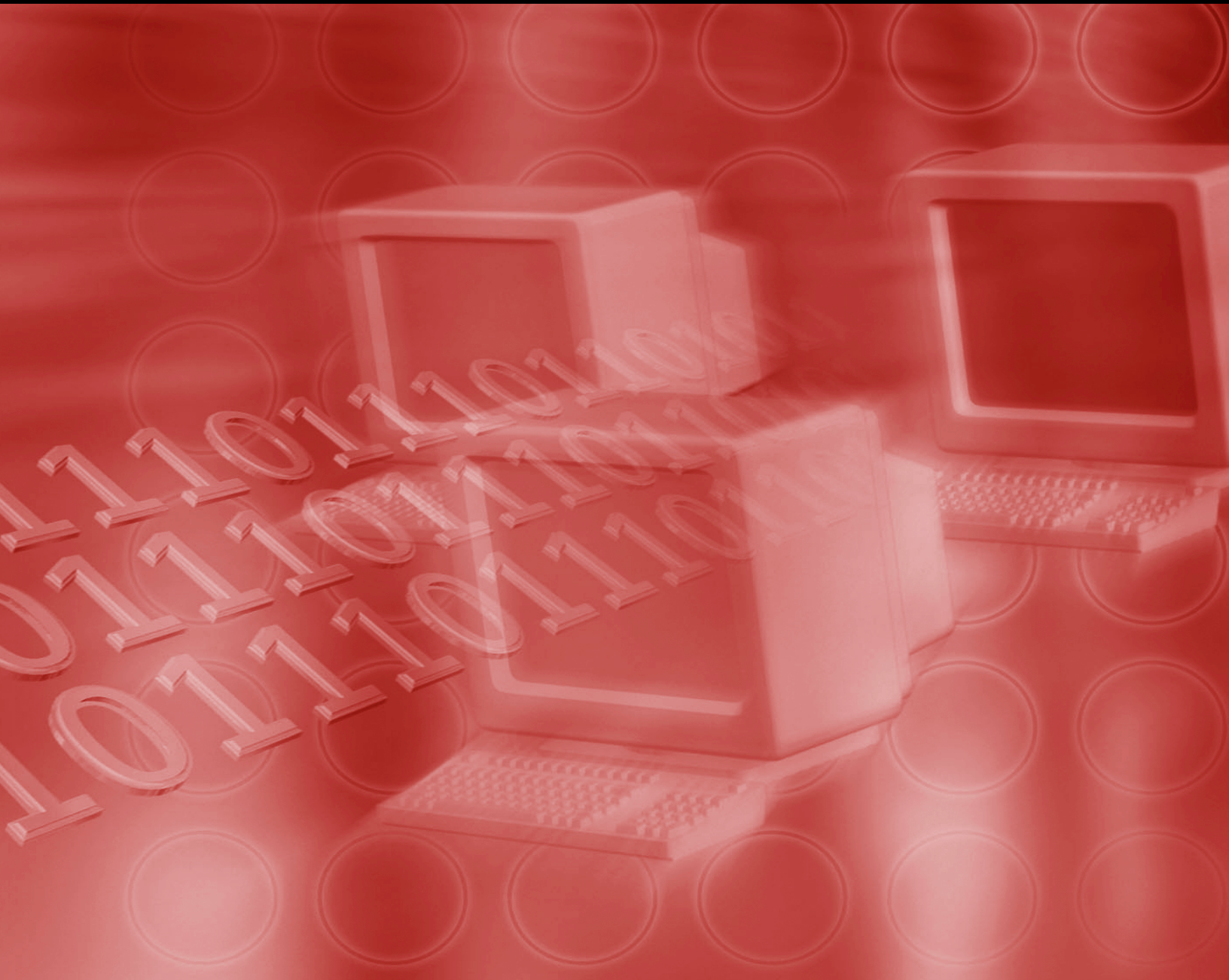




UNIVERSITY OF
CALGARY

Department of Computer Science

2006/07





CPSC 2006/2007

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Computer Science at the University of Calgary



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About CPSC

The Department of Computer Science continues to grow and flourish at the University of Calgary. This year we were pleased to welcome Dr. Rei Safavi-Naini as Professor and iCORE Chair in Information Security. We provide a stimulating environment for our approximately 150 doctoral and masters graduate students. The faculty, staff and students all strive to make Computer Science at the University of Calgary a great place to work and study.

Research Focus

The University of Calgary is committed in advancing its role as a research university. Computer Science has earned a reputation for high quality research and as new faculty join our department, more and more international collaborations are being forged, placing us among the best worldwide. Our faculty is excited about their research projects, many of which are inter-disciplinary, bringing computer science to fields such as medicine, biology, art and kinesiology.

Noteworthy

Denilson Barbosa was successful in receiving an AIF “Ingenuity New Faculty Award”.

Saul Greenberg appointed as University Professor in recognition of his contributions to research and the University of Calgary.

Saul Greenberg and **Sheelagh Carpendale** awarded an iCORE/Smart Technologies Industrial Chair in Interactive Technologies.

The CHCCS (Canadian Human Computer Communications Society) announced **Saul Greenberg**, as the recipient of an achievement award, for being one of the world’s leaders in human-computer interaction and computer-supported collaborative work.

Frank Maurer received a 2006 IBM Eclipse for Innovation Award for his work on agile acceptance testing of distributed J2EE applications

Robert Walker received a 2 year NSERC CRD Grant, his industrial partner is IBM Canada Ltd.

Carey Williamson appointed as an iCORE Chair in Performance Network.

The **iGem team** supervised by Christian Jacob was awarded first place in the “Conquest of Adversity” category at MIT’s iGem Competition to design and build genetically Engineered Machines. The team is comprised of students from both the Bachelor of Health Science and Computer Science programs.

Lori Shyba, Jim Parker’s PhD student, won the J.B. Hyne Research Innovation Award.

Jeff Boyd, awarded a NSERC Strategic Grant and is collaborating with J. Denzinger and A. Ramirez.

Moustafa Hammad awarded an NSERC-CRD as a CO-PI on the project “Intelligent Information Infrastructure for Wireless Multi-sensor Motes Applications” with Foothills Forest, Elk Valley Coal Corporation, and Wireless Edge Canada.

Karel Bergmann, **Jeffrey Erman**, **Jordan Kidney**, **Quang Trinh**, and **Min Xin**, were the first recipients of Computer Science’s Teaching Assistant Excellence Awards!

Gus Gutoski awarded the prestigious Chancellor’s Graduate Medal for academic standing.

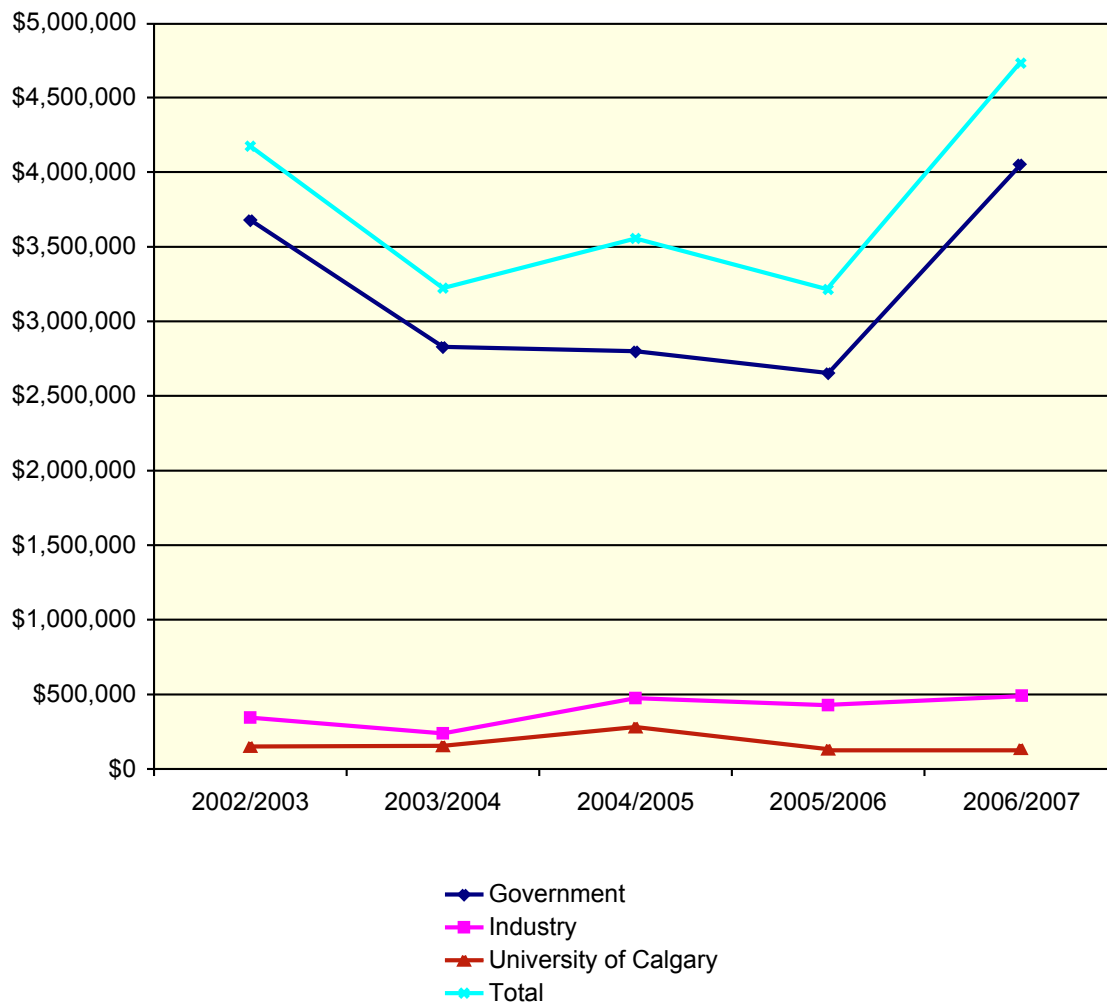


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Research Support

Funding research remains an ongoing challenge and although funding has increased slightly from industry and the University of Calgary, government grants continue to provide the bulk of these essential funds. This year the major increase in government funding is due to the hiring of Dr. Safavi-Naini and the inclusion of her iCORE award. Cuts to government funding and increased competition for government grants will remain a challenge in future years.

Source	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007
Government	\$3,679,905	\$2,829,522	\$2,800,792	\$2,653,169	\$4,084,645
Industry	\$343,819	\$237,569	\$474,408	\$428,172	\$530,631
Univ. of Calgary	\$150,000	\$155,715	\$280,963	\$132,274	\$138,200
Total	\$4,173,724	\$3,222,806	\$3,556,163	\$3,213,615	\$4,753,476





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Graduate Students Scholarships

<i>Name</i>	<i>Award</i>
Ruth Ablett, MSc	Lockhart Family Scholarship & Alberta Graduate Student Scholarship
Muhaimenul Adnan, PhD	iCORE International Graduate Student Scholarship & Dean's Entrance Scholarship
Thamer Albourae, MSc	Kingdom of Saudi Arabia Ministry of Higher Education Scholarship
Russel Apu, PhD	iCORE International Graduate Student Scholarship
Timothy Au Yeung, MSc	Queen Elizabeth II Graduate Scholarship
Sajib Barua, PhD	Dean's Doctoral Scholarship
Md. Naimul Basher, MSc	iCORE International
Karel Bergmann, MSc	Queen Elizabeth II Graduate Scholarship & Alberta Graduate Student Scholarship
John Brosz, PhD	NSERC PGS D & iCORE & Dean's Excellence Award
Ian Burleigh, PhD	NSERC PGS D & iCORE & Dean's Excellence Award
Jeyaprakash Chelladurai, PhD	Dean's Entrance Scholarship
Hung-Li Jason Chen, MSc	NSERC PGS M & iCORE & Alberta Graduate Student Scholarship
Bradley Cossette, MSc	Queen Elizabeth II Graduate Scholarship
Rylan Cottrell, MSc	Alberta Graduate Student Scholarship
Jeffrey Erman, MSc	Queen Elizabeth II Graduate Scholarship & Alberta Graduate Student Scholarship
Mahsa Eshraghi Boroojeni, MSc	iCORE International Graduate Student Scholarship
Furat Fawzi, MSc	Alberta Graduate Student Scholarship
Nathan Friess, MSc	NSERC CGS M & iCORE & Dean's Excellence Award
Gustav Gutoski, PhD	Chancellors Graduate Medal (for MSc thesis)
Emir Halepovic, PhD	NSERC CGS D & iCORE & Dean's Excellence Award
Mark Hancock, PhD	NSERC PGS D & iCORE & Alberta Ingenuity
Michael Hanna, MSc	Queen Elizabeth II Graduate Scholarship & Alberta Graduate Student Scholarship
Andreas Hirt, PhD	NSERC CGS D & iCORE & Alberta Ingenuity
Pauline Jepp, PhD	Fred A McKinnon Award
Namrata Khemka, MSc	NSERC PGS D & iCORE & Dean's Excellence Award
Keivan Kian Mehr	Queen Elizabeth II Graduate Scholarship
Taisya Krivoruchko, MSc	iCORE International
Anthony Lo, PhD	NSERC PGS D & iCORE & Dean's Excellence Award
Nayden Markatchev, MSc	Alberta Graduate Student Scholarship
Jessica Mason, MSc	Queen Elizabeth II Graduate Scholarship



Graduate Students Scholarships continued

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<i>Name</i>	<i>Award</i>
James McElroy, PhD	TR Labs
Grigori Melnik, PhD	Izaak Walton Killam Memorial Scholarship & iCORE
Fatima Mohammed Farag, PhD	Egyptian Government Scholarship
Md. Maruf Monwar, PhD	iCORE International Graduate Student Scholarship
Robert Morgan, MSc	Alberta Graduate Student Scholarship
Petra Neumann, PhD	Alberta Ingenuity & iCORE
Carman Neustaedter, PhD	Alberta Ingenuity & iCORE
Michael Nunes, MSc	NSERC PGS M & iCORE & Alberta Graduate Student Scholarship
Luke Olsen, PhD	NSERC PGS D & iCORE & Dean's Excellence Award & Dean's Entrance Scholarship
Shelly Park, MSc	Queen Elizabeth II Graduate Scholarship & Alberta Graduate Student Scholarship
K. Nadim Parvez, PhD	Dean's Doctoral Scholarship
Eric Penner, MSc	NSERC CGS M & iCORE & Dean's Excellence Award
Marcin Pilat, PhD	Queen Elizabeth II Graduate Scholarship & Special Top-Up Award
Richard Pusch, MSc	NSERC PGS M & iCORE
Mohammad Rahman, PhD	Queen Elizabeth II Graduate Scholarship & Special Top-Up Award
Faraz Rasheed, PhD	iCORE International Graduate Student Scholarship
Adam Runions, MSc	NSERC PGS M & iCORE & Alberta Graduate Student Scholarship
M. Omolade Saliu, PhD	NSERC CGS D & iCORE
Phillipa Sessini, MSc	NSERC CGS M & iCORE & Dean's Excellence Award
Xueling Shu, MSc	Alberta Graduate Student Scholarship
Richard Smith, PhD	Ruby Doctoral Scholarship
Torin Taerum, PhD	Dean's Entrance Scholarship
Shui-Chun Charlotte Tang, PhD	Alberta Ingenuity & iCORE
Kimberly Tee, MSc	Alberta Ingenuity & iCORE
Edward Tse, PhD	NSERC PGS D & iCORE & Alberta Ingenuity
Ullah, M Irfan, PhD	Government of Pakistan Scholarship
Mark Velichka, MSc	NSERC PGS M & iCORE & Alberta Graduate Student Scholarship
Ryan Vogt, PhD	NSERC PGS M & iCORE & Dean's Excellence Award
Min Xin, MSc	NSERC CGS M & iCORE & Dean's Excellence Award
James Young, PhD	NSERC CGS M & iCORE & Dean's Excellence Award
Jia Zeng, PhD	Graduate Faculty Council Scholarship
Torre Zuk, PhD	NSERC Industrial



