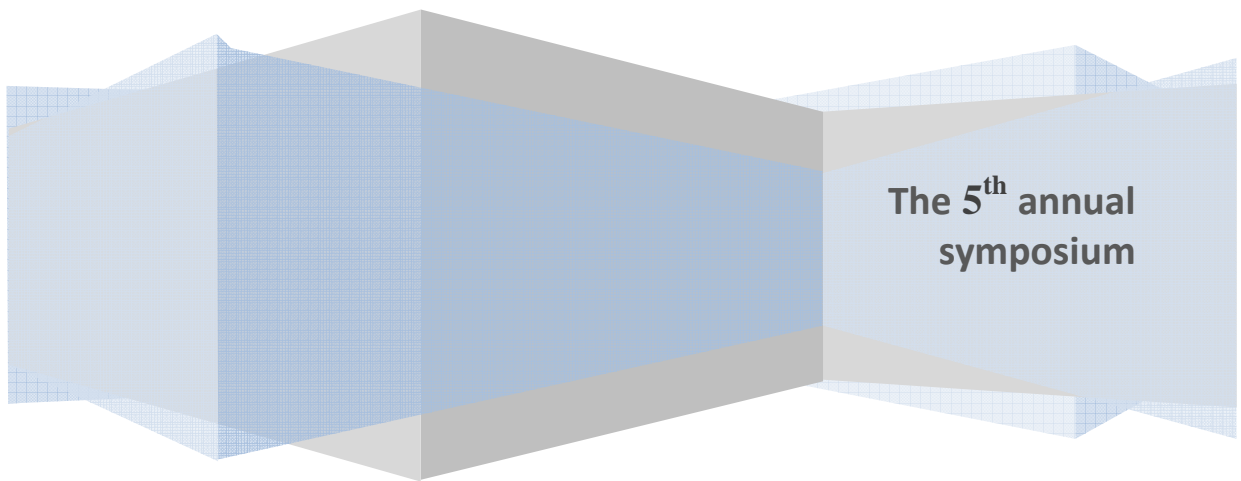




Connections 2009

ECE Graduate Symposium, U of T

May 14, 2009



The 5th annual
symposium

Welcome to the fifth annual University of Toronto Electrical and Computer Engineering (ECE) Graduate Symposium, Connections 2009. The objectives of this event are to promote interaction between members of industry and our graduate students and faculty, to learn about current research, to encourage cross-discipline research and to identify future directions and collaboration opportunities. This year we have presenters from 7 ECE groups: biomedical, communications, computer, control systems, electromagnetics, energy systems, photonics, and system control. We have prepared for an eventful program with:

- 35 short graduate student presentations
- A keynote speech by Dr. Tom Chau
- A panel session with U of T professors and company representatives
- A plenary session with presentations from Xilinx and The Innovations Group (TIG)

You will find more details about these events in the following pages. We hope that you will enjoy meeting our researchers and hopefully we will see you again next year.

Schedule

8:00 – 9:00	Registration & Complementary Continental Breakfast	
9:00 – 9:30	Opening Address (BA 1180) Keynote speech	
9:30 – 10:30	Session #1: (BA 1180) Performance I	Session #2 : (BA 1190) Reliability and Productivity
10:30 – 11:00	Poster Session #1	
11:00 – 12:00	Session #3: (BA1180) Performance II	Session #4: (BA 1190) Functionality I
12:00 – 13:00	Lunch	
13:00 – 13:30	ECTI Lab Tour	
13:30 – 14:00	Plenary Session	
14:00 – 15:00	Session #5: (BA 1180) Modeling	Session #6: (BA 1170) Functionality II
15:00 – 15:30	Poster Session #2 ECTI Lab Tour	
15:30 – 17:00	Panel Session (BA 1180) Awards Presentation for Top Speakers	
17:00 – 19:00	Showcase Dinner (GB202)	

Keynote Speech

9:10 am – 9:30 am

Speaker: Dr. Tom Chau

BA 1180

Tom Chau is the principal investigator in the PRISM lab. He is a Senior Scientist and Theme Leader, Innovation & Development, in the Bloorview Research Institute, and an Associate Professor and Graduate Coordinator of the Clinical Engineering Program, Institute of Biomaterials & Biomedical Engineering at the University of Toronto.

