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Co-op provides opportunities for employers and educational institutions to interact and exchange information on such issues as: the human resources needs of employers and technology advances

**Contact us today to learn more!**

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Co-op/PEP Coordinator  
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Secretary—Undergraduate, Co-op/PEP  
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## Faculty of Computer Science



## RESEARCH EXPOSITION

Friday, April 8th, 2011

8:00am - 4:30pm

Wu Conference Centre

Discover leading edge information technology research

Hear ICT industry researchers speak of their research

Explore opportunities for R&D collaboration

# EIGHTH ANNUAL



# HOW ARE YOU GOING TO CHANGE THE WORLD?



Understanding climate change, improving healthcare, fighting terrorism, discovering new medicines, or improving literacy levels:

## COMPUTER SCIENCE

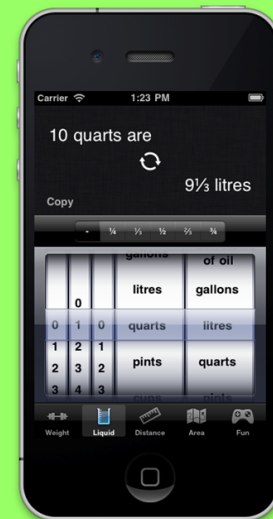
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## an overview of **iPhone** development

Use knowledge of the limits and capabilities of the iPhone mobile platform to produce feature-rich mobile applications. Develop navigation- and view-based apps for the iPhone. Use paradigms common to the iOS development framework, such as Model-View-Controller and Target Delegate to develop maintainable applications. Abide by memory-management rules and conventions to produce stable, lightweight mobile applications. Course Prerequisites- Experience programming in Object-Oriented languages. Experience with C would be helpful. Instructor: Ash Furrow

**\$550 taxes in register online maximum enrolment: 14**

**APRIL 26 27 28 [www.cs.unb.ca/itc/iphone](http://www.cs.unb.ca/itc/iphone)**

# PANELISTS

## Dr. Jane Fritz

Professor (retired)  
Faculty of Computer Science



Dr. Fritz has had a distinguished career at the University of New Brunswick which began when she joined the Faculty of Computer Science in 1980. She served one term as the Dean of Faculty of Computer Science (1998-2003) and Associate Vice-President Academic (Learning Environment) from 2004 to 2007. She also served as acting Vice-President Academic (2007-2008), acting Executive Director of the College of Extended Learning (2008), and acting AVP for Integrated Technology Services (2009). Dr. Fritz was part of UNB's first Shad Valley team and served as program director for 5 years.

Dr. Fritz has a B.Sc. in Mathematics from McGill University, M.Sc.(CS) from UNB, and D.Phil. from the University of York in the UK. Her many contributions within her discipline have made her a valued Faculty member. She is well known as an excellent teacher and was recognized as such when she received the Allan P. Stuart Award for Excellence in Teaching in 1989. Her areas of specialization include information systems and decision support, hypertext systems, multimedia and e-Learning. Over the years she has touched the lives of many students having taught 15 different undergraduate courses, supervised over 200 senior student projects, technical reports and honours theses, 23 masters theses and a PhD thesis. She has also been an active researcher and scholar, holding a number of research grants and contracts. She has published 26 refereed papers, 3 book chapters, made many conference presentations and served as a reviewer in a number of capacities.

She has been involved in many national and regional associations related to IT education, professionalism and economic development, including Greater Fredericton Knowledge Industry Task Force, Canadian Computer Science Accreditation Council, National CIPS Certification Council, the inaugural Board of Genome Atlantic, the Advisory Board of the NRC Institute of Information Technology, UNB's Board of Governors, and the Board of Enterprise Fredericton, where she served a term as chair. In these capacities, she has been awarded the Allan P. Stuart Award for Excellence in Teaching and the President's Medal for outstanding contributions over her career by the University of New Brunswick, the Knowledge Industry Special Recognition Award (KIRA), the Community IT Hero Award by ITAC (Information Technology Association of Canada), and the Gary Hadfield Professional Achievement Award from the Canadian Information Processing Society.