MSC and PhD Final Oral Examinations

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<i>Name</i>	<i>Degree</i>	<i>Thesis</i>	<i>Supervisor</i>
Adnan, Muhaimenul	MSC	Incrementally Mining Dynamic Databases and Overcoming Main Memory Bottleneck in Mining Huge Databases	Reda Alhajj
Agyemang, Malik	PHD	Web Content Outlier Mining: Motivation, Framework and Algorithms	Ken Barker
Ashraf, Fatima	MSC	ClusTex: Using Clustering Techniques for Information Extraction from HTML Pages containing Semi-Structured Data	Reda Alhajj
Bajwa, Harpreet	MSC	Testing Process for Portal Applications	Frank Maurer
Baker, David	MSC	Course based	Rob Kremer
Bao, Yuliang	MSC	Hybrid Cache Invalidation Schemes in Mobile Computing Environments	Ken Barker
Bhawnani, Pankaj	MSC	An Integrated Method for 'When to Release' Decisions Based on Reliability?	Guenther Ruhe
Boyden, Sean	MSC	Streaming Media Performance with TCP Vegas	Mahanti/Williamson
Brunn, Meru	MSC	Curve Synthesis by Example	Costa Sousa/Samavati
Cai, Yong Xue	MSC	Course based	Guenther Ruhe
Cherlin, Joseph	MSC	Sketch-Based Modeling of Parametric Surfaces using Few Strokes	Costa Sousa/Samavati
Cieslak, Mikolaj	MSC	Stochastic Simulation of Pattern Formation: An Application of L-systems	Prusinkiewicz/Lemieux
Davis, Guy Dylan	MSC	Course based	Rob Kremer
Elliot, Kathryn	MSC	Contextual Locations in the Home	Greenberg/John E. Abraham
Fanea, Elena	MSC	Establishing Graphical and Formal Relationships between Visualizations of Multi-Dimensional Data	Sheelagh Carpendale
Gaurav, Abhishek	MSC	CoAllocation of Compute and Storage Resources in Grid Environments	Rob Simmonds
Gavinsky , Dmitry	PHD	Shared Randomness and Entanglement in Communication Complexity	Watrous/Cleve
Gebara, Dany Daniel	MSC	WaveQ: Combining Wavelet Analysis and Clustering for Effective Image Retrieval	Alhajj/John E. Abraham
Giles, Brett	MSC	Programming with a Quantum Stack	Robin Cockett
Houtzager, Gwen Mirjam	MSC	Optimizing Web Proxy Cache Placement	Carey Williamson
Khemka, Namrata	MSC	Comparing Particle Swarms and Evolution Strategies: Benchmarks and Application	Jacob/ Gerald Cole
Kian Mehr, Keivan	MSC	CARSVM: Classification by Integrating Class Association Rules and Support Vector Machine	Reda Alhajj
Kidney, Jordan James	MSC	Learning of Cooperative Behavior for Multi-agent Software Testing	Joerg Denzinger
Liu, Yu	MSC	Learning of Cooperative Behavior for Multi-agent Software Testing	John Aycock
Liu, Lawrence Yp	MSC	An Environment for Collaborative Agile Planning	Frank Maurer
Lo, Chiu Wa Anthony	MSC	VIREX: Powerful Visual Tool for Simple and User-friendly Querying of Relational Databases to Produce XML Documents	Reda Alhajj



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<i>Name</i>	<i>Degree</i>	<i>Thesis</i>	<i>Supervisor</i>
Luo, Yuan	MSC	Facial Model Metamorphosis Using Geometrical Methods	Marina Gavrilova
Luo, Huiming	MSC	Course based	Rob Kremer
Madhukar, Alok	MSC	Peer to Peer (P2P) Traffic Classification	Carey Williamson
Mahanti, Aniket	MSC	Characterising Usage of the AirUC WLAN	Carey Williamson
Mahmud, Shafquat	MSC	When Should Crosscutting Concerns Be of Concern in the Software Development Lifecycle?	Rob Walker
Mason, Katherine	PHD	A Framework for Element-Based Computer Graphics	Sheelagh Carpendale
McEwan, Gregor	MSC	Community Bar: Designing for Informal Awareness and Casual Interaction	Saul Greenberg
Neustaedter, Carman	PHD	Domestic Awareness and the Role of Family Calendars	Saul Greenberg
Olsen, Luke	MSC	Constraining Wavelets for Multiresolution	Samavati/Costa Sousa
Ozyer, Tansel	PHD	Alternative Approaches for Producing and Ranking Alternative Clustering.	Reda Alhajj
Poon, Kelly Lin	MSC	Physically-Based Modelling of Flowers	Jon Rokne
Prakash, Jerrall	MSC	Secure and Authenticated Communication for a Multi-Agent Framework	Rob Kremer
Ramachandran, Shantha	MSC	Numerical Results on Class Groups of Imaginary Quadratic Fields	Michael Jacobson
Rashid, Jibran	MSC	Nonlocality and the No-Signalling Polytope	John Watrous
Rizk, Philip	MSC	A Gridftp Overlay Network Service	Unger/Simmonds
Schmidt, Ryan	MSC	Interactive Modeling with Implicit Surfaces	Brian Wyvill
Severn, Aaron	MSC	Sketch-Based Assembly of Subdivision Surfaces	Faramarz Samavati
Siadat, Seyed	MSC	An Evaluation of Simultaneous Evolvability and Efficiency in Aspect-Oriented Software Development	Rob Walker
Smith, Colin Terence	PHD	On Vertex-Vertex Systems and Their Use in Geometric and Biological Modelling	P. Prusinkiewicz
Strömer, Julie	MSC	Immersive and Interactive Visualization of Volume Interiors with a Flashlight-Based Detail-in-Context Lens Tool	Barker/Christoph Sensen
Taerum, Torin	MSC	Real-Time Resolution Contextual Close-up of Clinical Volumetric Data	Costa Sousa/Samavati
Tat, Annie	MSC	Visualizing Digital Communication	Carpendale/Woodrow
Trinh, Quang	PHD	Semantic Interoperability Between Relational Databases in Large-Scale Environments	Ken Barker
Tu, Phong Nguyen	MSC	Course based	Frank Maurer
Udechukwu, Ajumobi Okwuchukwu	PDH	Reduced-Parameter Approaches to Time-Sensitive Discovery and Analysis of Navigational Patterns	Ken Barker
Viggers, Kevin Douglas	MSC	Improving the Modularity of Context-Sensitive Concerns through the Use of Declarative Event Patterns	Rob Walker
Wang, Chengfeng	MSC	Computational Geometry Methods in Fingerprint Identification	Marina Gavrilova
Wang, Ye	MSC	Simulating Chinese Calligraphy and Painting in RealTime	Jon Rokne
Wecker, Lakin	MSC	Synthesizing Techniques Based on Multiresolution	Samavati/Gavrilova
Werbicki, Paul John	MSC	Developing Applications with Multiple Programming Languages – an Investigation using C++ and Java	Rob Kremer
Wormsbecker, Ian Brian	MSC	Channel Selection Strategies for Multi-Channel MAC Protocols in Wireless Ad Hoc Networks	Carey Williamson
Xiong, Wenliang	MSC	In-Container Testing for Web Portal Applications	Frank Maurer



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Research Personnel

Post Doctoral Fellows

Isenberg, Tobias	<i>Applying non-photorealistic rendering to information visualization (Carpendale)</i>
Hofstra, Peter	<i>Theoretical Computer Science (Cockett)</i>
Barbier de Reuille, Pierre	<i>Biological Modelling & Visualization (Prusinkiewicz)</i>

Researcher

Area of research/Lab

Arlitt, Martin	<i>Wireless Networks/Williamson/Unger</i>
Bauld, Eric	<i>Decision support/Ruhe</i>
Bowes, Jeff	<i>Databases/Barker</i>
Cossette, Brad	<i>Decision support/Ruhe</i>
Curry, Roger	<i>Grid Research Centre/Unger/Simmonds</i>
Fox, Mark	<i>Grid Research Centre/Unger/Simmonds</i>
Garth, Victor	<i>Databases/Barker</i>
Gaurav, Abishek	<i>Grid Research Centre/Unger/Simmonds</i>
Goodlad, David	<i>Decision support/Ruhe</i>
Houtzager, Gwen	<i>Wireless Networks/Williamson</i>
Kiddle, Cameron	<i>Grid Research Centre/Unger/Simmonds</i>
Kivi, Derek	<i>Grid Research Centre/Unger/Simmonds</i>
Lane, Brendan	<i>Biological Modeling/Prusinkiewicz</i>
Luo, Jingxiang	<i>Wireless Networks/Williamson</i>
Mahanti, Aniket	<i>Wireless Networks/Williamson</i>
Noumen, Etienne	<i>Databases/Barker</i>
Rizk, Philip	<i>Grid Research Centre/Unger/Simmonds</i>
Simmonds, Robert	<i>Grid Research Centre/Unger</i>
Sun, Hongxia	<i>Wireless Networks/Williamson</i>
Wong, Nelson	<i>Human Computer Interaction/Greenberg</i>
Wormsbecker, Nathan	<i>Wireless Networks/Williamson</i>
Wu, Qian	<i>Wireless Networks/Williamson</i>
Wu, Yujing	<i>Wireless Networks/Williamson</i>



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Research Personnel continued

Graduate students

Degraaf, R	Kamaluddeen, Nuha	Ullah, Irfan
Leighton, Gregory	Dohotaru, Catalin	Al-Emran, Ahmed
Agyemang, Malik	Zhang, Hongchao	Mohamed, Abdallah
Duta, Angela	Bhalla, Navneet	Brosz, J
Rahman, Rasheed	Pilat, Marcin	Chen, Hung-LI
Williams, Pele	von Mammen, Sebastian	Severn, A
Joevenazzo, Jill	Bergman, Karel	Sadeghi, Javad
Sadikali, Akil	Hirt, Andreas	Shirmohammadi, Mitra
Hindrichs, Uta	Krivoruchko, Taisya	Eshraghi, Mahsa
Keijser, Jeroen	Lorimer, William	Aikema, David
Tat, Annie	Ramchandran, Shantha	Akshay, Abhinav
Tobiasz, Matthew	Velichka, Mark	Elahi, Tanvire
Guo, X	Becerra, Gabriel	Markatchev, Nayden
Nichols, Sean	Heard, Jason	Tan, Tingxi
Tang, Ning	Gopinathan, Ajay	Rizk, Philip
Anastacio, Fabricio	Basher, Naimul	Cottrell, Rylan
Kidney, Jordan	Erman, Jeffrey	Holmes, Reid
Zheng, Wei Wei	Sessini, Phillipa	Mahmud, Shafquat
Apu, Russel	Deng, Chengyao	McIntyre, Mark
Bhattacharya, Priyadarshi	Melnik, Grigori	Rawal, Bhavya
Hasan, Mahmudul	Morgan, Robert	Siadat, Jamal
Monwar, Maruf	Park, Shelly	Gavinsky, Dmitry
Luo, Yuan	Cieslak, M	Gerhardt, Heath
Larkin, Wecker	Smith, Richard	Rashid, Jibran
Diaz-Marino, Rob	Sekhon, Ravdeep	Boyden, Sean
Elliot, Kathryn	Wang, Chengfeng	Cao, Jean
McEwan, Gregor	Wang, Y	Gong, Minwei
Smale, Stephanie	Bhawnani, Pankaj	Parvez, KN
Neustaedter, carman	Du, Gengshen (Kelly)	Obied, Ahmed
Hegazy, Islam	Li, Jingzhou	DeGroot, Erwin
Mohammed-Farrag, Fatima	McElroy, James	Jepp, Pauline
Omotayo, Adesola	Saliu, Omolade Moshood	



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Undergraduate students and their supervisors

Park, Justin	<i>Barbosa</i>	Goyette, Brina	<i>Kremer</i>
Zholudz, Yanina	<i>Barbosa</i>	McIntyre, Sean	<i>Kremer</i>
Wan, Di	<i>Barbosa</i>	Sedach, Vladimir	<i>Kremer</i>
Lynch, Sean	<i>Barbosa</i>	Sessini, Phillipa	<i>Mahanti</i>
Elliot, Grant	<i>Barbosa</i>	Leventer, A	<i>Mahanti</i>
Stagg, Andrew	<i>Barbosa</i>	Walny, Jagodo	<i>Maurer</i>
Stedman, Arthur	<i>Barbosa</i>	Dhillon, Harminder	<i>Maurer</i>
Sayles, Maxwell	<i>Boyd</i>	Wilson, Patrick	<i>Maurer</i>
Jenskin, Steve	<i>Carpendale</i>	Alesksic, Darko	<i>Rokne</i>
Seniuk, Andrew	<i>Carpendale</i>	Jackson, Kevin	<i>Rokne</i>
Nix, Simon	<i>Greenberg</i>	Zhang, John	<i>Rokne</i>
Shabash, Boris	<i>Jacob</i>	Bauld, Eric	<i>Ruhe</i>
King, Patrick	<i>Jacob</i>	Dunsmore, Devlin	<i>Ruhe</i>
Steil, Scott	<i>Jacob</i>	Echtner, Martin	<i>Ruhe</i>
Novakowski, Scott	<i>Jacob/Boyd</i>	Przepiora, Mark	<i>Ruhe</i>
Baradoy, Graham	<i>Kremer/Barbosa</i>	Kapur, Puneet	<i>Walker</i>

Visitors

Johnen, Collette	<i>LRI, Universite de Paris, Sud, France</i>
Kawash, Jalal	<i>American University of Sharjah, UAE</i>
Flores Mendez, Roberto	<i>Christopher Newport University, Virginia, USA</i>
Tessem, Bjonar	<i>University of Bergen, Norway</i>
Weber, Sebastien	<i>University of Applied Sciences, Mannheim, Germany</i>
Hoemig, Sascha	<i>University of Applied Sciences, Mannheim, Germany</i>
Herbig, Andreas	<i>University of Applied Sciences, Mannheim, Germany</i>
Kolenda, Henning	<i>University of Applied Sciences, Mannheim, Germany</i>
Richter, Michael	<i>University of Kaiserslautern, Germany</i>
Erdogmus, Hakan	<i>NRC Institute for Informaiton Technology, Ottawa</i>
Ferraro, Pascal	<i>LaBRI - universit� Bordeaux, France</i>
Escobar, Abraham	<i>INRA, France</i>
Ahmad, Nasri	<i>American University of Beirut</i>
Cretton, Frabrice	<i>University of Fribourg, Switzerland</i>
Imhof, Jerome	<i>University of Fribourg, Switzerland</i>
Schwartz, Martin	<i>University of Magdebury, Germany</i>
Viller, Steve	<i>University of Queensland, Australia</i>
Collins, Christopher	<i>University of Toronto, Canada</i>
Godin, Christoph	<i>INRA, France</i>
Costes, Evelyne	<i>INRA, France</i>
Oliver, Michel	<i>Universite d'Evry Val d'Essonne , France</i>



Seminars

CPSC 2006/2007

Computer Science throughout the year encourages and supports information sharing by hosting seminars presented by individuals within the department and by invited speakers.