Dr. Chau holds a Canada Research Chair in Pediatric Rehabilitation Engineering (Canadian Institutes of Health Research). He also holds a doctorate in systems design engineering, with a specialization in pattern analysis and machine intelligence (Waterloo), a Masters in electrical & computer engineering (Toronto) and a Bachelors in engineering science (Toronto).

Dr. Chau's research interests lie in the exploitation of intelligent systems to maximize possibilities for children and youth with disabilities. A central focus of his activities is on enabling access for those who otherwise would have no means of communication or interaction with the environment.

Dr. Chau was recently honored with an Early Researcher Award (Ministry of Research & Innovation). Other notable accolades include: Canada's Top 40 Under 40 (Caldwell Partners), For Kids Sake Award (Rogers Communications), Maclean's Honour Roll (Maclean's Magazine) and Young Engineer Medal (Professional Engineers Ontario).

Session 1: **Performance I**

9:30 am – 10:30 am

BA 1180

1-1 Peter Yiannacouras, yiannac@eecg.utoronto.ca
FPGA-Based Vector Chaining

1-2 Eric LaForest, laforest@eecg.utoronto.ca
Efficient Implementation of Multi-ported Register Files on
FPGA

1-3 Steven Birk, sbirk@cs.toronto.edu
Parallelizing FPGA Placement Using Transactional
Memory

1-4 Daniel L. Ly, daniel.ly@utoronto.ca
A Distributed FPGA Architecture for Restricted Boltzmann
Machines

1-5 Jin Jin, jinjin@eecg.toronto.edu
Multimedia Multicasting in Next Generation Wireless
Communication Networks

1-6 Ali Khanafer, ali.khanafer@utoronto.ca
Transceiver Design for Broadband Wireless
Communications

Session 2: **Reliability and Productivity**

9:30 am – 10:30 am

BA 1190

2-1 Yunfeng Lin, ylin@eecg.toronto.edu

Data Persistence in Large-scale Sensor Networks with
Decentralized Fountain Codes

2-2 Hong Xu, henryxu@eecg.toronto.edu

XOR-Assisted Cooperative Diversity in OFDMA Wireless
Networks: Optimization Framework and Approximation
Algorithms

2-3 Vincent Mirian,

Scalable Macro-Pipelined Accelerator (SMPA for Matrix
Multiplication)

2-4 David Han, han@eecg.toronto.edu

Directive-based GPU Programming

2-5 Chuck Zhao, czhao@eecg.toronto.edu

Efficient Software-only Check-pointing Support for
Debugging

2-6 Navid Toosizadeh, navid@eecg.utoronto.ca

PVT-aware Self-tuning Design

Session 3: **Performance II**

11:00 am – 12:00 am

BA 1180

- 3-1 Yang-Yang Li**, yy.li@utoronto.ca
Cognitive Channel Reuse for User-deployed Femtocells

- 3-2 Bijan Golkar**, bijan@comm.utoronto.ca
Resource Management in Autonomous Infrastructure-based Cellular Networks

- 3-3 Martin Labrecque**, martinl@eecg.utoronto.ca
Maximizing the Returns of Parallelism in FPGA-based Processors

- 3-4 Dharmendra Gupta**, danny.gupta@utoronto.ca
Acceleration of CDO pricing on FPGA

- 3-5 Alireza Heidar-Barghi**, arhdr@eecg.toronto.edu
Matching Algorithms to Computing Architectures

- 3-6 Etienne Veilleux**, etienne.veilleux@utoronto.ca
Interconnection of Wind Turbines Using DC Grid

Session 4: **Functionality I**

11:00 am – 12:00 am

BA 1190

4-1 Jason Luu, jason.luu@utoronto.ca

Packing for Heterogeneous FPGAs

4-2 Yibin Chen, yibin@eecg.utoronto.ca

Error Trace Compaction Using Satisfiability Solving

4-3 Zimu Liu, zimu@eecg.toronto.edu

Why Are Peers Less Stable in Unpopular P2P Streaming Channels?