# WELCOME



Welcome to the 2011 Faculty of Computer Science Annual Research Exposition. I hope that you enjoy the exposition's program and find the experience of meeting and sharing thoughts with our students and researchers as well as one another unique and worthwhile!

The 2011 Faculty of Computer Science's Annual Research Exposition showcases the excellent research, new developments, and experience related to the area of information and communication technology. This year we have 30 Posters. The coverage of the contributions is very wide, which is one of the features that distinguishes our research expo from other events that focus on more specific areas. The participants in the Exposition will have the opportunity to hear leading experts and IT leaders present keynote talks and have the opportunity to view the posters at the poster session.

Many people contributed to the success of this Exposition. I would like to thank all the organizing committee members, in particular, Dr. Weichang Du, Chair of the organizing committee, for his effort and dedication. I am also very pleased to thank all the students and professors for their posters which are the main attraction, the keynote speakers, members of the panel on ICT talent challenges in New Brunswick, and to all the participants. You are the ones who make all this effort worthwhile!

Ali A. Ghorbani  
Professor and Dean

# PROGRAM

**8:00—8:50**

Registration & Poster Session I

**8:50—8:55**

Dr. Ali Ghorbani, Dean, Faculty of Computer Science, UNB

**8:55—9:00**

Dr. Gregory Kealey, Provost & VP Research, UNB

**9:00—9:15**

Christian Couturier, Director-General, NRC-IIT

**9:15—9:30**

Marc Leger, Deputy Minister, Post-Secondary Education, Training and Labour

**9:30—9:45**

Dr. Joe Horton, Faculty of Computer Science, UNB

**9:45—10:00**

Ian Cavanagh, CEO, Ambir Solutions

**10:00—10:15**

Dr. Gerhard Dueck, Faculty of Computer Science, UNB

**10:15—10:30**

Maurice Gallant, CIO, City of Fredericton

**10:30—11:45**

Break & Poster Session II

**11:45—12:00**

Dr. Janet Light, Department of Computer Science and Applied Statistics, UNBSJ

**12:00—12:15**

Dr. Bradford Nickerson, Assistant Dean, Research & Outreach, Faculty of Computer Science, UNB

# PANELISTS

## Richard Isnor

Manager  
NSERC-Atlantic



Richard Isnor is Manager of the Atlantic Regional Office for the Natural Sciences and Engineering Research Council of Canada (NSERC-Atlantic), based in Moncton, NB. Previously, he was Director of Innovation Policy and Science at the International Development Research Centre in Ottawa and also worked for three years with the National Research Council of Canada managing the Genomics and Health Initiative.

Richard holds a Ph.D. in Science and Technology Policy Studies from the University of Sussex, UK; a Master's in Environmental Studies from Dalhousie University, Canada; and a B. Sc. in Biochemistry from Mount Allison University, Canada. He has held science and technology policy and management positions in a variety of federal government organizations, including Environment Canada, Natural Resources Canada and the Privy Council Office.

NSERC is Canada's primary federal agency supporting research in the natural sciences and engineering. NSERC's goal is to help make Canada a country of discoverers and innovators for the benefit of all Canadians. To reach the NSERC-Atlantic office staff, please call 506-854-8154 or email at [nserc-atlantic@nserc.ca](mailto:nserc-atlantic@nserc.ca).

## Ian Baird

Director, Business Development  
MITACS



Ian joined MITACS in July 2005 and is based in Fredericton. He is responsible for working with industry and university researchers by helping them come together to solve some of the most pressing research challenges facing Atlantic Canadian industries today.

A graduate of Dalhousie University in Halifax (BComm'90, MBA'92), with roots in New Brunswick and Nova Scotia, Ian brings 18 years of private and public sector experience to his role with MITACS. Formerly a commercial banker with RBC Royal Bank, Toronto-Dominion Bank, and Barclays Bank of Canada, Ian has worked in most of the region's major centres including Halifax, Fredericton, and St. John's (Newfoundland). He also worked for three years as an investment officer with the New Brunswick Department of Economic Development & Tourism (now Business New Brunswick), where his primary responsibility was to seek and attract foreign direct capital investment to the province. His career has provided him with clear insights into the needs and challenges facing private industry in Atlantic Canada, and the role that research will play in advancing the regions social and economic prospects.