Department Presentations

Carey Williamson An Inside Look at WWW2007

Invited Speakers

Andy Cockburn	Faster (and faster) scrolling with automatic zooming and space-filling thumbnails
Antoine Spicher	Paths and Patches: Declarative Handling of Multi-Dimensional Data-Structures
Helen Sharp	Empirical Studies of Software Development
Takeo Igarashi	Interactive “smart” Computers (Sketching Interfaces for 2D/3D Graphical Applications)
Colette Johnen	Implementing Read/Write State Models with Link-Registers
Marco Dorigo	Self-assembling in Swarm Robotics: The Swarm-bot Project
John Wilkes	Tuscany – economy-based service-oriented computing
Bill Bone	Sizing up the Next Big Thing in Information Technology
Philippe Kruchten	Software Architecture Decisions – A Missing Element in Architectural Knowledge
Stephen Viller	Lo-fi matchmaking: A Study of Social Pairing for Backpackers
Tim Bell	Computer Science Unplugged
Steven Tanimoto	Transparent Interfaces to Software Systems: Helping Users Understand Their Tools
Hiroaki Ogata	Computer Supported Ubiquitous Learning in the Context of Language Learning
Gail Murphy	Reducing Information Overload for Software Developers
Gregor McEwan	Supporting teams collaborating remotely
Rob Deline	“HIP” Tools for Software Development (with Gina Venolia and Andrew Begel)
Volker Wulf	A Practise-based Approach to Human Centred Computing
Ihab Ilyas	The RankDB Project: Supporting Ranking in Database Systems
Catherine Plaisant	Network Visualization: Seeking Alternatives to the Traditional Node Link Diagram
Andrea Bunt	Supporting Interface Customization Using a Mixed-Initiative Approach
Pau Atela	New Geometric Concepts for Phyllotaxis
Andrea Bunt	Supporting Interface Customization Using a Mixed-Initiative Approach
Sergei Bereg	Open Problems in Computational Geometry
Lionel C. Briand	Ensuring the Dependability of Software-Intensive Systems
Michael M. Richter	Similarity and Utility
Paolo Cappellari	Model Independent Schema and Data Translation
Ton Kalker	The State of Digital Watermarking
Mary Cummings	Decision and Collaboration Support for Time-Critical Unmanned Vehicle Operations (with Stacey Scott)
Geoff Moon	Intellectual Property and Commercialization



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Graduate Seminars

Stephanie Smale	Broadcasting Information via Display Names in Instant Messaging
Anguo Dong	ByCT: Bluejay Comparison Tool
Ye Wang	Simulating Chinese calligraphy and ink painting in real time
Jibrán Rashid	Introduction To Nonlocality
Mikolaj Cieslak	Stochastic Simulation of Pattern Formation: An Application of L-systems
Pankaj Bhawnani	An Integrated Method for 'When to Release' Decisions Based on Reliability
Yuan Luo	NPAR by Example: Line drawing facial animation from photographs
Shafquat Mahmud	When Should Crosscutting concerns Be of Concern in the Software
Keivan Kian Mehr	Effective Classification by Integrating Support
Muhaimenul Adnan	Incremental Mining of Association Rules in Dynamic Databases
Luke Olsen	Constraining Wavelets for Multiresolution
Gabriel Becerra	A Social Commitment-Based Agent-Controlled Constraint Environment: An Implementation and Investigation
Wenliang Xiong	In-Container Testing for Web Portal Applications
Aniket Mahanti	Characterising Usage of the AirUC WLAN
Shantha Ramachandran	Numerical Results on Class Groups of Imaginary Quadratic Fields
Torin Taerum	Real-Time Super Resolution Contextual Close-up of Clinical Volumetric Data
Phil Rizk	A GridFTP Overlay Network Service
Aaron Severn	A sketch-based approach to assembling subdivision surfaces with Boolean operations
Carman Neustaedter	The Calendar is Crucial TM : Coordination and Awareness Through Family Calendars
Sean Boyden	Multimedia Streaming with TCP Vegas
Julie Stromer	Immersive and Interactive Visualization of Volume Interiors
Priyadarshi Bhattacharya	CRYSTAL - A new density-based fast and efficient clustering algorithm
Jamal Siadat	An Evaluation of Simultaneous Evolvability and Efficiency In Aspect-Oriented Software Development
Lakin Wecker	Repairing Terrain: A multiresolution approach
Nuha Kamaludden	Comparing Dynamic Software Transactional Memory and Locking Implementations of XML Documents

Art Exhibits

G. Hushlak, C. Jacob, N. Bhalla, P. Nuytten, S. Novakowski

BrainSwarms, Bio/Med SciART, 8th Annual International Exhibition of Digital Prints

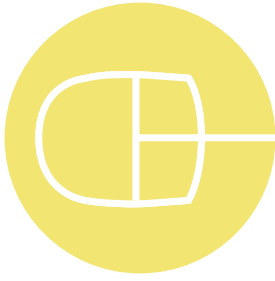
New York Hall of Science, Sep. 30, 2006 - Jan. 15, 2007

Daily Planet, Discovery Channel, October 23, 2006, Lessons from Mother Nature on How to Manage Traffic featuring Christian Jacob.

Installation at the Victoria Convention Centre by Jeff Boyd, Christian Jacob, Jerry Hushlak and their students entitled "Surveillanceart.com".

Workshops and Conferences

Marina Gavrilova	Intl. Symposium on Voronoi Diagrams in Science and Engineering (ISVD 2006)
Peter Hoyer	6 th Canadian Summer School on Quantum Information Processing (EQUIPS06)
Robin Cockett	Foundational Methods in Computer Science (FMCS06)
Robin Cockett	Categories and Semigroups Workshop, 2006
Carey Williamson	SummerSim 2006



Faculty

REDA ALHAJJ, Professor

Research Interests:

Reda's primary research is focused on object-oriented databases, data integration and re-engineering, data mining, multiagent systems, character recognition, bio-data mining and analysis.

Selected publications 2006/2007:

- T. Özyer, R. Alhajj and K. Barker, "Intrusion Detection by Integrating Boosting Genetic Fuzzy Classifier and Data Mining Criteria for Rule Pre-screening," *Journal of Network and Computer Applications*, Vol.30, No.1, pp.99-113, January 2007
- A. Malik, K. Barker, and R. Alhajj, "A comprehensive survey of numeric and symbolic outlier mining techniques," *Intelligent Data Analysis*, Vol.10, No.6, pp.521-538, 2006.
- O. Abul, R. Alhajj, and F. Polat, "Powerful Approach for Effective Finding of Significantly Differentially Expressed Genes," *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, Vol.3, No.3, pp.220-231, September 2006.
- J. Du, R. Alhajj and K. Barker, "Genetic Algorithms Based Approach to Database Vertical Partition," *Journal of Intelligent Information Systems*, Vol.26, No.2, pp.167-183, March 2006



Project:

- Data mining, Biocomputing and Bioinformatics, XML and Data Re-engineering.

Graduate Students:

Muhaimenul Adnan, PhD – Incremental Mining Techniques
Mohammed S. Alshalalfa, MSc – Bioinformatics and Biocomputing
Derar Hasan Assi, MSc – Data Mining
Sajib Barua, PhD – Multiagent based approach for spatial outlier mining
Jeff Chang, MSc – Association-Rules Mining
Furat Fawzi, MSc – Relational Database into Fuzzy XML
Micheal Hanna, MSc – Natural Language Interface to Databases.
Mohammad Khabbazzhaye Tajer, PhD – Data Mining
Keivan Kian, PhD – CARSVML Classification by Integrating Class Association Rules
Igor Kiselev, MSc – Multiagent Systems
Anthony Lo, PhD – XML Databases
Lizhe Ma, MSc – XML Databases
Faraz Rasheed, PhD – Web databases
Jia Zeng, PhD – Multiagent based approach for TIS Prediction
Ming Zhang, PhD – Mining XML Documents

<http://www.cpsc.ucalgary.ca/~alhajj>

JOHN AYCOCK, *Assistant Professor**Research
Interests:*

John has been researching computer viruses, worms and other malicious software for several years, and is now looking at spam and spyware too. These are huge problems in our computer-dependent society, and it is vital that future threats are identified and countered.

One reason for lapses in computer security is program error. John also looks at software tools and programming languages which make the programming task easier and less error-prone.

*Selected
publications
2006/2007:*

- J. Aycock. Computer Viruses and Malware. Advances in Information Security, volume 22, Springer-Verlag, 2006. J. Aycock and N. Friess. Spam Zombies from Outer Space, 15th Annual EICAR Conference, 2006, pp. 164-179.
- J. Aycock, R. deGraaf, and M. Jacobson, Jr. Anti-Disassembly using Cryptographic Hash Functions, Journal in Computer Virology 2, 1 (August 2006), pp. 79-85.
- J. Aycock. Teaching Spam and Spyware at the University of C@lg4ry, Third Conference on Email and Anti-Spam (CEAS 2006), short paper, pp. 137-141.
- R. Vogt, J. Aycock, and M. Jacobson, Jr. Army of Botnets, 14th Annual Network and Distributed System Security Symposium, 2007, pp. 111-123.

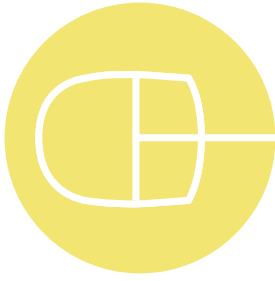
*Project:*

- SPARK, a toolkit for implementing domain-specific languages in Python.

*Graduate
Students:*

- Randal Acton**, Phd – AI and multi-agent systems in information security (co-supervisor J. Denzinger)
Rennie de Graaf, MSc – Applied Network Security (co-supervisor M. Jacobson)
Nathan Friess, MSc – Botnets and related privacy issues
Margaret Nielsen, MSc – Privacy issues
Ryan Vogt, MSc – Sandboxing for computer security. (co-supervisor M. Jacobson)

<http://pages.cpsc.ucalgary.ca/~aycock/>



Faculty

DENILSON BARBOSA, *Assistant Professor*

Research Interests:

Denilson is interested in all aspects of databases and the Web, particularly the management of semi-structured data and XML. XML has become the standard format for encoding and exchanging data on the Web, and is becoming increasingly popular as underlying format for standard office applications, such as text-editors and spreadsheets. As a result, there is an increasing need for efficient XML data management techniques.

Denilson has also been working on autonomous data management, which aims at developing database systems that can improve their performance over time. In particular, he has been working on benchmarking autonomic tools and developing learning-based techniques for improving the efficacy of such tools.

Selected publications 2006/2007:

- Denilson Barbosa, Gregory Leighton, and Andrew Smith. Efficient Incremental Validation of XML Documents After Composite Updates. In Proceedings of the 4th International XML Database Symposium, pages 107-121, Seoul, Korea, September 10-11, 2006.
- Denilson Barbosa and Alberto O. Mendelzon. Declarative Generation of Synthetic XML Data. *Softw., Pract. Exper.* 36(10), 1051-1079, John Wiley & Sons; 2006.
- Denilson Barbosa, Laurent Mignet, and Pierangelo Veltri. Studying the XML Web: Gathering Statistics from an XML Sample. *World Wide Web* 8(4), 413-438. Springer Business + Media; 2005. DOI: 10.1007/s11280-005-1544-y



Projects:

- XML Data Management for Web Services, NSERC.
- Autonomic Data Management.
- ToXgene, a declarative generator of synthetic XML data.

Graduate Student:

Gregory Leighton, PhD – XML Data Management
Justin Park, MSc – XML Data Management

<http://pages.cpsc.ucalgary.ca/~denilson/>

KEN BARKER, *Professor and Head**Research
Interests:*

Ken's research interests are quite wide-ranging under the general umbrella of database systems. Much of recent work has focused on various applications of data mining but contributions have also been made to areas of health informatics, mobile data management, XML repositories, data design, data integration, data security, and bioinformatics. He is now beginning a project aimed at creating a privacy-preserving database management system.

*Selected
publications
2006/2007:*

- Camorlinga, S. and K. Barker, "A Complex Adaptive System Based on Squirrel Behaviors for Distributed Resource Allocation", *Journal of Web Intelligence and Agent Systems*, IOS Press Publishers, Volume 4, Number 1, March 2006, pp 1-23.
- Omotayo, A., M.A. Hammad, and K. Barker. Efficient Data Harvesting for Tracing Phenomena in Sensor Networks. in *Proceedings of the 18th International Conference on Scientific and Statistical Database Management (SSDBM)*. 2006. Vienna, Austria.
- Rahman, R.M., K. Baker and R. Alhadjj, Replica Placement in Data Grid: A Multi-objective Approach, *Proc. of International Conf. on Grid and Cooperative Computing*, Springer-Verlag LNCS, Beijing, China, Nov. 2005.

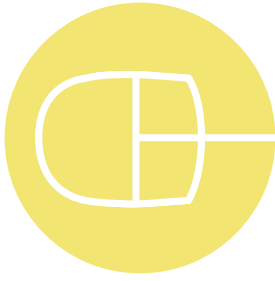
*Project:*

- PP-DBMS, XML Data Design, Mobile Cache Management, Emergent Computing, and Data Mining.

*Graduate
Students:*

Steven Choy, MSc – XML Data Modeling
Nelson Chu, PhD – Tuple Space in Grids
Anguo Dong, MSc – Data Mining (co-supervisor C. Sensen)
Angela Duta, PhD – XML, data security and privacy
Paul Gordon, PhD – Databases
Jeroen Keijser, MSc – Presence in virtual Reality (co-supervisor S. Carpendale)
Brenan Mackas, MSc – Databases
Christopher Marriott, PhD – Databases
George Shi, PhD – Ontology based Geospatial Information Retrieval and Extraction
Julie Stromer, MSc – Next generation bioinformatics (co-supervisor C.Sensen)
Adepele Willams, PhD – Concept hierarchies in data mining
Hong Xu, MSc – Databases
Omotayo Adesola, PhD – Development of efficient information for data management

<http://pages.cpsc.ucalgary.ca/~barker/>



Faculty

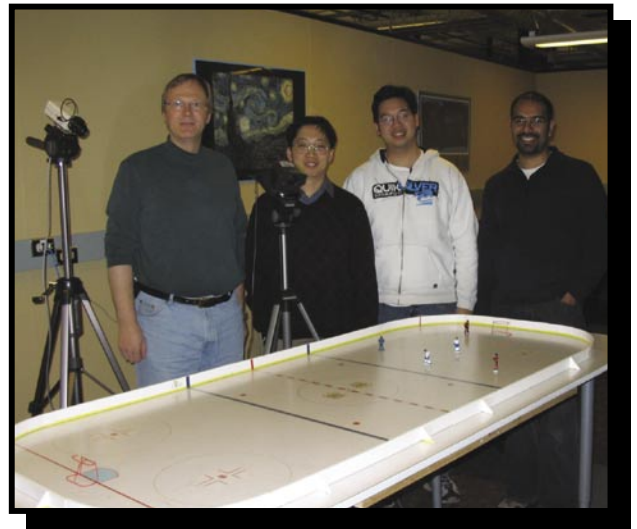
JEFFREY BOYD, Associate Professor

Research Interests:

Jeffrey's research is in the area of computer vision, focusing on the analysis of motion. Much of his work has been in the area of biometric recognition of people by their gait. He co-authored an early paper that described a method that could identify individual people by looking at temporal patterns in the descriptions of walking figures. As worldwide interest in biometrics grows, Jeffrey is refining techniques in an effort to build machine systems that emulate the way humans interpret the motion they see. Jeffrey also does work on multi-media information systems that extract descriptions of dynamic scenes from video cameras, and build models of the scene for archival, transmission, and display for remote viewers. These systems combine low-level video processing algorithms with XML documents exchanged over a network to build elaborate systems for multimedia surveillance. Applications of the work include multimedia network broadcast of sporting events, surveillance for traffic and security, and interactive art.

Selected publications 2006/2007:

- C. Guo, J. Boyd, S. Greenberg, E. Sharlin, "Monitoring the home environment using domestic robot," Graphics Interface 2007, Montreal, Canada, June 2007.
- Q. Nguyen, S. Novakowski, J. E. Boyd, C. Jacob, G. Hushlak, "Motion swarms: video interaction for art in complex environments", proceedings of ACM Multimedia 06, Santa Barbara, CA, October 24-26, 2006.
- J. E. Young, E. Sharlin, and J. E. Boyd, "The use of Haar-like features in bubblegrams: a mixed reality human-robot interaction technique", Proceeding of IEEE CASE 06, Shanghai, China, October 7-10, 2006.



Projects:

- Human motion analysis: the development of a machine vision systems that evaluate human athletic performance by emulating the way humans interpret the motion of athletes.
- Tracking Systems for Multimedia Sports Broadcast: Systems that extract object trajectories of humans and other moving objects from video sequences. The extracted information is used to build dynamic scene models that we can archive, transmit over a network and display. One significant application we are developing is tracking hockey players in order to analyze their motion for coaching purposes, or for broadcast to viewers.

