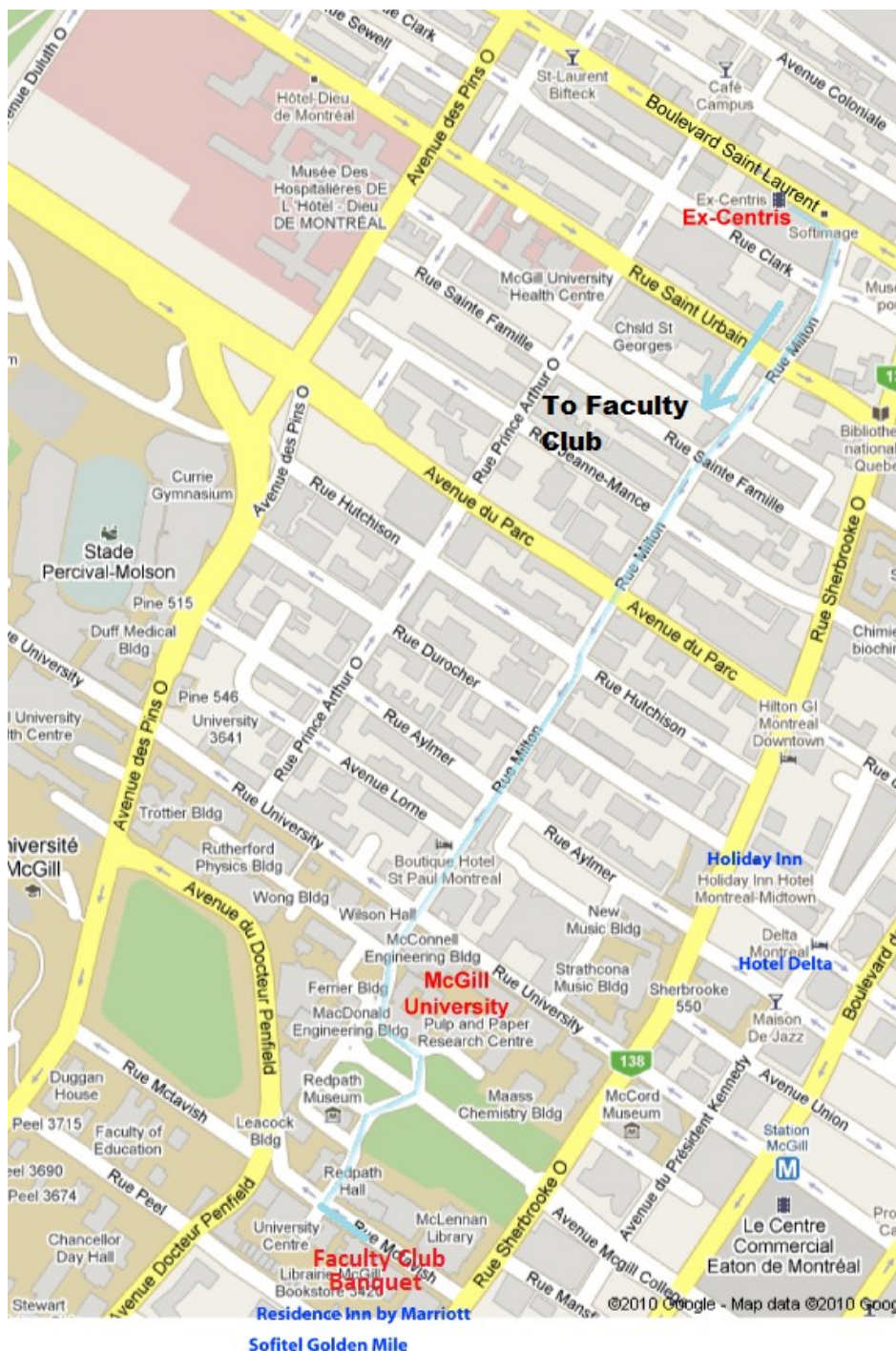
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Map Follow light blue path to go from Ex-Centris to banquet location at the Faculty Club.



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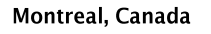
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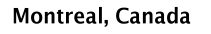
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