**12:15—12:30**

Dr. H.E.A (Eddy) Campbell, President, UNB

**12:30—13:15**

Lunch & Poster Session III

**13:15—13:30**

Geoff Flood, President, T4G Ltd.

**13:30—14:20**

Postdoctoral Fellows & Students Presentations

**14:20—15:00**

Break & Poster Session IV

**15:00—16:15**

Panel Discussion

Topic: The ICT Talent Challenge in New Brunswick

Moderator: Larry Sampson, CEO, New Brunswick Information Technology Council (NBITC)

Panellists:

Bill Levesque, Deputy Minister, Business NB

Trevor Corey, Vice-President—NB, CGI

Ian Baird, Director, Business Development, MITACS

Richard Isnor, Manager, NSERC-Atlantic

Jane Fritz, Professor (retired)



# POSTERS

1. J.D. Horton. *Simulation of Consciousness using Evolution.*
2. Yassaman Zand-Moghaddam, J.D. Horton. *Mapping Relational Database Schemas to Ontologies.*
3. Rachita Sharma, Patricia Evans, Virendra Bhavsar. *Mapping Regulatory Network from one Organism to Another.*
4. Ahmed Alghamdi, Mohammed Alzaylaee, Raid Alghamdi, Przemyslaw Pohec, John DeDourek. *Network Simulation.*
5. Hongtao Xiao, Eric Aubanel. *Parareal Algorithm in Cloud Environment.*
6. Hadi Shiravi, Ali Shiravi, Ali A. Ghorbani. *Network Security Visualization.*
7. Ehsan Mokhtari, Jonathan Millar, Ali. A. Ghorbani. *A Multifaceted Approach to Botnet Detection, Mitigation and Visualization (Framework Subproject).*
8. Julian Rrushi, Ali A. Ghorbani. *Mathematical Prediction of Botnet Propagation Dynamics.*
9. John Felix Charles Joseph, Ali. A. Ghorbani. *Group Behavior Metrics for P2P Botnet Detection.*
10. Hadi Shiravi, Ali Shiravi, Ali A. Ghorbani. *Network Security Visualization.*
11. D. Dubois, Rp. Singh, Ali. A. Ghorbani. *Grouping of Blogposts.*
12. Intelligent & Adaptive Systems Research Group. *Opinion Mining & Issue Discovery (OMID).*
13. Sujan Saha, Harold Boley, Gerhard W. Dueck. *EnviroPlanner: A Rule Responder for Distributed Environmental Querying.*
14. Md. Mazder Rahman, Gerhard W. Dueck. *A Uniform Method for Quantum Costs Optimization of Reversible Circuits.*
15. Markus C. Goffart, Gerhard W. Dueck. *Issues of Java Garbage Collection.*

# PANELISTS

## Trevor Corey

Vice President—New Brunswick  
CGI



Trevor Corey joined CGI in mid 2006 as Vice President, Systems Integration and Consulting, Atlantic Region. Trevor managed the operations and delivery of all consulting work of the CGI Atlantic regions practice which has offices located in Nova Scotia, New Brunswick and Prince Edward Island. In 2008, Trevor assumed responsibility for all CGI activity in New Brunswick.

Prior to returning to New Brunswick, Trevor worked with Accenture for over 16 years where he reached the Partner level in 2003. During his tenure delivering consulting services to Communications and High Tech Companies such as Microsoft, Bell Canada, Telus, and Bell South; Trevor received worldwide recognition for his experiences and innovation in the areas of IP Communications strategy and service delivery.

Before concentrating in the communications and high tech industry, Trevor consulted all over North America for a variety of industries including provincial and federal governments, national defence, oil and gas, financial services, manufacturing, energy and health care. His career in the information technology sector spans 20 years.

Trevor is a founding Board member of the New Brunswick IT Council, he sits on the Industry Advisory Board for UNB's Faculty of Computer Science, serves as the Chairman of the Fredericton Amateur Speed Skating Club and is a Board member for Speed Skate New Brunswick.

Trevor is a graduate of the University of New Brunswick with a degree in Computer Science ('90). Trevor lives in Fredericton with his wife and two children.