Graduate Students:

Jill Joevenazzo, MSc – Gait perception using passive dynamic walkers
Quoc Nguyen, MSc – Computer Vision
Akil Sadikali, MSc – Computer Vision

<http://pages.cpsc.ucalgary.ca/~boyd/>

SHEELAGH CARPENDALE, *Associate Professor & Canada Research Chair in Information Visualization*

Research Interests:

As a researcher in information visualization methodologies, Sheelagh explores different ways of making the invisible visible, and develops new interaction methods to support people actively exploring and manipulating information spaces. The goal is to promote comprehension by creating effective visual tools. Creating visualizations poses problems both in terms of developing appropriate information representations and presenting those representations in a manner that is meaningful to the user. While her research has concentrated on the second point, presentation issues, Sheelagh includes sufficient representational research in order to ground her work in real data, real tasks and real users.



Selected publications 2006/2007:

- Hancock, M.S., Carpendale, S., Cockburn, A. Shallow-Depth 3D Interaction: Design and Evaluation of One-, Two- and Three-Touch Techniques. In Conf. Human-Computer-Interaction, CHI'07, 2007
- Keijser J., Carpendale, S., Hancock, M.S., Isenberg, T. (2007). Exploring 3D Interaction in Alternate Control-Display Space Mappings. Proc. IEEE Symposium on 3D User Interfaces, 3DUI'07, pages 17-24, March 2007

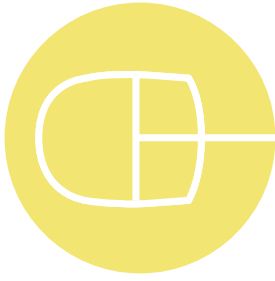
Projects:

- Elastic presentation.
- Collocated collaboration.
- Interactions on large displays.
- Visualizing human dialogues.
- Visualizing uncertainty in data.

Graduate Students:

Mark Hancock, PhD – Exploring Issues in 3D Collaborative Tabletop Interfaces
Uta Hinrichs, MSc – Integrated input for tabletop displays
Jeroen Keijser, MSc – Alternate control/display space mapping for 3D interaction (co-supervisor K. Barker)
Petra Neumann, PhD – Collaborative Information Visualization Interfaces
Eric Penner, MSc – Interactive exploration of 3D Visualization (co-supervisor R. Mitchell)
Charlotte Tang, PhD – Asynchronous, Collocated Collaboration
Annie Tat, MSc – Visualization Human Dialog
Matthew Tobiasz, MSc – Information Visualization
Torre Zuk, PhD – Visualization uncertainty

<http://innovis.cpsc.ucalgary.ca>



Faculty

ROBIN COCKETT, *Professor*

Research Interests:

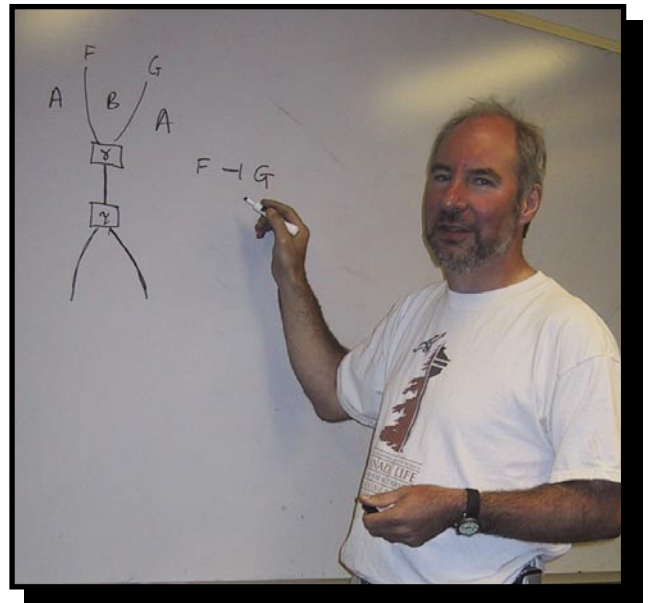
Dr. Cockett and his students use categorical proof theory to understand program semantics and to design programming languages with special formal properties. For example; How can one design a concurrent programming language which cannot deadlock or livelock? Using the proof theory of linear logic it is actually possible to provide such a system, however, this is far from the end of the story. There remains practical issues: How complex is the required semantic checking (type checking, linearity constrains etc.); What is the operational semantics of such a language (e.g. abstract machines, interface with operating system etc.); How expressive is such a language (useability and theoretical expressive power), etc.

Selected publication 2006/2007:

- “A language for Multiplicative-additive Linear Logic” (with Craig Pastro) In proc. of the 10th Conference on Category Theory in Computer Science (CTCS 2004) editor Lars Birkedal. Electronic Lecture Notes in Computer Science, Elsevier, Vol 122 (pages 23-65) Appeared in 2005.

Projects:

- Channel based concurrency (with C. Pastro and L. Santocanale).
- Classical restriction categories (with Ernie Manes and X. Guo).
- Computability and realizability theory for restriction categories (with P. Hofstra and X. Guo).
- Smooth and differential categories (with R. Blute and R. Seely).
- Program transformation tools for datatypes (with V. Vene).
- Flow graph optimization for compilers (with M. Burrell).
- Type checking for termination and uniqueness in the CHARITY programming language (with D. Harrington).



Graduate Students:

Brett Gilles, MSc – Implementation and semantics of quantum programming languages
Xiuzhan Guo, PhD – Decision problems in linear categories
Sean Nichols, MSc – Category Theory
Ning Tang, MSc – Model compiler optimizations using Categorical Theory

<http://pages.cpsc.ucalgary.ca/~robin>

MARIO COSTA SOUSA, *Assistant Professor*

Research Interests:

Mario's research interests are scientific and medical visualization, computer graphics and animation techniques. He performs research in non-photorealistic rendering (NPR), illustrative visualization, 3D modeling and volumetric display software.

Selected publications 2006/2007:

- Lapides, P., Sharlin, E., Sousa, M.C. and Streit, L., "The 3D Tractus: A Three-Dimensional Drawing Board", Proc. of First IEEE International Workshop on Horizontal Interactive Human-Computer Systems (TableTop 2006)

Project:

- Research and development of NPR methods for 3D model construction/analysis, natural media simulation, rendering techniques and systems for computer-generated illustrative visualization and composition in two main contexts: (1) Traditional illustration, by providing tools to help scientific and medical illustrators with the complexities of their work, preserving their style and adapting to their preferred ways of thinking and working; (2) Scientific analysis and visualization, by mainly providing novel ways on visualizing scientific data, physical phenomena, simulations, etc., and by presenting abstractions to users in ways that reconcile expressiveness and ease-of-use.



Graduate Students:

Fabricio Anastacio, MSc – Sketch-based Modeling of Plants (co-supervisor P. Prusinkiewicz)

John Brosz, PhD – Modeling Terrains By Example (co-supervisor F. Samavati)

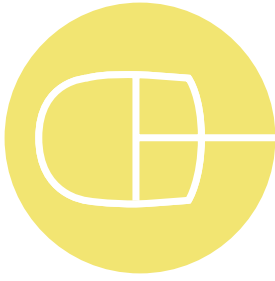
Hung-Li Jason Chen, MSc – Volumetric Deformation and Rendering (co-supervisor F. Samavati)

Pauline Jepp, PhD – Sculpting using Interactive Implicit Modeling. (co-supervisor B. Wyvill & J. Denzinger)

Luke Olsen, MSc – Sketch-based Mesh Augmentation

Torin Taerum, Phd – Computer-generated Medical Illustrations (co-supervisor F. Samavati)

<http://pages.cpsc.ucalgary.ca/~mario/>



Faculty

JÖRG DENZINGER, *Associate Professor*

Research Interests:

Jörg's research is in the areas of Artificial Intelligence and Multi-Agent Systems. One of his main interests is learning cooperative behaviour of agents. This encompasses developing appropriate agent architectures, basic learning and evaluation methods for behaviour (from the perspective of an individual, perhaps selfish, agent and of a team), specialized adaptation methods and methods to model other agents. The application areas he is interested in range from computer games to finding security problems in systems. His second major research topic is distributed, knowledge-based search. This deals with developing cooperation concepts so that several computers can work together on problems such as scheduling, theorem proving, optimizing processes or searching the Internet.



Selected publications 2006/2007:

- Denzinger, J.; Hamdan, J.: Improving Observation Based Modeling of Other Agents using Tentative Stereotyping and Compactification through kd-tree Structuring, Web Intelligence and Agent Systems: An International Journal Vol.4(3), 2006, pp. 255-270.
- Kidney, J. ; Denzinger, J.: Testing the limits of emergent behavior in MAS using learning of cooperative behavior, Proc. ECAI 2006, Riva del Garda, 2006, pp. 260-264
- Afsharchi, M. ; Far, B.H. ; Denzinger, J.: Ontology-Guided Learning to Improve Communication between Groups of Agents, Proc. AAMAS 2006, Hakodate, 2006, pp. 923-930.

Projects:

- Cooperative Data Mining for Health Care Applications.
- Improving Agent Communication by Taxonomy-based Learning.
- Cooperative Search with Global and Agent-specific Goals.
- Intelligent Agents in Commercial Computer Games.
- Evolving Attack Teams to Test and Improve Computer Security.

Graduate Students:

Randal Acton, PhD – AI & multi-agent systems in information security (co-supervisor J. Aycock)
Joseph Chang, MSc – AI-methods in the re-use of software (co-supervisor R. Walker)
Alan Fedoruk, PhD – Development of a framework for cooperative search
Jie Gao, PhD – Cooperative data mining methods in health care data
Pauline Jepp, PhD – Sculpting using Interactive Implicit Modeling. (co-supervisor M. Costa Sousa & B. Wyvill)
Tyson Kendon, MSc – AI & multi-agent systems
Jordan Kidney, PhD – Testing for unwanted emergent behavior in multi-agent systems
Shelly Park, MSc – Capturing verbal documentation in Agile planning (co-supervisor F. Maurer)
Sanjeev Paskarade, MSc – AI & multi-agent systems
Keith Randell, MSc – Learning techniques to solve (NP-hard) optimization problems

WAYNE EBERLY, *Professor and Associate Head, Undergraduate Affairs*

*Research
Interests:*

Wayne's research concerns the design and analysis of algorithms for problems in computer algebra. Randomized algorithms, and algorithms for computations over finite fields have been the focus of much of Wayne's recent work. This research generally attempts to analyze and improve algorithms for fundamental computational problems, such as the solution of systems of linear equations. Since fundamental problems are studied, potential applications of this work are diverse.

Wayne's work is also informed by experimental work and the evidence about the performance of various heuristics in realistic applications that such work can provide. In particular, Wayne's recent work attempts to explain the behaviour of heuristics that have recently been used to solve large sparse systems of equations that are formed when the "Number Field Sieve" algorithm is used for integer factorization. His analytical work can (and has) provide explanations for poorly understood phenomena reported in the experimental literature, as well as modifications of algorithms in order to deal with infrequent failure conditions that experimental work might miss.



*Selected
publication
2006/2007:*

- W.Eberly, M.Giesbrecht, P.Giorgi, A.Storjohann, and G.Villard, Solving Sparse Rational Linear Systems, Proc., 2006 International Symposium on Symbolic and Algebraic Computation, Genova, Italy, 2006, pp.63-70

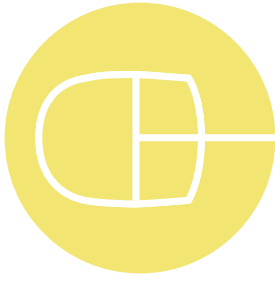
Projects:

- Analysis of Block Lanczos and Block Wiedemann Algorithms: An analysis and improvements of heuristics that are currently used to solve large, sparse systems of equations in number-theoretic applications (including modern integer factorization algorithms), resulting in randomized algorithms that are both efficient and provably reliable in all cases.
- Decomposition of Matrix Algebras: Efficient and reliable algorithms for use by mathematicians in their experimental work to investigate properties of groups, rings, and similar structures. Several of the algorithms proposed to date have been implemented in the computer algebra systems Magma and GAP and are now in use.

*Graduate
Student:*

Wei Wei Zheng, PhD – Design and analysis of algorithms for large sparse matrix computations

<http://www.cpsc.ucalgary.ca/~eberly>



Faculty

MARINA GAVRILOVA, *Associate Professor*

Research Interests:

Marina's research is on applications of geometric algorithms to biometrics, GIS, image processing and computer modeling. Related issues such as data representation, numerical stability, optimization and efficient analysis of models are of interest. Specific areas where the developed methodologies are applied include mechanical and biological systems, terrain visualization, GIS (geographical information systems) and synthesis of biometric data.

Selected publications 2006/2007:

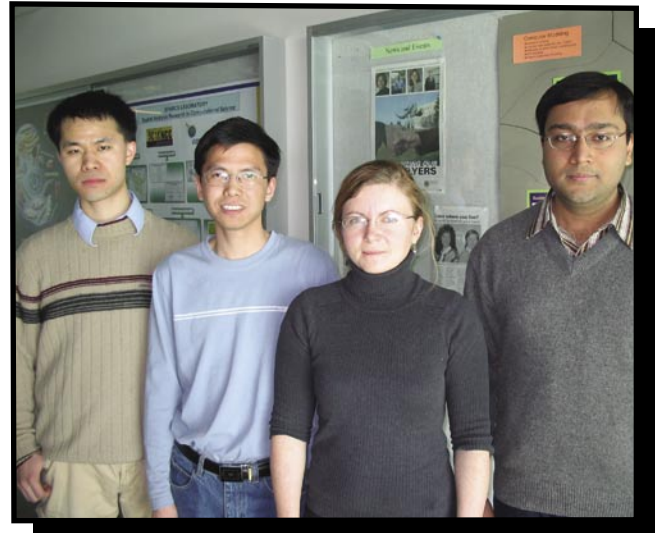
- LNCS Springer ICCSA 2006 Book of Proceedings, Editor (4 volumes)
- IEEE-CS ISVD 2006 Book of Proceedings, Editor
- N. Medvedev, V.P.Voloshin, V.A. Luchnikov, Gavrilova M.L The algorithm for three-dimensional Voronoi S-network, *Journal of Computational Chemistry*, vol. 27, issue 14, pp. 1676-1692, November 2006
- R. Apu and M. Gavrilova (2006) Fast and Efficient Rendering System for Real-Time Terrain Visualization, *IJCSE Journal*, Issue 2, 2007 (IJCSE 2006 Vol 2 Nos 5/6).
- Bereg, Sergey, M.L. Gavrilova, Y. Zhang Robust point location in Generalized Voronoi Diagrams, *IEEE-CS proceedings, ISVD 2006*, pp. 54-59, Banff, AB, Canada, July 2006
- Anikeenko, A.V., M.L. Gavrilova and N.N. Medvedev Application of Procrustes distance to shape analysis of Delaunay simplexes, *IEEE-CS proceedings, ISVD 2006*, pp. 148-152, Banff, AB, Canada, July 2006

Projects:

- GIS data models and techniques.
- Computational Science.
- Biometric Technologies.