4-4 James Huang and Lionel Litty, z.huang@utoronto.ca

Ocasta: Separating Wheat from Chaff for System Configuration Management

4-5 Daniel Fingas, d.fingas@utoronto.ca

Autonomous Operation of A Parallel-Converter Motor Drive

4-6 Jurgen Alico, jurgen.alico@utoronto.ca

Multimode Digital Current Program Mode Controller

Session 5: **Modeling**

2:00 pm – 3:00 pm

BA 1180

- 5-1 Mohamed Zakaria Kamh**, m.zakariakamh@utoronto.ca
A Hybrid HNN-QP Based Approach for Dynamic Economic Dispatch Problem Solution
- 5-2 Elham Safi**, elham@eecg.utoronto.ca
Modeling and Optimization of Delay and Power for Processor Components
- 5-3 Guang Ji**, gji@comm.utoronto.ca
Stochastic Rate Control of VBR Scalable Video Streaming over Wireless Network
- 5-4 Henry Wong and Danyao Wang**, danyao.wang@utoronto.ca
Packet Network Simulator-on-Chip
- 5-5 Jimmy Qiu**, jimmy.qiu@utoronto.ca
Cough Detection and Forecasting for Radiation Therapy

Session 6: **Functionality II**

2:00 pm – 3:00 pm

BA 1170

- 6-1 Samuel Tien-Chieh Huang**, s.huang@utoronto.ca
Hardware Realization of Discrete Event System
Diagnosers
- 6-2 Hien K. Goi**, hien.goi@utoronto.ca
Vision-Based Vehicle Trajectory Following with Constant
Time Delay
- 6-3 Brian Keng**, brian.keng@gmail.com
A Succinct Memory Model for Automated Design
Debugging
- 6-4 Levent Kayili**, levent.kayili@utoronto.ca
Superluminal Group Delay and “Detection Latency” in the
Presence of Noise for Communication Systems
- 6-5 Sinisa Colic and Josh Dian**, sinisa.colic@utoronto.ca
Biologically Inspired Stimulation for Epilepsy Control
- 6-6 Jason R. Grenier**, j.grenier@utoronto.ca
Using Light to Make Light Devices

Lab Tours

The Emerging Communications Technology Institute (**ECTI**) is an interdisciplinary, inter-faculty research institute based at the University of Toronto. ECTI provides global university-based leadership through access to state-of-the-art research facilities, promotion of collaborative research with strategic partners, and by facilitating advanced educational opportunities and information exchange events.

Session 1: ECTI Bahen Prototyping Cleanroom

Location: BA 7180

Lab description: The Bahen Cleanroom provides two large areas in which to fabricate devices in silicon, compound semiconductors, ceramic, glass, and polymer. Resources include a Class 1000 photolithography/wet chemistry space, including two fully exhausted acid wet benches, and a Class 10,000 space housing deposition and etching machines.

Session 2: ECTI Electron Beam nanolithography Facility

Location: Wallberg Room 38 (basement)

Lab description: ECTI's recently opened Electron Beam Nanolithography Facility is in the basement of the Wallberg Building. The Class 100 cleanroom space houses an Electron Beam Lithography tool, and is the only one of its kind in Ontario or Western Canada. With the capability to define features as small as 7 nanometres, this technology offers a broad-base fabrication platform for research in areas ranging from electronic devices and integrated optics to the emerging fields of nanobiotechnology, nanoelectromechanical systems (NEMS), nanophotonics and nanomagnetism.

Panel Session

3:30 pm – 5:00 pm

BA 1180

Topic: “The future of research in Canada”

Panel members:

- **Jennifer MacInnis**
Director of Intellectual Property and Contracts, University of Toronto
VP Research.
- **Jonathan Rose**
Professor and Chair of the Edward S. Rogers Sr. Department of
Electrical and Computer Engineering, University of Toronto.
- **Av Utukuri**
President and CTO of Nytric Ltd., a leading Innovation Consulting
Firm that creates cutting edge technologies to turn innovative ideas into
successful products.
- **Cameron Serles**
Founder, President and CEO of Xiris Automation Inc., a manufacturer
of “machines that can see” defects in manufactured goods, primarily for
the global optical disc (CDs, DVDs) and metal fabrication industries.