# PANELISTS

## Bill Levesque

Deputy Minister  
Business New Brunswick



Bill Levesque graduated from Laval University with a Bachelor of Business Administration in 1992.

A New Brunswick native, Bill moved home to accept a post with the province's Department of Municipalities, Culture, and Housing. He worked with local municipality administrations first in the Dalhousie region, and later in a new role as town manager with the Village of Nigadoo.

From there, Bill was named vice-president of the Regional Development Corporation, spending six years there until being offered the position as president of the corporation in 2007. The Edmundston native spent two years as president of the Regional Development Corporation before stepping into the role as deputy minister of Business New Brunswick.

Bille Lévesque a reçu son Baccalauréat en administration des affaires de l'Université Laval en 1992.

Natif du Nouveau-Brunswick, Bill est revenu dans la province pour occuper un poste au sein du ministère des Municipalité, Culture et Habitation. Il a travaillé au niveau de l'administration municipale, d'abord avec la ville de Dalhousie et ensuite comme administrateur municipal pour la ville de Nigadoo.

Par la suite, il a été nommé vice-président de la Société de développement régional où il a passé six ans. En 2007, Bill, un natif d'Edmundston, a été nommé président de la Société de développement régional pour ensuite accepter en 2009 le poste de sous-ministre d'Entreprise Nouveau-Brunswick.

# POSTERS

16. Justin Deschenes, Michael Fleming. *Incorporating Human Memory Models into Artificial Intelligence Techniques.*
17. Ki Hyang Lee, Michael Fleming, Scott Buffett. *Maintaining Dynamic COP-nets with Changing Preferences.*
18. James McManus, Michael Fleming, Scott Buffett. *Ontology Guided Dynamic Preference Elicitation of Conditional Preferences.*
19. Ash Furrow, Kenneth B. Kent. *A Framework Testing Functional Correctness for FPGA Architecture Exploration.*
20. Nils Reichert, Kenneth B. Kent. *Digital Questionnaire System with Emotional Recognition.*
21. Thorsten Roth, André Hinkenjann. *Graph Based Post Processing of Visual Data for Interactive Graphics.*
22. Jens Maiero, André Hinkenjann, Marco Winzker, Matthias Bues. *FPGA-Based Image Combining for Parallel Graphics Systems.*
23. Pouya Bisadi, Bradford G. Nickerson. *Orthogonal Range Search using a Distributed Computing Model.*
24. Stuart A. MacGillivray, Bradford G. Nickerson. *Persistent Spatial Data Structures.*
25. Gautam K. Das, Robert Fraser, Alejandro Lopez-Ortiz, Bradford G. Nickerson. *On the Discrete Unit Disk Cover (DUDC) Problem.*
26. Yuanyuan Guo, Harry Zhang, Xiaobo Liu. *Instance Selection in Semi-Supervised Learning.*
27. Xiaobo Liu, Huajie Zhang, and Yuanyuan Guo. *Transfer Learning.*
28. Sangwhan Cha, Weichang Du. *Context Aware Middleware Services for Disconnection Tolerant Mobile Applications.*
29. Xiping Hu, Weichang Du, Bruce Spencer. *Agent Based Application Programming Framework for Ad-Hoc Networks.*
30. Phuntsho Ugyel. *A Cloud Computing Training Platform.*

## Christian Couturier

Director General (DG)  
National Research Council Institute for Information Technology (NRC-IIT)



Christian Couturier is Director General (DG) of the National Research Council Institute for Information Technology (NRC-IIT), which undertakes research in three strategic areas of information and communications technology:

- ✦ Knowledge from data: Making sense of Information;
- ✦ People-oriented systems: so you can use Technology effectively;
- ✦ E-business: any where, any time.

Christian's leadership has been recognized by several awards including Canada's "Top 40 Under 40." His research team's success continues to be celebrated through many international, national and local awards including the 2007 Canadian Information Productivity Awards (CIPA) Gold Award of Excellence for innovation in the Health Care Sector and the 2009 Canadian Advanced Technology Alliance (CATA) award for Public Sector Leadership in Advanced Technology.