Graduate Students:

Russel Apu, PhD – Adaptive memory subdivision for strategic motion planning and navigation
Priyadarshi Bhattacharya, MSc – Risk Analysis of Ship Routes using Topological Information
Mahmudul Hansan, MSc – Synthesizing Techniques based on Multiresolution Commence studies
Md. Maruf Monwar, PhD – Multimodal Biometric System

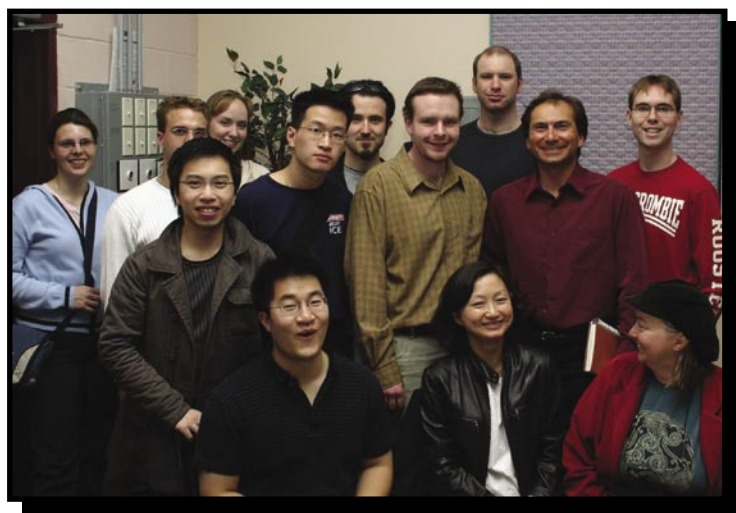


www.cpsc.ucalgary.ca/~marina

SAUL GREENBERG, *Professor & Associate Head, Graduate Affairs*

Research Interests:

Saul is an active researcher in Human Computer Interaction, a sub-area of Computer Science concerned with methods and principles on how to design computer interfaces so that people can interact effectively with them. He specializes in computer supported cooperative work, where he investigates how people work together, how the computer and related technologies (groupware) affect group behaviour, and how software can be designed



to support and augment group work. He also investigates context-aware computing, where computers can be crafted to fit within their environment in a way that encourages natural interaction.

Selected publications 2006/2007:

- Neustaedter, C., Greenberg, S. & Boyle, M. (2006). Blur Filtration Fails to Preserve Privacy for Home-Based Video Conferencing. ACM TOCHI Trans. Human Computer Interaction, 13(1).
- Tam, J., and Greenberg, S. (2006) A Framework for Asynchronous Change Awareness in Collaborative Documents and Workspaces. Int J. Human Computer Studies, 64(7), Elsevier.
- Greenberg, S. and Boyle, M. (2006) Generating Custom Notification Histories by Tracking Visual Differences between Web Page Visits. Proc Graphics Interface (GI'06), June, 227-234

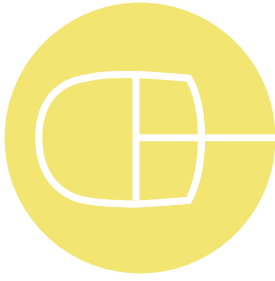
Project:

- NSERC Research Network – Network for Effective Collaboration Technologies through Advanced Research.

Graduate Students:

Timothy Au Yeung, MSc – Human computer Interaction
Robert Diaz-Marino, MSc – Toolkit using Diamond Touch tabletop surfaces
Carman Neustaedter, PhD – Design of digital family calendars
Michael Nunes, MSc – Computer Supported Cooperative Work
Stephanie Smale, MSc – Groupware
Kimberly Tee, MSc – Informal Awareness and casual interaction
Edward Tse, PhD – SDGToolkit

<http://www.cpsc.ucalgary.ca/~saul>



Faculty

MOUSTAFA HAMMAD, *Assistant Professor*

Research Interests:

Moustafa's current research interests lie in the area of Database Systems. Specifically, his work focuses on proposing, building, and evaluating database technologies for non-traditional data types. The following are some of the research avenues that he is currently exploring. (1) Stream Data Systems: Specifically, query processing and storage management of applications that receive endless amounts of data (data streams). Such applications include sensor-based environments, earth sciences, real time business processing, object's tracking, and network monitoring. (2) Multimedia Databases: Specifically, video modeling, access control, buffer management, and video query processing. (3) Spatio-temporal Databases: Specifically, designing efficient index structures and querying moving objects. (4) Architecture-aware database design: Specifically, the efficient utilization of the underlying hardware in the database design such as memory systems (e.g., caches) and the multi-threaded CPU pipelines, while designing database components.

Selected publication 2006/2007:

- Wessam M. Hassanein, Moustafa A. Hammad, and Layali Rashid. "Characterizing the Performance of Data Management Systems on Hyper-Threaded Architectures". In Proceedings of the 18th International Symposium on Computer Architecture and High Performance Computing (SBAC-PAD), Pages 99-106, Ouro Preto, Brazil, Oct., 2006. Selected one of the best papers.
- Adesola Omotayo, Moustafa A. Hammad, and Ken Barker. "Efficient Data Harvesting for Tracing Phenomena in Sensor Networks". In Proceedings of the 18th International Conference on Scientific and Statistical Database Management (SSDBM), Pages 59-68, Vienna, Austria, July 2006.
- Adesola Omotayo, Moustafa A. Hammad, and Ken Barker. "Update-aware Scheduling Algorithms in Hierarchical Data Dissemination Systems". In Proceedings of the 7th International Conference on Mobile Data Management (MDM), Electronic proceedings, Pages 18.1-18.6, Nara, Japan, May 2006.

Projects:

- A Scalable Data Management Framework for Streaming Data Sources.
- SeMag: A Sensor Data Management System.
- Development of Lidar-aided Mono-plotting & true Ortho-Photo Generation.

Graduate Students:

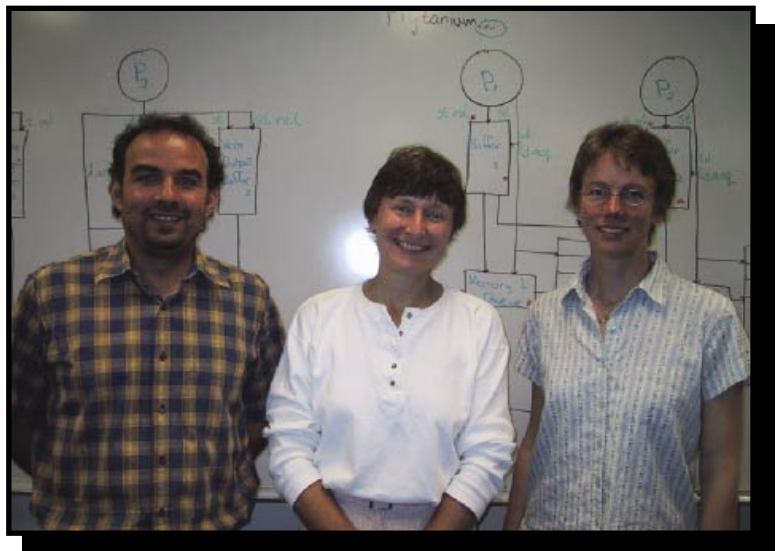
Mohammed E. Hegazy, PhD – Database Management Systems
Fatima M. Farag, PhD – Database Management Systems



LISA HIGHAM, *Associate Professor**Research
Interests:*

Lisa's research concerns the design and analysis of distributed algorithms. One specific research interest is fault tolerance. Current systems consist of many processors and other components and hence are increasing likely to fail in some way as their size and interconnection complexity grows. So robust algorithms that can withstand or recover from various faults are required. For example, a self-stabilizing distributed system can recover from an arbitrary transient fault without external intervention or re-initialization, and eventually resume correct behaviour.

Another research interest is memory consistency. Multi-processors employ a variety of buffering, caching, and communication techniques that enhance speed but can result in unexpected computations. We developed a framework for precisely defining the memory behaviour of multiprocessor systems, and now use this framework to compare multi-processor machines, design efficient programs for them, and to port programs between them.

*Selected
publications
2006/2007:*

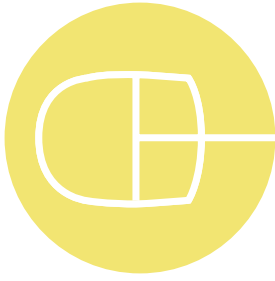
- L.Higham, L.Jackson, and J.Kawash. "Specifying Memory Consistency of Write Buffer Multiprocessors" ACM Transactions on Computer Systems. vol.25, no.1, pages1–42, February, 2007.
- L.Higham and J.Kawash. "Tight Bounds for Critical Sections in Processor Consistent Platforms", IEEE Transactions on Parallel and Distributed Systems, vol.17, no.10, pages 1072–1083, October, 2006

Projects:

- Itanium Memory Consistency.
- Models for Self-stabilization.

*Graduate
Students:*

Steven Cheng Hum Yuen, MSc – Sequential consistency on weak memory models
LilAnne Jackson, PhD – Porting between machines with different memory consistency
Parthasarathy Ramanujam, MSc – Combining game theory with network coding



Faculty

PETER HÖYER, *Assistant Professor*

Research Interests:

Peter Hoyer is interested in theoretical aspects of computer science and in the relationship between physics and computer science. His research is mainly on algorithms, data structures, and complexity theory, with a focus on algorithms for quantum computers. A quantum computer is a computational device that is based on quantum physics as opposed to being based on bits as a traditional computer. His research goal is characterizing problems that can be solved efficiently with the help of quantum mechanics. Problems that on the surface seem very complex, yet contain an internal well-behaved structure, are particularly well-suited for being solved on quantum computers. His research methodologies are theoretical and aims at a fundamental understanding. His research is part of an effort to say what it means to compute something on a very basic level.



Selected publications 2006/2007:

- Multipartite nonlocal quantum correlations resistant to imperfections, Harry Buhrman, Peter Hoyer, Hein Roehrig, and Serge Massar. *Physical Review A*, 73: 012321 (9 pages), 2006.
- Quantum query complexity of some graph problems, Christoph Dürr, Mark Heiligman, Peter Hoyer, and Mehdi Mhalla. *SIAM Journal on Computing* 35(6):1310-1328, 2006
- Resources required for preparing graph states, Peter Hoyer, M. Mhalla and S. Perdrix. *Proc. of 17th Intl. Symposium on Algorithms and Computation (ISAAC'06)*, Kolkata, India, Dec 18-20, 2006. *Lecture Notes in Computer Science*, 4288:638-649, December 2006.

Project:

- Develop new quantum algorithms, understand their relationship with classical algorithms, and prove lower bounds.

Graduate Students:

Catalin Dohotaru, MSc – Quantum Algorithmics
Nathan Wiebe – Physics and Astronomy (co-supervisor B. Sanders)

www.cpsc.ucalgary.ca/~hoyer

CHRISTIAN JACOB, Associate Professor (Joint appointment with the Department of Biochemistry & Molecular Biology, Faculty of Medicine)

Research Interests:

Christian's Evolutionary & Swarm Design Group (www.swarm-design.org) is building agent-based simulations of mostly biological systems for different levels of granularity, from vehicular and pedestrian traffic simulations to the modelling of army ant raids. In collaboration with our colleagues in the Faculty of Medicine, we focus on 3-dimensional agent-based models of biomolecular systems, such as gene regulatory networks, bacterial chemotaxis, immune system reactions, and blood clotting. These mathematical and computer models open new opportunities for biological and life sciences, bioinformatics and computational biology research in order to understand systems with massively parallel interactions and their emergent properties.



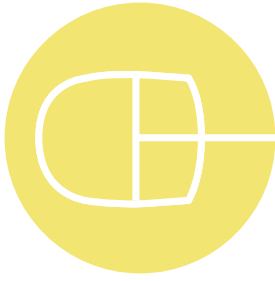
Christian also collaborates with Prof. Jerry Hushlak from the Department of Art to investigate the use of evolutionary swarm intelligence systems to build virtual "swarm sculptures" (www.swarmart.com) and interactive computer installations that illustrate principles of emergence in Art & Science.

Selected publications 2006/2007:

- Jacob, C., Husjlk, G., Boyd, J., Nuytten, P., Sayles, M., and Pilat, M. Swarmart: Interavtive art from swam intelligence (cover story). *Leonardo*, 40(3):248-254, 2007
- Nguyen, Q., Novakowski, S., Boyd, J., Jacob, C., and Hushlak, G. (2006). Motion Swarms: Video Interaction for Art in Complex Environments, ACM Multimedia 2006, Santa Barbara, CA, USA
- Jacob, C., Steil, S., and Bergmann, K. (2006). The Swarming Body: Simulating the Decentralized Defenses of Immunity, ICARIS 2006, 5th International Conference on Artificial Immune Systems, Oeiras, Portugal.
- Jacob, C., Barbasiewicz, A. and Tsui, G. (2006). Swarms and Genes: Exploring Lambda-Switch Gene Regulation through Swarm Intelligence, IEEE World Congress on Computational Intelligence (WCCI 2006), Vancouver, BC, Canada.

Graduate Students:

Karel Bergmann, MSc – Cryptanalysis using evolution-inspired algorithms (co-supervisor R. Scheidler)
Navneet Bhalla, PhD – Evolutionary Self-Assembly
Namrata Khemka, Phd – Optimization for Biomolecular Modelling
Paul Nuytten, MSc – Swarm Intelligence Models of Neural Growth
Marcin Pilat, PhD – Evolutionary Morphology
Sebastian Von Mammen, PhD – Swarm-based Developmental Design
Ian Burleigh, PhD – The Computational Beauty of Music



Faculty

MICHAEL JACOBSON, JR., *Assistant Professor*

Research Interests:

Mike's main areas of research are cryptography (data security) and computational number theory. In particular, he is involved in investigating the suitability of certain number-theoretic structures and problems as bases for public-key cryptosystems, enabling applications such as secure key-exchange and digital signatures. The efficiency of such cryptosystems is tested by implementing the best-known algorithms and devising improvements. The security is tested by developing sequential and distributed algorithms for solving the underlying number-theoretic problem.



Selected publications 2006/2007:

- FPGA implementation of point multiplication on Koblitz curves using Kleinian integers, "CHES 2006," Yokohama, Japan, October 2006.

Projects:

- Improving the efficiency of public-key cryptographic protocols based on elliptic curves and low-genus hyperelliptic curves.
- Investigating the security of cryptosystems based on arithmetic in number fields and function fields.
- Improving index-calculus algorithms for computing class groups and discrete logarithms in class groups of quadratic number and function fields.
- Developing new, improved algorithms for unconditional class group and regulator computation in quadratic fields, and for various computations related to algebraic number theory.

Graduate Students:

Wai Fong Chan, MSc – Efficient point multiplication on Koblitz curves
Reinderd DeGraaf, MSc – Applied network security (co-supervisor J. Aycock)
Jonathan Hammell, MSc – Cryptography
Andreas Hirt, PhD – Anonymous network communication (co-supervisor C. Williamson)
William Lorimer, PhD – Authentication protocols and zero-knowledge
Ahmed Obied, MSc – Unauthorized use of information systems (co-supervisor C. Williams)
Mark Velichka, MSc – Using index calculus to solve the discrete log problems
Ryan Vogt, MSc – Sandboxing for computer security (co-supervisor J. Aycock)

ROBERT KREMER, *Associate Professor**Research
Interests:*

Rob's research interests focus on agent based systems, concept mapping, and formal methods. He is currently developing a flexible and easy-to-use infrastructure for agent development as a research tool. This will lead to the ability to test the effectiveness of various conversational strategies, for example, Is the "traditional" conversation protocol approach better or worse than the social commitment approach to complex agent-based conversations? This work dovetails with previous work on concept mapping systems, in that the agent infrastructure supports a multi-user interface and data store for the concept mapping system. Conversely, the concept mapping system will form a sophisticated view (and controller) of the agent environment. A formal model of the agent infrastructure is also under development.

*Selected
publication
2006/2007:*

- Kremer, R & Flores, R (2006) Flexible Conversations Using Social Commitments and a Performatives Hierarchy. F. Dignum, et al (Eds) Selected Papers from Proc. of the Agent Communications Workshop, AAMAS 2005 (Intl. Conf. on Autonomous Agents and Multi-Agent Systems), Utrecht, The Netherlands, August, 2005). Springer-Verlag, LNAI 3859, 2006 pp.93-108.

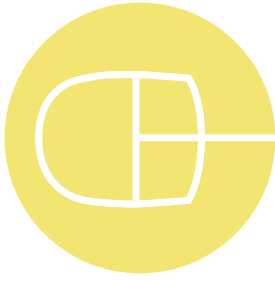
Project:

- Development of the CASA agent based infrastructure. Implementation of a formally-specified social commitment protocol under CASA.