Author List

Name	Group	Session
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Wong, Henry	Computer	5
Xu, Hong	Computer	2
Yiannacouras, Peter	Computer	1
Zhao, Chuck	Computer	2

Symposium Chairs

Ali Khamfer

Guang Ji

Bogdan Simion

Brian Keng

David Han

Dharmendra (Danny) Gupta

Mohammad Shahin Mahanta

Tao Xu

Advisers

Prof. Jonathan Rose, Department Chair

Jason Luu, Connections 2008 Symposium Chair

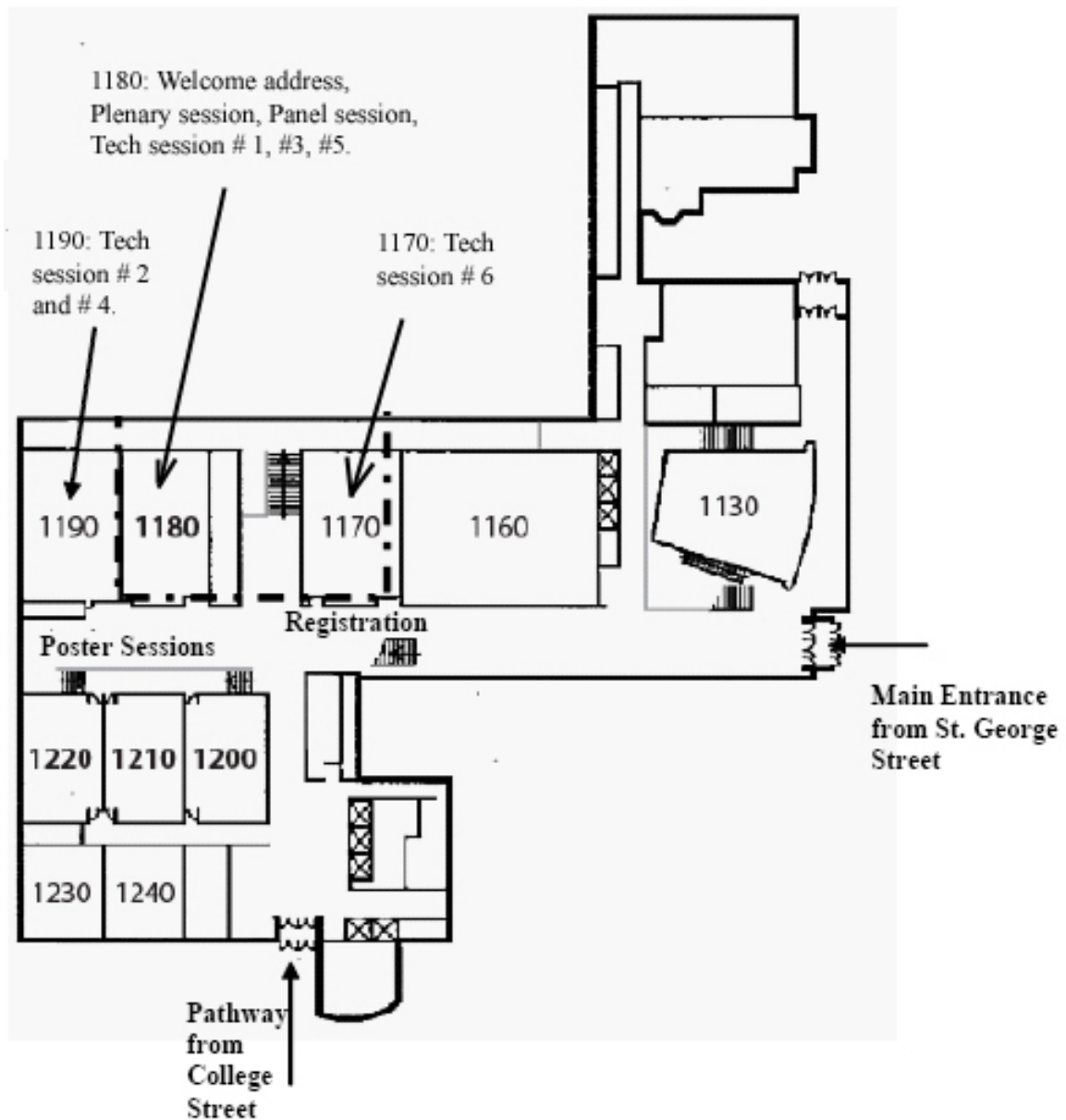
Xavier Pena, TIG

Symposium Map

Bahen Centre for Information Technology

40 St. George Street

Toronto, Ontario

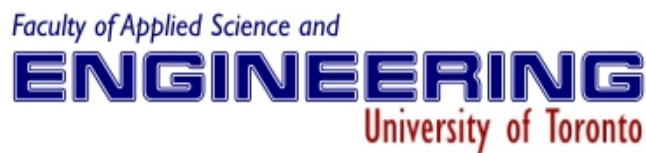


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