Under Christian's leadership, NRC-IIT has known unprecedented success in creating economic impact for Canada. NRC-IIT increases the global reach of Canadian firms to undertake activities that result in significant value for Canada in terms of creating jobs, economic growth, and increased productivity. A third party study shows that every dollar invested in the Institute yielded five dollars in economic activity. Increasing licensing revenues indicate that the ROI is now at almost 7:1.

Prior to his term as DG, Christian served as Director, Research Programs and as Group Leader at NRC-IIT. Before coming to NRC, Christian held various positions at the Université de Moncton, including Director General and Professor. He studied at Université de Moncton, Université du Québec à Montréal and University of New Brunswick. His professional certifications include the GoC Living Leadership Program and several SAP and ORACLE credentials.

His service on major boards and committees includes: NATO (RTO-IST) Research and Technology Organization Information Systems Technology; New Brunswick Health Council; IBM Centre for Advanced Studies Conference (CASCON); CANARIE Inc.; among several others.

Christian is often in demand as a public speaker; prominent engagements include: New England Governors and Eastern Canadian Premiers; Advisory Council in Science and Technology; Sommet économique du N-B; Université Pierre-Marie Curie, Paris.

## Larry Sampson

CEO  
New Brunswick IT Council



Larry brings over 30 years of championing ICT as an economic enabler to the NBITC Board. A serial volunteer, he has sat on the Board of ITAC, CATA, and the Software Human Resources Council, as well as serving on the National Board and as National President of the Canadian Information Processing Society.

In addition to being a founding board member of ITANS, NovaKnowledge and now the NBITC, Larry has directed global operations for an international e-Learning Company, held a senior position in a major U.S. IT services company, and managed large-scale IT and Knowledge Management initiatives for Defense and Fortune 1000 firms in Canada and the United States. Larry holds a Bachelor of Commerce degree from Saint Mary's University, and is a graduate of Management and Information Technology programs at Babson College and the University of Western Ontario.



## Geoff Flood

President  
T4G Ltd.



Geoff is the guiding force behind the continued growth of T4G Limited, a leading Canadian information technology professional services firm. Geoff has provided the leadership, vision and strategic direction for the company since its inception.

Geoff was previously Chief Information Officer and Vice-President of Dylex Limited – a multidivisional specialty retailer with over 700 stores in North America. In this capacity, he had the executive responsibility for the information technology assets of the Dylex Group of companies.

Prior to joining Dylex, Geoff held the position of Information Systems Officer for George Weston Limited (Canada's largest food processor and retailer) where he coordinated information systems activity across the Weston/Loblaw group of companies. Earlier at George Weston, he was responsible for strategic and corporate planning and financial reporting.

Geoff is currently a member of the Board of Directors of Andaurex Industries and is a past Director of the Triax Growth Fund and Whitehill Technologies. Geoff is actively involved in several charitable organizations and founding board member of the Future Focus Foundation. Geoff is currently Chairman of the New Brunswick IT Council.

Geoff holds an MBA in Finance from Queen's University, and a Bachelor of Arts in Economics from St. Francis Xavier University.

Geoff lives in Saint John, New Brunswick. He is married and has three children.

## Marc Léger

Deputy Minister  
Post-Secondary Education, Training and Labour



Marc Léger was appointed Deputy Minister of the Department of Post-Secondary Education, Training and Labour on December 1, 2010. Prior to this assignment, he was the Deputy Minister of Public Safety from 2007 to 2010.

Mr. Léger's career extends 21 years in the New Brunswick public service with the Department of Public Safety, the Department of Health and the Department of Intergovernmental Affairs. He also worked as the Deputy Chief of Protocol during the 1999 Sommet de la francophonie in Moncton.

Marc was born in south-eastern New Brunswick and attended both the University of Ottawa and Carleton University where he received his Masters in Public Administration. He is married with two daughters.

Marc Léger a été nommé sous-ministre de l'Éducation postsecondaire, de la Formation et du Travail le 1<sup>er</sup> décembre 2010. Il a auparavant exercé les fonctions de sous-ministre de la Sécurité publique de 2007 à 2010.