*Graduate
Students:*

Gabriel Becerra Ayala, MSc – Minds and Agents in Ambient Intelligent Environments
Ibrahim Jadalowen, MSc – Course based
Chad La Fournie, MSc – Course based





Faculty

CHRISTIANE LEMIEUX, *Associate Professor (Joint appointment with the Department of Mathematics)*

Research Interests:

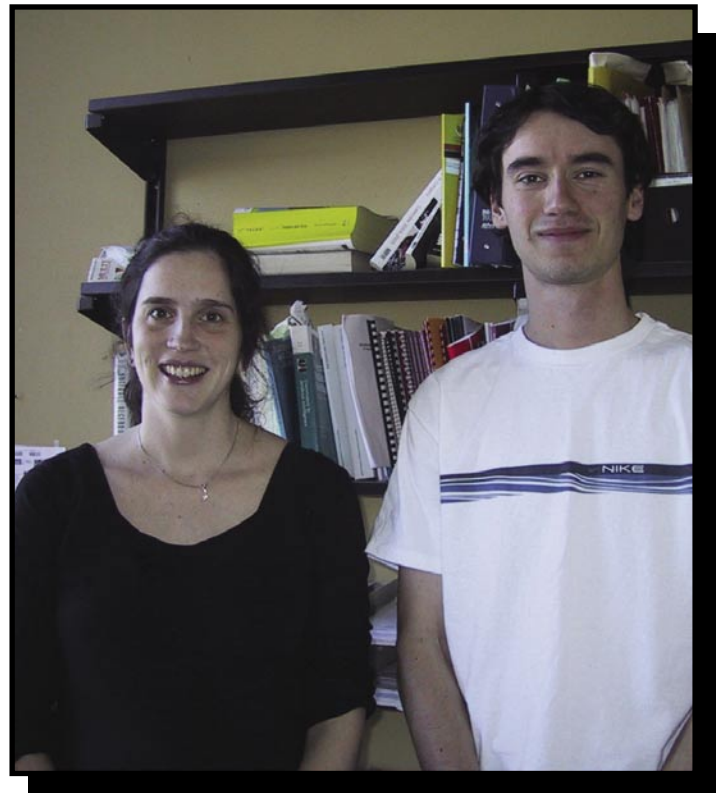
Christiane is studying quasi-Monte Carlo methods, which can be seen as a deterministic version of the Monte Carlo method. These methods are mostly used for multi-dimensional numerical integration, and they try to improve upon the Monte Carlo method by using more uniformly distributed samples to build their approximation. Christiane's current research is mostly focused on using quasi-Monte Carlo methods in complex applications, and finding better parameters for different quasi-Monte Carlo constructions.

Selected publications 2006/2007:

- C. Lemieux. "Quasi-random number techniques", book chapter to appear in "Handbook in Operations Research and Management Science: Simulation", Elsevier, 2005.
- F. J. Hickernell, C. Lemieux and A. B. Owen. "Control Variates for Quasi-Monte Carlo", to appear in Statistical Science, 2005.

Projects:

- Using simulation and diffusion approximations to model plant development.
- Quality measures and parameter searches for quasi-Monte Carlo constructions.
- Pricing American options using quasi-Monte Carlo methods and other variance reduction techniques.
- Using highly-uniform sampling in Metropolis-type algorithms.



Graduate Students:

Mikolaj Cieslak, MSc – Solving chemical processes usually represented as a set of coupled ordinary differential equations using Gillespie's stochastic method (co-supervisor P. Prusinkiewicz)
Jennie La, MSc – (Department of Mathematics and Statistics)

www.math.ucalgary.ca/~lemieux

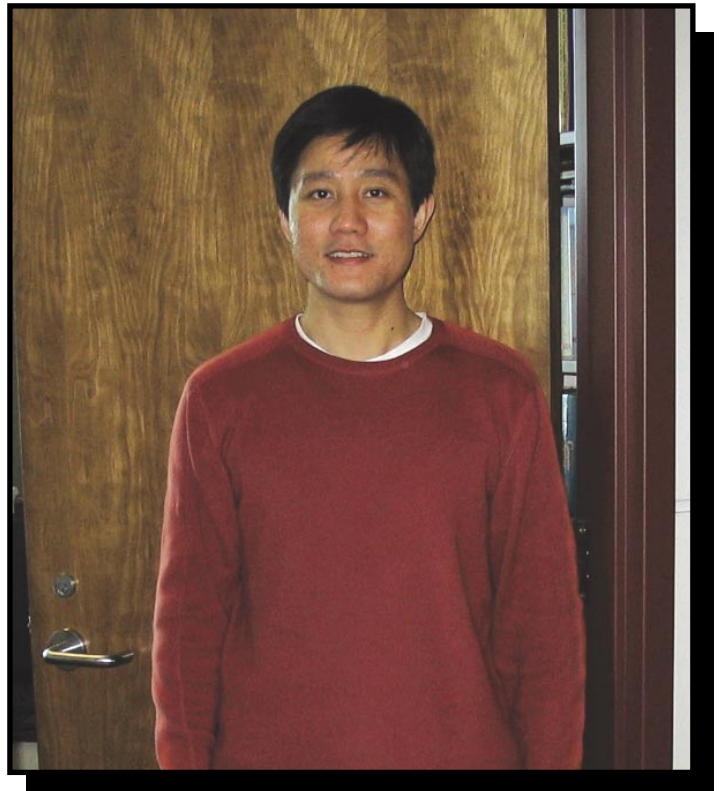
ZONGPENG LI, *Assistant Professor*

Research Interests:

Zongpeng's research interests are in computer networks and distributed algorithms. Recently, he has been working on distributed network optimization for multicast applications such as media streaming and file distribution. Zongpeng is also interested in information theory, coding theory, and wireless communications.

Selected publications 2006/2007:

- Jun Yuan, Zongpeng Li, Wei Yu, Baochun Li. A Cross-Layer Optimization Framework for Multi-hop Multicast in Wireless Mesh networks, in IEEE Journal on Selected areas of Communication (JSAC), 24(11):2092-2103, November 2006.
- Zongpeng Li, Baochun Li, Lap Chi Lau. On Achieving Optimal Multicast Throughput in Undirected Networks, in joint special issue, IEEE Transactions on Information Theory (IT) and IEEE/ACM Transactions on Networking (TON), 52(6): 2467-2485, June 2006
- Liqi Shi, Phillipa Sessini, Anirban Mahanti, Zongpeng Li, Derek Eager. Scalable Streaming for Heterogeneous Clients, in the Proc. of ACM Multimedia 2006, Santa Barbara, CA, October 22-27, 2006.
- Zongpeng Li, Anirban Mahanti. A Progressive Flow Auction Approach for Low-Cost On-Demand P2P Media Streaming, in the Proc. of the 3rd Intl. Conf. on Quality of Service in Heterogeneous Wired/Wireless Networks (QShine 2006), Waterloo, Canada, August 7-9, 2006.



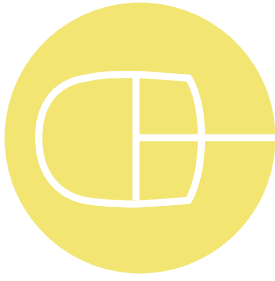
Projects:

- Optimization Algorithms in Data Networks.
- Scalable P2P On-demand Media Streaming Based on Network Coding.

Graduate Student:

Mingwei Gong, PhD – Networks
Parthasarathy Ramanujam, MSc – Networks
Phillipa Sessini, MSc – Characterizing Web network traffic (co-supervisor A. Mahanti)
Ajay Gopinathan, MSc – Network Optimization and Game Theory

www.cpsc.ucalgary.ca/~zongpeng



Faculty

KENNETH LOOSE, *Associate Professor*

Research Interests:

Kenneth's research focuses on two distinct areas - Computer Science Education and the role of users in software evaluation. He has spent some time looking at the role of discrete mathematics in the undergraduate program, specifically with respect to student mathematical maturity and its effect on the ability of students to effectively learn discrete math. Looking to expand this to also include linear mathematics and calculus to attempt to determine if there is an optimal sequence for the mathematics that is currently required for Computer Science majors. In the area of software evaluation, Kenneth's is focusing on the use of investigative techniques more common to the Social Sciences but that are applicable to finding relationships among users and the software that they use. This is in many ways an analysis of users and particular software to identify relationships affecting the interaction of the user with the software. In both areas, he is especially interested in games programming and software.

Kenneth is currently involved with an interdisciplinary group that is working toward creating a network of researchers involved in educational games. This is partially funded by a grant from SSHRC. He is also working on data from the last eight years that includes performance in the three areas of mathematics that are required for Computer Science students. This should add significantly to findings already obtained in looking at discrete mathematics performance. A final major project is one in which he wishes to create a profile of skills that are critical components in computer games, especially educational computer games - an area that is receiving increased recent attention.



Graduate Student:

Jessica Mason, MSc – Game Programming

<http://www.cpsc.ucalgary.ca/Dept/contact.php?profile=loose>

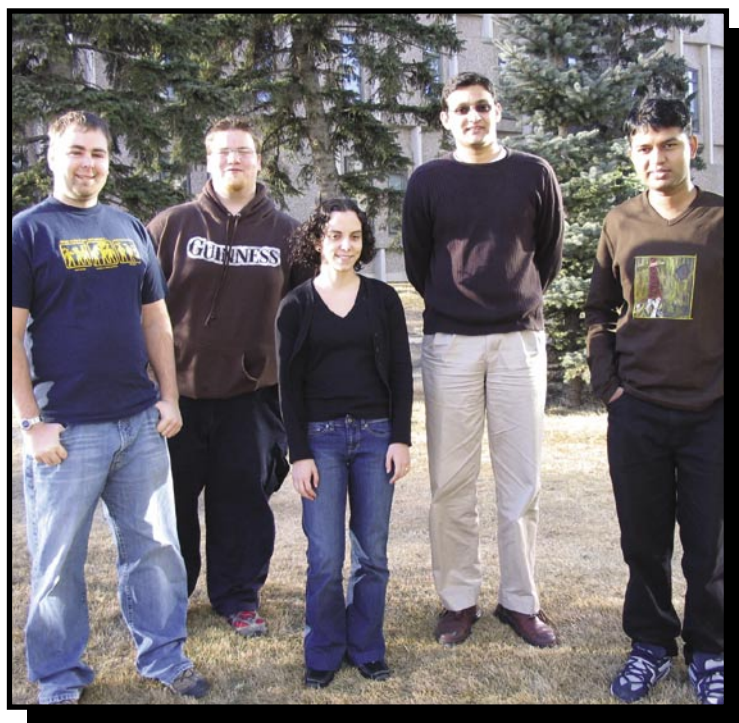
ANIRBAN MAHANTI, *Assistant Professor*

Research Interests:

Anirban's research interests are in the areas of performance evaluation of distributed computer systems and computer networks. His specific research interests include multi-media streaming systems, Web performance, network measurement and modeling, network protocols and architectures, and distributed systems.

Selected publications 2006/2007:

- Sean Boyden, Anirban Mahanti and Carey Williamson. "Characterizing the Behavior of Real Video Streams". In Proceedings of the SCS Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS), Philadelphia, PA, July 2005, pp. 783-791.
- Aniket Mahanti, Anirban Mahanti and Carey Williamson. "Locality Characteristics of Web Streams Revisited". In Proceedings of the SCS SPECTS, Philadelphia, PA, July 2005, pp. 795-803.
- Anirban Mahanti, Derek Eager and Mary Vernon. "Improving Multi-rate Congestion Control Using a TCP Vegas Throughput Model". Computer Networks Journal, Vol. 48, No. 2, June 2005, pp. 113-136.



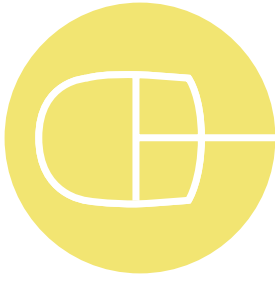
Projects:

- Multimedia Streaming Protocols and Performances.
- Internet Traffic Classification.

Graduate Students:

Naimul Basher, MSc – Web traffic
Jeffrey Erman, MSc – Internet Traffic Classification
Phillipa Sessini, MSc – Characterizing Web network traffic (co-supervisor Z. Li)

<http://pages.cpsc.ucalgary.ca/~mahanti>



Faculty

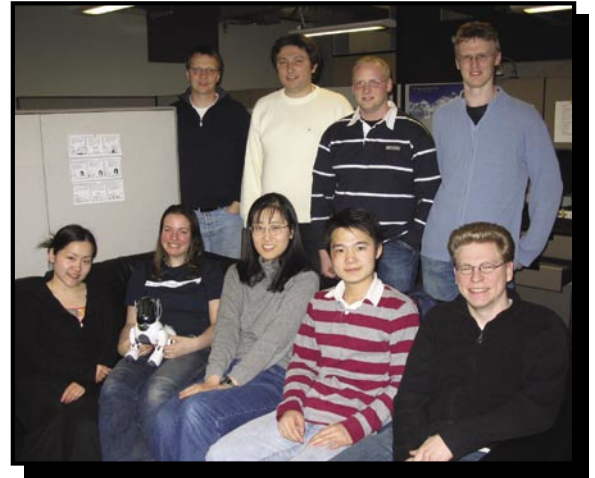
FRANK MAURER, *Professor and Associate Head, Research & Planning*

Research Interests:

Frank's research interests include agile software methodologies (such as Extreme Programming, Scrum DSDM, etc.), software engineering approaches for e-Business software development, web engineering, globally distributed software development, and experience and knowledge management. Frank is the head of the e-Business engineering group at the University of Calgary and serves as the Associate Head Planning and Research.

Selected publications 2006/2007:

- C. Zannier, M. Chiasson, F. Maurer: A Model of Design Decision Making based on Empirical Results of Interviews with Software Designers, Understanding the Social Side of Software Engineering - Qualitative Software Engineering Research, A Special Issue of the Journal of Information and Software Technology, p. 637-653, Feb 2007.
- F. Maurer, G. Melnik: Driving Software Development with Executable Acceptance Tests, Executive Report on Agile Project Management, Vol. 7, No. 11, Cutter Consortium, November 2006.
- F. Maurer, C. Mann: Introducing Agile Techniques in a Small Team Environment: A Case Study, Agile Project Management, Vol. 7, No. 2, Executive Report Cutter Consortium, p. 1-21, 2006



Projects:

- MASE – Tool Support for Agile Project Management.
- Single Display Groupware for Agile Software Teams.
- Alan – A robotic colleague for agile teams (with J. Denzinger & E. Sharlin).
- Fitclipse – Tool support for early acceptance testing and interaction design.
- AcceptJ2EE – Acceptance testing of distributed J2EE applications.

Graduate Students:

Ruth Ablett, MSc – Using a robot to facilitate continuous integration in an Agile environment (co-supervisor E. Sharlin)
Kobe Davis, MSc – Software Engineering
Chengyao Deng, MSc – Acceptance Testing for Distributed J2EE Applications
David Fox, MSc – course based
Harpit Grewal, MSc – Course based study
Girgori Melink, PhD – Early acceptance testing
Robert Morgan, MSc – Group collaboration support to agile planning
Shelly Park, MSc – aily Scrum Meeting Summarizer for Agile Development Teams
Caryna Pinheiro, MSc – course based
Xueling Shu, MSc - Automated Performance Testing for Java3D Applications
Patrick Wilson, MSc – course based
Carmen Zannier, PhD – An Empirical Evaluation of Decision Making in Software Design

<http://ebe.cpsc.ucalgary.ca/Frank.Maurer>

JAMES PARKER, *Professor**Research
Interests:*

Jim is currently working on computer game technology, especially the synthesis and coding of digital audio. This includes creating sound effects and music, and manipulating, classifying and recognizing. He has been involved in pattern recognition and computer vision research for over 20 years, and applies this knowledge to practical projects. He and his students have designed and built a number of computer games. His students are currently working on pattern recognition in biometrics (signature, face, and voice recognition), virtual reality, games and entertainment technology (audio analysis and synthesis), and natural computer interfaces (gesture and gaze recognition, similarity search for pictures and sounds). He is the founder of the Digital Media Lab, which works with local and distance game developers and animation groups, and has research ties with the Banff New Media Institute, Education, Kinesiology, Fine Arts, and Engineering.

*Selected
publications
2006/2007:*

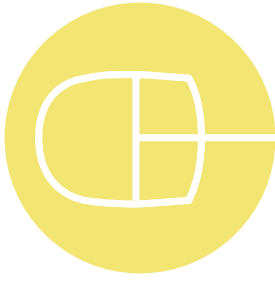
- J. R. Parker, Using Games to Advance Language Training and Education, Serious Games summit, Washington, D.C., Oct 31-Nov 1, 2005.
- J. R. Parker & Brad Behm, Composite Algorithms in Image Content Searches, *11th Intl. Conf. on Distributed Multimedia Systems (DMS2005)* Sep 5-7, 2005, Calgary, AB, Canada.

Projects:

- Caching of audio files in computer games: Implementing a sound file scheduling algorithm that will be integrated into a game.
- Query by example for sound: Given a sound file, find others in a set of files that sound like it.
- Determining Body Pose In Images: An image that includes a human body is given - What is the angle of the arms/legs? There is a very practical use for this, if it can be accomplished in a fast enough time.

*Graduate
Students:*

Sonny Chan, MSc – Advancing medical image processing (co-supervisor J. Mitchell)
Shannon Jaeger, MSc – Virtual reality and games for teaching
Christopher Marriott, PhD – Learning in populations of artificial lifeforms



Faculty

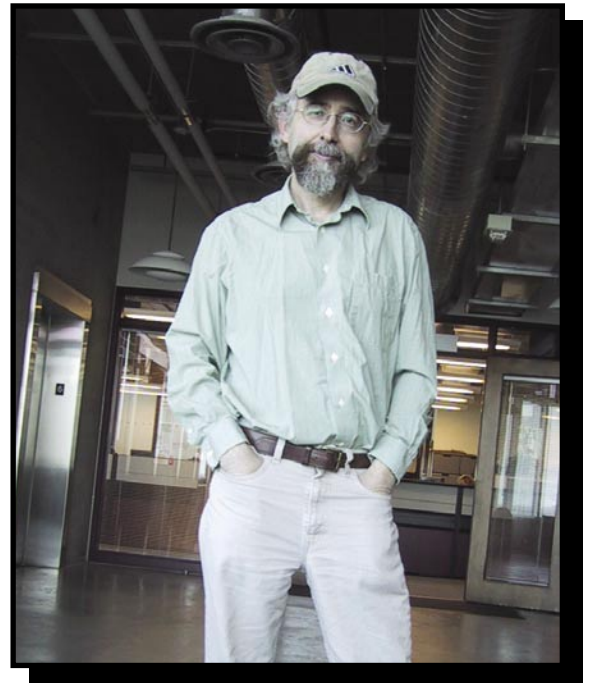
PRZEMYSŁAW PRUSINKIEWICZ, *Professor*

Research Interests:

Dr. Prusinkiewicz and his students look at facilitating the modeling of plants using the conceptual framework of Lindenmayer Systems (L-Systems). They investigate the dynamics of reciprocal interaction between plants and their environment and explore the relationships between various theoretical models used to describe plant architecture. This makes it possible to understand the data required, the limitations and capabilities necessary to model plants that result in images which are photorealistic and highly complex. They have developed software environments for conducting simulated experiments, called the Virtual Laboratory and L-Studio.

Selected publications 2006/2007:

- R. Smith, C. Kuhlemeier, P. Prusinkiewicz (2006): Inhibition fields for phyllotactic pattern formation: A simulation study. *Canadian Journal of Botany* 84 Nr.11, pp 1635-1649.
- R. Smith, S. Guyomarc'h, T. Mandel, D. Reinhardt, C. Kuhlemeier, P. Prusinkiewicz 2006: A plausible model of phyllotaxis. *Proc. of the National Academy of Sciences* 103 Nr. 5, pp 1301-1306.
- M. Fuhrer, H. Wann Jensen, P. Prusinkiewicz 2006. Modelling plant morphogenesis. *Current Opinion in Plant Biology* 9 Nr. 1, pp 83-88.



Projects:

- Modeling plants from genes to phenotypes.
- New programming paradigms and languages for modeling, simulation and visualization of biological systems.

Graduate Students:

Fabricio Anastacio, MSc – Sketch-based modeling (co-supervisor M. Costa Sousa)
Jevaprakash Chelladurai, PhD – Modelling and visualization of plants
Adam Runions, MSc – Modeling and visualization of venation patterns
Richard Smith, PhD – Computational models of spiral phyllotaxis

<http://pages.cpsc.ucalgary.ca/~pwp>
www.algorithmicbotany.org

JON ROKNE, *Professor*

Research Interests:

Jon's research interests span the areas of interval analysis, global optimization, computer graphics and solid modeling. Within these areas he aims to develop algorithms for solving a variety of problems such as robust computations of intersection tests, finding good inclusion for functions over intervals computing zeros of function, etc. He has also worked on global illumination as applied to the modeling of plants and on physically based computer graphics.



Selected publications 2006/2007:

- Rendering plasma phenomena: applications and challenges. Eurographics 2006, State of the Art Reports, pp 63-88 (2006). (with G. V. G. Baranoski).
- Fingerprint Recognition Using a Hierarchical Approach. In: Computational Intelligence in Information Assurance and Security Series: Studies in Computational Intelligence, Vol. 57, eds, Nedjah, Abraham and Mourelle, Springer, pp 175-198 (2007) (with M. Gavrilova, C. Wang and Y. Luo).
- Construction and Analysis of Meshless Finite Difference Methods. Computational Mechanics 37, pp 232-248 (2006). (with Qun Lin)

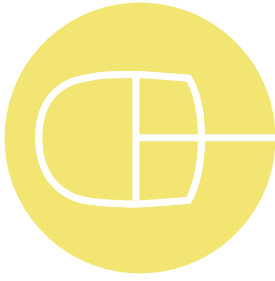
Projects:

- Computer-aided desing algorithms.
- Interval analysis algorithm.
- Physical based computer graphic simulations.
- Geometric computations.

Graduate Students:

Ravdeep Sekhon, MSc – Realistic implementation of veins in leaves
Ye Wang, PhD – Computational Geometry

<http://pages.cpsc.ucalgary.ca/~rokne/>



Faculty

GÜNTHER RUHE, *Professor (Joint appointment with the Department of Electrical & Computer Engineering)*

Research Interests:

Geunther Ruhe is an iCORE Professor. This is a joint appointment in the Departments of Computer Science and Electrical and Computer Engineering. His research is in the area of intelligent support, in particular for design and analysis of releases in incremental software development, analysis of software requirements, project management, and selection of components-of-the-shelf (COTS) products. A new generation of intelligent decision support tool has been designed, implemented and initially evaluated. ReleasePlanner™ is a tool suite that provides flexible and web-based tool support for assigning requirements of features to releases so that the most important risk, resource, and budget constraints are fulfilled.

Selected publications 2006/2007:

- J. Li, G. Ruhe, A. Al-Emran, M. M. Richter, A Flexible Method for Effort Estimation by Analogy, *Empirical Software Engineering*, Volume 12(2007), No 1, pp 65-106
- G. Du, M. M. Richter, G. Ruhe, An Explanation Oriented Dialogue Approach and its Application to Wicked Planning Problems, *Computing and Informatics*, Vol 25 (2006), :pp 223-249.
- J. Momoh, G. Ruhe, Release Planning Process Improvement –An Industrial Case Study, *Software Process Improvement and Practice*. Vol. 11 (2006), pp 295-307.
- A. Ngo-The, G. Ruhe (eds.), *Requirements Engineering Decision Support (Special Issue)*, *Software Engineering and Knowledge Engineering*, Vol. 16, December 2006.



Projects:

- Intelligent support for release and design decision of evolvable software systems.
- Intelligent design decisions.
- Simulation-based decision support for software quality assurance (SimQuali).

Graduate Students:

Thamer Albourae, MSc – Lightweight Re-planning for Software Releases
James Ambler, MSc – Software Engineering
Frazul Chowdhury, MSc – Software Engineering
Bradley Cossette, MSc – Software Engineering
Gengshen Du, PhD – Decision Support for Scenario-based Release Planning
Kendra Hamilton, MSc – Software Engineering
Jingzhou Li, PhD – Management of Tabular-based Requirments Using Rough Sets
James McElroy, PhD – Software Engineering
Vladimir Melink, PhD – Software Engineering
Omolade Saliu, PhD – Software Release Planning in Evolving Systems
Irfan Ullah, PhD – Planning Releases for Software Product Lines

<http://sem.cpsc.ucalgary.ca/~ruhe>

REIHANEH SAFAVI-NAINI, *Professor and iCORE Chair in Information Security*

Research Interests:

Rei's research interest is information security. Her more recent works have been on information theoretic security, provable security, network security, digital and privacy rights management, and multimedia security. She is particularly interested in authentication problem in digital world.

Authentication of information is arguably the most important security goal in modern electronic communication systems. Authentication systems provide assurance for communicants about entities involved in the communication and the messages that are exchanged. Authentication systems must also meet the challenges resulting from the advancement of technologies and the introduction of new services. Applications such social networking and instant tele-conferencing require secure authentication in dynamic groups. A growing concern is users' privacy and the assurance that users' data cannot be later used to breach their privacy. A useful authentication system must be provably secure and also sufficiently efficient to be acceptable by the users.



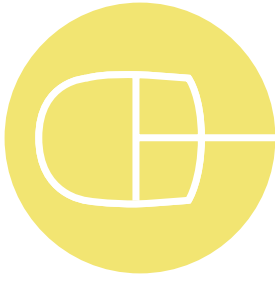
Selected publications 2006/2007:

- L. M. Batten, R. Safavi-Naini (Eds.), Information Security and Privacy, 11th Australasian Conf. ACIISP 2006, melnourne, Australia, July 3-5, 2006. Proceeding Springer 2006.
- D. Tonien and R. Safavi-Naini, Construction of Deletion Correcting Codes Using Generalized Reed-Solomon Codes and Their Subcodes, Designs, Codes and Cryptography, Vol. 42, No. 2 (February 2007), pp. 227-237.
- R. Safavi-Naini and H. Wang, Secret Sharing Schemes with Partial Broadcast Channels, Designs, Codes and Cryptography, Vol 41, No. 1, October 2006, pp. 5-22.
- D. Tonien, R. Safavi-Naini, Recursive Constructions of Secure Codes and Hash Families using Difference Function Families, Journal of Combinatorial Theory A, Ser. A, 2006, Vol. 113, No. 4, pp. 664-674.

Projects:

- Cryptography
- Intrusion Detection in Sensor Networks
- Privacy enhancing systems
- Technologies for management of digital rights

<http://pages.cpsc.ucalgary.ca/~rei/>

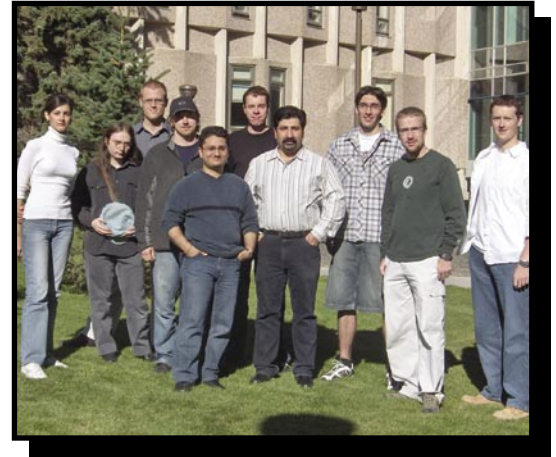


Faculty

FARAMARZ SAMAVATI, *Assistant Professor*

Research Interests:

Faramarz Samavati works on various aspects of Computer Graphics. His research areas are Geometric Modeling, Sketch-Based Modeling, Visualizations and Non-photo Realistic Rendering. More specifically, the research topics in his area are Surface Modeling, Volumetric Modeling, Subdivision Surfaces, Splines, Least Squares, NURBS, Multiresolution and Wavelets. As one of his important research results, he was able to obtain Multi-resolution representation for smooth objects by reversing subdivision and without direct use of wavelets. Faramarz and his group also explore various applications of these modeling techniques in Biometric, Medical, terrain and Seismic simulation and visualization.



Selected publications 2006/2007:

- Pakdel, H.R. and Samavati, F.F. “Incremental Subdivision for Triangle Meshes”, International Journal of Computational Science and Engineering, Vol. 2, No. 5 and 6, 2006
- Foster, K., Sousa, M.C., Samavati, F.F. and Wyvill, B. “Polygonal Silhouette Error Correction: A Reverse Subdivision Approach”, International Journal of Computational Science and Engineering Vol. 2, No. 5 and 6, 2006
- Severn, A., Samavati, F.F. and Sousa, M.C. “Transformation Strokes”, Proceedings of the 3rd Eurographics Workshop on Sketch-Based Interface and Modeling, pp. 73-81, Vienna, Austria, September 2006
- Chen, H.J., Samavati, F.F., Sousa, M.C. and Mitchell, R. “Sketch-Based Volumetric Seeded Region Growing”, Proceedings of the 3rd Eurographics Workshop on Sketch-Based Interface and Modeling, , pp. 123-129, Vienna, Austria September 2006

Project:

- Multi-resolution in Computer Graphics.

Graduate Students:

John Brosz, PhD – Terrain modeling by example
Hung-Li Jason Chen, MSc – Volume Deformation (co-supervisor M. Costa Sousa)
Mahsa Eshraghyi Boroojeni, MSc – Interactive modelling
Luke Olsen, PhD – Constraining Wavelets for Multiresolution
Richard Pusch, MSc – Interactive modelling
Javad Sadeghi, PhD – Interactive modelling
Mitra Shirmohammadi, MSc – Geometric modeling with L-systems
Torin Taerm, PhD – Medical Illustrations (co-supervisor M. Costa Sousa)

<http://pages.cpsc.ucalgary.ca/~samavati/>

RENATE SCHEIDLER, Associate Professor (Joint appointment with the Department of Mathematics)

Research Interests:

Renate's principal areas of interest include computational number theory and cryptography. Specifically, her research explores algorithms for finding invariants of algebraic number fields and function fields, as well as the design and analysis of cryptographic systems whose security is based on the problem of computing such invariants. Currently, the best known methods for finding invariants are sub-exponential and frequently exponential, so the cryptosystems in question are very secure. She is interested in faster cryptographic and number theoretic algorithms, as well as efficient implementations.



Selected publication 2006/2007:

- M. J. Jacobson, Jr., R. Scheidler and A. Stein, Faster Cryptographic Key Exchange on Hyperelliptic Curves. To appear in Advances in Mathematics of Communications 2 (2007).
- M. J. Jacobson, Jr., R. Scheidler and A. Stein, Fast arithmetic on hyperelliptic curves via continued fraction expansions. Invited paper, Advances in Coding Theory and Cryptology, Series on Coding Theory and Cryptology 2, World Scientific Publishing Co. Pte. Ltd., Hackensack, New Jersey 2007, 201-244.
- Q. Wu and R. Scheidler, An explicit treatment of biquadratic function fields. Contributions to Discrete Mathematics 2 (2007), 43-60.
- M. J. Jacobson, Jr., R. Scheidler and H. C. Williams, An improved real quadratic field based key exchange procedure. Journal of Cryptology 19 (2006), 211-239.

Projects:

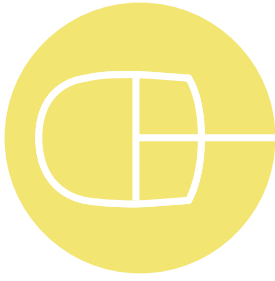
- Algorithms and Cryptography in Algebraic Function Fields.
- Novel Implementation of Cryptographic Algorithms on Custom Hardware Platforms.
- Efficient Arithmetic in Global Quadratic Fields.
- Privacy and Number Theoretic Cryptography.
- Construction of Hyperelliptic Function Fields of High Three-Rank (with M. Bauer, M. J. Jacobson, and Y. Lee).
- Cubic Function Fields from Quadratic Infrastructure (with M. J. Jacobson, Y. Lee, and H. C. Williams).
- Quartic Function Fields (with Q. Wu).