Au cours de ses 21 années de service au sein de la fonction publique, M. Léger a fait partie des ministères de la Sécurité publique, de la Santé et des Affaires intergouvernementales. Il a aussi été chef adjoint du protocole au Sommet de la francophonie à Moncton en 2009.

Marc est né dans le Sud-Est du Nouveau-Brunswick et a fréquenté l'Université d'Ottawa et l'Université Carleton, où il a obtenu sa maîtrise en administration publique. Marc et son épouse ont deux filles.

# SPEAKERS

## Ian P. Cavanagh, P.Eng.

Chief Executive Officer  
Ambir



Ian is Chief Executive Officer of Ambir, an independent, Atlantic Canadian, IT & Business Consulting Services company.

Ambir's vision is to provide leadership to Atlantic Canada by demonstrating that we can play a key role in the evolving Global IT marketplace. Our talented people are trusted to help our clients across the United States and Canada to meet their business goals through the practical application of IT. Ambir, recognized twice as "The #1 Best Place to Work in Atlantic Canada" by Progress Magazine, and ranked nationally as one of Canada's Top 25 Up and Comers in the Branham Group Surveys of ICT Companies, maintains offices in Saint John and

Fredericton, New Brunswick and Halifax, Nova Scotia, Canada.

As CEO of Ambir, Ian brings a wealth of experience and a proven track record working with high growth software and services companies. His knowledge of the global outsourcing industry is propelling Ambir towards realizing its full potential and capturing growth opportunities from its home base in Atlantic Canada. Ian's strengths lie in his expertise in Executive Management, Business Development & Strategy, Sales & Marketing, International Markets, M&A, Venture Capital Fundraising & Operations.

Experienced in both private and public high growth technology companies, Ian was previously Canadian President of a global outsourcing company where he gained a comprehensive insight into the opportunities in the Global IT services sector. Previously, Ian founded Daruma Consulting Inc. where he focused on providing strategic guidance to start-ups both in Canada and the United States. Prior to founding Daruma, Ian held senior executive roles in business development with Kana Communications, Redwood City, California and Genesys Telecommunications Laboratories Inc., Daly City, California, which was later acquired by Alcatel Communications. Ian began his career as a transmission design engineer with the New Brunswick Telephone Company.

Ian is an proud New Brunswick Ambassador, an Advisory Board Member of Compre-Cultures, SaleNorth Solutions, Sayf (U.S.), Digant Technologies PVT (India), Cabot Solutions (India) and Acadia University's F.C. Manning School of Business Administration. Ian holds a Certificate of Applied Science and a Bachelor of Electrical Engineering Degree from Acadia University & Dalhousie University (formerly TUNS). Ian was a founding CoChair of the New Brunswick IT Council and is a Registered Professional Engineer in the Province of New Brunswick. Ian was formerly a member of the New Brunswick Roundtable on Self Sufficiency, a member of the National NASSCOM/ITAC Steering Committee on Outsourcing, a Director of PropelICT, a Director of Digital Nova Scotia and a Director member of the Executive of the Associated Alumni of Acadia University.

# SPEAKERS

## Maurice Gallant

CIO, Assistant Director of Corporate Services, President and C.E.O. e-Novations  
City of Fredericton



Mr. Gallant is currently Chief Information Officer and Assistant Director of Corporate Services with the City of Fredericton. In 1997 Mr. Gallant joined the City of Fredericton as Manager of Information and Communication Technology. In 2001, he was appointed President and CEO of E-Novations, a city owned company dedicated to economic development through technology innovation.

Mr. Gallant was chairman of the City of Fredericton Smart Communities initiative in 2000 and was directly involved in the City's Intelligent Communities initiatives which have seen Fredericton place in the Top 7 Intelligent Communities. He played a leadership role in the creation and development of the Fredericton Municipal Area Network and Fred-eZone, Canada's first free municipal Wi-Fi network.

Prior to joining the City, Maurice was Director Information and Systems Technology with the Conference Board of Canada in Ottawa. He has over 20 years relevant experience with Information Technology and Project Management.

Mr. Gallant is President of the MISA Canada (Municipal Information Systems Association) and Vice-President MISA Atlantic and serves on the Research Ethic Board of the University of New Brunswick.