Graduate Students:

Karel Bergmann, MSc – Cryptanalysis using evolution-inspired algorithms (co-supervisor C. Jacob)

Taisya Krivoruchko, MSc – Electronic voting: Registration

www.math.ucalgary.ca/~rscheidl
www.cisac.math.ucalgary.ca



Faculty

EHUD SHARLIN, *Assistant Professor*

Research Interests:

Ehud is interested in physical interfaces between humans and computers, tangible user interfaces, human-robot interaction, and virtual and mixed reality interfaces. Physical interfaces rely directly on the physical world using its extremely rich collection of objects, tools, interaction rules and concepts, all well learned and well practiced by humans from their everyday experiences. Good physical interfaces embody function and content and can be very intuitive and simple to use.

Selected publications 2006/2007:

- M. Xin and E. Sharlin, “Exploring Human-Robot Interaction Through Telepresence Board Games”, 16th International Conference on Artificial Reality and Telexistence, ICAT 2006, Zhejiang University of Technology, Hangzhou, P.R.China, Lecture Notes in Computer Science, volume 4282, Springer, November 29 - December 1st, 2006.
- J. E. Young, E. Sharlin, and J. E. Boyd, “Implementing Bubblegrams: The Use of Haar-Like Features for Human-Robot Interaction”, IEEE Conference on Automation Science and Engineering, CASE 2006, Shanghai, China, October 7 – 10, 2006.
- S. Jacoby, N. Josman, D. Jacoby, M. Koike, Y. Itoh, N. Kawai, Y. Kitamura, E. Sharlin, and P. L. Weiss, “Tangible User Interfaces: Tools to Examine, Assess and Treat Dynamic Constructional Processes in Children with Developmental Coordination Disorders”, International Conference Series on Disability, Virtual Reality and Associated Technologies, ICDVRAT 2006, Esbjerg, Denmark, 18-20 September 2006.
- L. Streit, P. Lapedes, M. Costa Sousa, and E. Sharlin, “Modeling Plant Variations through 3D Interactive Sketches”, 3rd Eurographics Workshop on Sketch-Based Interfaces and Modeling, SBIM 2006, Vienna, Austria, September 3-4, 2006.



Projects:

- Mixed reality-based human robot interfaces.
- Sheep and Wolves - game-based testbed for human robot interaction.
- The 3D Tractus: a 3D tangible drawing board (with M. Costa Sousa).
- Alan: a robotic companion for agile software engineering teams (with F. Maurer and J. Denzinger).

Graduate Students:

Ruth Ablett, MSc – Using a robot in an Agile environment (co-supervisor F. Maurer)
Cheng Guo, MSc – Robot Interfaces
James Young, PhD – Exploring the artistic language
Min Xin, MSc – The 3D Tractus

<http://pages.cpsc.ucalgary.ca/~ehud/>

JONATHAN SILLITO, *Assistant Professor**Research
Interests:*

Jonathan's research focuses on empirically understanding social and technical aspects of software creation and evolution, such as how programmers do their work, how programming tools are used and how teams of programmers collaborate. The long-term goal of his research program is to improve both programming practices and tool support.

Some of Jonathan's recent empirical work identified questions that programmers ask about a code base and demonstrated where current programming tools fall short in helping programmers answer those questions. Building on this work, he is currently carrying out several projects involving prototyping and evaluating new kinds of programming tools.

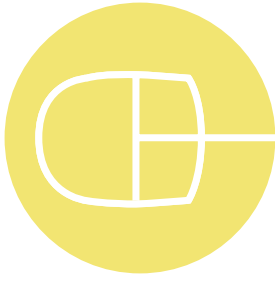
*Selected
publication
2006/2007:*

- Jonathan Sillito, Gail Murphy and Kris De Volder. Questions Programmers Ask During Software Evolution Tasks. SIGSOFT/FSE 2006.
- Jonathan Sillito and Eleanor Wynn. Social Dependencies and Contrasts in Software Engineering Practice. CSCW Workshop on the Social Side of Large-Scale Software Development, 2006.

*Graduate
Students:*

David Fox, MSc – Software Engineering
Caryna Pinheiro, MSc – Software Engineering

<http://ucalgary.ca/~sillito/>



Faculty

ROBERT SIMMONDS, *Adjunct Assistant Supervisor*

Research Interests:

Rob performs research into grid computing, parallel discrete event simulation and parallel network emulation. The main grid computing research activities includes a project that aims to understand many issues relating to monitoring grid environments. The goal is to produce models of computer, network and monitoring components and models of different monitoring activities. This should enable monitoring requirements to be mapped programmatically to a grid environment. Another grid related project is considering how data replication and caching decisions should be made by grid data management systems in environments with access to dynamically controlled optical light path networks.

Selected publications 2006/2007:

- Simmonds, R. and Unger, B.W. (2006) “Model-Based Services for Computing Grid Performance Analysis and Tuning” (abstract), Proceedings of the 20th Workshop on Principles of Advanced and Distributed Simulation (PADS), Singapore, May, pp 129



Projects:

- Model based grid monitoring (Joint project with HP Labs, Palo Alto).
- Proactive Data Management.
- High performance overlay networks.
- Internet Protocol Traffic and Network Emulator (IP-TNE).

Graduate Students:

Idowu Adewale, MSc – User oriented monitoring for grid environments
David Aikema, MSc – Virtual organization management
Abhinav Akshay, MSc – Grid Environments
Tanvire Elahi, PhD – Model based job scheduling (co-supervisor B. Unger)
Nayden Markatchev, MSc – Grid environments
Ting Xi Tan, MSc – Grid Environments

<http://grid.ucalgary.ca>

ROBERT J. WALKER, *Assistant Professor**Research
Interests:*

Rob's primary research concerns easing problems of software evolution and reuse. This centers around the observation that software is developed assuming that one sees essentially the entire "world" — you know what classes exist, what libraries are in use, their exact interfaces and properties, etc. The reality is that libraries, standards, and languages all change over time. By isolating a module from the world around it, but still allowing it to interact with the world, we could make our modules less likely to need to change. Rob has created a mechanism called implicit context for permitting such apparent isolationism. Rob is also heavily involved in the recently-introduced programming paradigm called aspect-oriented software development.

*Selected
publications
2006/2007:*

- Reid Holmes, Robert J. Walker, and Gail C. Murphy. Approximate structural context matching: An approach to recommend relevant examples. *IEEE Transactions on Software Engineering*, 32(12):952-970, December 2006
- Robert J. Walker, Reid Holmes, Ian Hedgeland, Puneet Kapur, and Andrew Smith. A light-weight approach to technical risk estimation via probabilistic impact analysis. In *Proceedings of the 3rd International Workshop on Mining Software Repositories (MSR '06) at the 28th International Conference on Software Engineering (ICSE-28)*, pages 98-104, 2006
- Jamal Siadat, Robert J. Walker, and Cameron Kiddle. Optimization aspects in network simulation. In *Proceedings of the 5th International Conference on Aspect-Oriented Software Development (AOSD '06)*, pages 122-133, 2006

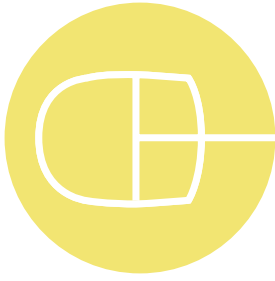
Projects:

- Context insensitivity for software evolution.
- Aspect-oriented software development and its assessment.
- Large-scale unanticipated software reuse.
- Technical risk estimation.

*Graduate
Students:*

Joseph Chang, MSc – AI-methods in the re-use of software (co-supervisor J. Denzinger)
Bradley Cossette, MSc – Language-independent probabilistic change impact analysis
Ryan Cottrell, MSc – Context-sensitive call chain suggestions
Reid Holmes, PhD – Tools and techniques for software developers
Puneet Kapur, MSc – Context sensitive tools
Mark McIntyre, MSc – Dataflow-based suggestions of near clones
Bhavya Rawal, MSc – Incorporation of transformations into change history mining

<http://pages.cpsc.ucalgary.ca/~rwalker/>



Faculty

JOHN WATROUS, *Associate Professor and Canada Research Chair in Quantum Computing*

Research Interests:

John's research focuses on quantum computation and information. This area of research is concerned with models of computation based on quantum mechanics, and on the information-theoretic properties of quantum mechanical systems. In particular, he is interested in quantum computational variants of interactive proof systems, quantum algorithms for group-theoretic problems, and properties of quantum entanglement.

Selected publications 2006/2007:

- J. Watrous. Zero-knowledge against quantum attacks. Proceedings of the 38th Annual ACM Symposium on Theory of Computing, 2006.
- J. Watrous. Bipartite subspaces having no bases distinguishable by local operations and classical communication. Physical Review Letters 95(8): Article 080505, 2005.
- B. Rosgen and J. Watrous. On the hardness of distinguishing mixed-state quantum computations. Proceedings of the 20th Annual Conference on Computational Complexity, pp. 344-354, 2005.
- C. Marriott and J. Watrous. Quantum Arthur-Merlin games. Computational Complexity, 14(2): pp. 122-152, 2005.
- G. Gutoski and J. Watrous. Quantum interactive proofs with competing provers. In Proceedings of the 22nd Annual Symposium on Theoretical Aspects of Computer Science, Volume 3404 of Lecture Notes in Computer Science, pp. 605-616, Springer-Verlag, 2005.



Graduate Students:

Dmitry Gavinsky, PhD – Quantum communication complexity
Heath Gerhardt, PhD – Quantum and iterated quantum processes
Gus Gutoski, PhD – Quantum interactive proof systems with competing provers
Jibran Rashid, MSc – Norms and distance measures of quantum super-operators
William Rosgen, PhD – Bell inequalities and quantum nonlocality

<http://pages.cpsc.ucalgary.ca/~jwatrous>

CAREY WILLIAMSON, *iCORE Professor and NSERC/iCORE/Telus Mobility Industrial Chair*

Research Interests:

Carey's general research interests are in computer networks and computer systems performance evaluation. Specific interests include Internet protocols, wireless networks, network traffic measurement, workload characterization, network simulation, and Web server performance. A self-described "Internet mechanic", Carey focuses a lot of his research on the interactions between Internet protocols, and the resulting impacts on user-perceived performance. Much of this work is experimental, with an applied focus on industrially-relevant network performance problems. He is currently an iCORE Professor in "Broadband Wireless Networks, Protocols, Applications, and Performance" and holds an NSERC/iCORE/TELUS Mobility Industrial Research Chair in Wireless Internet Traffic Modelling.



Selected publications 2006/2007:

- Impact of Stochastic Traffic Characteristics on Effective Capacity in CDMA Networks by Hongxia Sun, Qian Wu, and Carey Williamson. The official version of this paper is to appear in Proceedings of the 2nd IEEE Workshop on Performance and Management of Wireless and Mobile Networks (P2MNet), Tampa, FL, November 2006.
- Towards Stadium-Scale Wireless Media Streaming by Jean Cao and Carey Williamson. The official version of this paper appeared in Proceedings of IEEE/ACM MASCOTS, Monterey, California, September 2006.
- A Longitudinal Study of Peer-to-Peer Traffic Classification by Alok Madhukar and Carey Williamson. The official version of this paper appeared in Proceedings of IEEE/ACM MASCOTS, Monterey, California, September 2006.

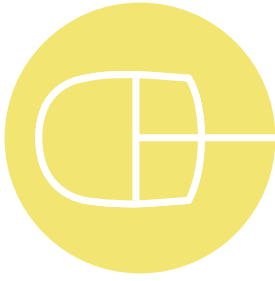
Projects:

- Wireless Internet Traffic Modeling.
- Multi-channel MAC Protocols for Wireless Networks.
- Stochastic Capacity Networks.

Graduate Students:

Jean Cao, PhD – QoS issues in Wireless LAN
Mingwei Gong, PhD – Wireless resource management and scheduling
Emir Halepovic, PhD – Evaluation of large-scale peer-to-peer computing applications
Andreas Hirt, PhD – Anonymous network communication (co-supervisor M. Jacobson)
Ahmed Obied, MSc – Honeypots (co-supervisor M. Jacobson)
Nadim Parvez, PhD – TCP Protocols for wired/wireless networks

<http://pages.cpsc.ucalgary.ca/~carey/>



Faculty

BRIAN WYVILL, *Professor*

Research Interests:

Brian's research interests centers around the theme of computer animation. In 3D modelling he (and his brother Geoff Wyvill) have designed methods for interacting and rendering implicit surfaces. These models, called SOFT objects, are very useful in animation for representing deformable surfaces. More recently, he has been working on the BlobTree, which includes blends, CSG boolean operations, Barr warps, and texturing of implicit surfaces. He is currently working on new methods for controlled blending, animation, precise contact modelling and volume control.

Selected publications 2006/2007:

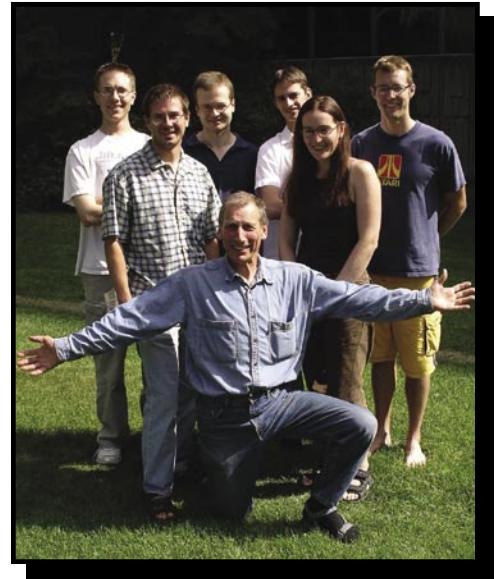
- Kevin Foster, Pauline Jepp, Brian Wyvill, Mario Costa Sousa, Callum Galbraith, Joaquim A. Jorge, Pen-and-Ink for BlobTree Implicit Models, Computer Graphics Forum (Proc. of Eurographics 2005), 24(3) (2005), 267-276.
- Ryan Schmidt, Brian Wyvill, Mario Costa Sousa, Joaquim A. Jorge, ShapeShop: Sketch-Based Solid Modeling with the BlobTree, 2nd Eurographics Workshop on Sketch-based Interfaces and Modeling, Dublin, Ireland, August 2005.
- Brian Wyvill, Kevin Foster, Pauline Jepp, Ryan Schmidt, Mario Costa Sousa, Joaquim A. Jorge, Stylistic Rendering of Implicit Models, 1st EG Workshop on Computational Aesthetics in Graphics, Visualization and Imaging, Girona, Spain, May 2005.
- Ryan Schmidt, Brian Wyvill, Mario Costa Sousa, Sketch Based Modeling with the Blob Tree, ACM Siggraph 2005 Sketch presentation, August 2005.

Projects:

- Better Blending between Multiple Nodes of the Blobtree.
- BlobTree Modeling System.

Graduate Students:

Erwin de Groot, PhD – Visualization methods for implicit surfaces
Pauline Jepp, PhD – Sculpting using Interactive Implicit Modeling. (co-supervisor M. Cos Sousa & J. Denzinger)
Vishal Kochhar, MSc – Computer Graphics



<http://pages.cpsc.ucalgary.ca/~blob/>

Faculty:

Anton Colijn - Faculty Association

Instructors

Katrin Becker
Frank Deur
Donna Fremont
Ivo Jirasek
Rose Joshua
Leonard Manzara
Craig Schock
James Tam
Nathaly Verwaal
Chris Walpole

Adjunct Professors:

Don Ariel
Hakan Erdogmus
Abram Gamer
Joaquim Jorge
Jalal Kawash
Tom Keenan
Maria L. Lantin
J. Ross Mitchell
Charles P. Pfleeger
Shari L. Pfleeger
Michael M. Richter
Christoph Sensen
Robert Simmonds
Peter D. Vize
Thomas W. Williams
Ian Witten

Emeritus Faculty:

Graham Birtwistle
James Bradley
Mike Brebner
Brian R. Gaines
David Hill
John Kendall
Mildred L. G. Shaw
Brian W. Unger
Michael R. Williams

Computer Halloween Party



CPSC 2006/2007





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