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Citizenship: Canadian

Education

2010 – 2014 **Doctor of Philosophy**

Simon Fraser University, School of Computing Science (Burnaby, Canada)

Thesis: Real-Time Embedded Low-Frequency Load Disaggregation

Advisor: Fred Popowich

2007 – 2009 **Bachelor of Technology**

British Columbia Institute of Technology

School of Computing and Academic Studies (Burnaby, Canada)

Major: Computer Systems with a Data Communications Specialization

1993 – 1996 **Diploma in Computer Technology**

Selkirk College (Castlegar, Canada)

2014 – **Certificate, Data Science**

Johns Hopkins University (Baltimore, United States)

2009 **Certificate, Electronics Technician**

George Brown College (Toronto, Canada)

Certifications

2013 **Senior Member (smIEEE)**

Institute of Electrical and Electronics Engineers (IEEE)

2010 **Information Systems Professional (ISP)**

Canadian Information Processing Society (CIPS)

Academic Experience

2014 – Postdoctoral Fellow & Sessional Instructor

Simon Fraser University, School of Computing Science (Burnaby, Canada)

Data analytics summary: cities and distribution area water and power data.

2014 – Research Associate

Simon Fraser University, School of Engineering Science (Burnaby, Canada)

2012 – 2013 Research Project and Capstone Project Mentor

British Columbia Institute of Technology, School of Energy (Burnaby, Canada)

Electrical and Computer Engineering Technology Program

2008 – Research Associate

British Columbia Institute of Technology, Applied Research (Burnaby, Canada)

Industry Experience

2012 Mitacs Accelerate Intern (4 months)

Awesense Wireless Inc. (Vancouver, Canada)

Data analytics summary: analyze time series power grid data, visualize losses.

2011 – 2012 NSERC Engage Research Assistant (8 months)

Embedded Automation, Inc. (Burnaby, Canada)

2006 – 2008 Co-Founder & CTO

Vvvroom.com (Burnaby, Canada)

Data analytics summary: newsfeed aggregator of thousands of feeds hourly.

2006 Vancouver Office Software Development Manager

AbsolutePoker.com: ePrado Management, Inc. (Burnaby, Canada)

Data analytics summary: one million financial transactions per day.

1996 – 2008 Principal & Senior Software Developer

Oponix Systems Inc. formerly Makonin Consulting Corp. (Burnaby, Canada)

Clients incl. Telus Mobility, Vancouver Coastal Health, Sierra Wireless, Safeway

Canada, Quartech Systems, Engineering Central, ApexMail, OAN Services

Data analytics summary: 1.8 billion call records for re-rating (Telus Mobility),
mass dynamic data conversion engine of modem activations (Sierra Wireless).

Publications

BOOKS & THESES

Makonin, S. (2014). *Real-Time Embedded Low-Frequency Load Disaggregation*. PhD thesis, Simon Fraser University, School of Computing Science

Bennett, D., **Makonin, S.**, Mayfield, V. W., Neustaedter, T., and Wrenn, M. R. (1997). *Visual C++ 5 Developer's Guide*. Sams Publishing, 2nd edition; Sams Publishing, ISBN: 0672310317.

JOURNAL ARTICLES (PEER REVIEWED)

Makonin, S., Bajic, I. V., and Popowich, F. (2014). Efficient Online Load Disaggregation Using a Sparse Viterbi Algorithm. *IEEE Signal Processing Letters*, [in revision].

Makonin, S. and Popowich, F. (2014). Nonintrusive Load Monitoring (NILM) Performance Evaluation: A unified approach for accuracy reporting. *Energy Efficiency*, Springer, DOI: 10.1007/s12053-014-9306-2

Makonin, S., Bartram, L., and Popowich, F. (2013). A Smarter Smart Home: Case Studies of Ambient Intelligence. *IEEE Pervasive Computing*, 12(1):58–66.

Makonin, S. and Popowich, F. (2012). Home Occupancy Agent: Occupancy and Sleep Detection. *GSTF Journal on Computing*, 2(1):182–186.

CONFERENCE PROCEEDINGS (PEER REVIEWED)

Makonin, S., Bajic, I. V., and Popowich, F. (2014). Efficient Sparse Matrix Processing for Nonintrusive Load Monitoring (NILM). In *Proceedings of the 2nd International Workshop on Non-Intrusive Load Monitoring*.

Makonin, S., Guzman Flores, L., Gill, R., Clapp, R. A., Bartram, L., and Gill, B. (2014). A Consumer Bill of Rights for Energy Conservation. In *Proceedings of the 2014 IEEE Canada International Humanitarian Technology Conference (IHTC)*.

Filsoof, R., Bodine, A., Gill, B., **Makonin, S.**, and Nicholson, R. (2014). Transmitting Patient Vitals Over a Reliable ZigBee Mesh Network. In *Proceedings of the 2014 IEEE Canada International Humanitarian Technology Conference (IHTC)*.

Makonin, S., Sung, W., Dela Cruz, R., Yarrow, B., Gill, B., Popowich, F., and Bajic, I. V. (2013). Inspiring Energy Conservation Through Open Source Metering Hardware and Embedded Real-Time Load Disaggregation. In *Proceedings of the 5th IEEE PES Asia-Pacific Power and Energy Engineering Conference (APPEEC)*.

- Makonin, S.,** Popowich, F., Bartram, L., Gill, B., and Bajic, I. V. (2013). AMPds: A Public Dataset for Load Disaggregation and Eco-Feedback Research. In *Proceedings of the 2013 IEEE Electrical Power and Energy Conference (EPEC)*.
- Makonin, S.,** Popowich, F., Moon, T., and Gill, B. (2013). Inspiring Energy Conservation Through Open Source Power Monitoring and In-Home Display. In *Proceedings of the 2013 IEEE Power and Energy Society General Meeting*.
- Makonin, S.,** Popowich, F., and Gill, B. (2013). The Cognitive Power Meter: Looking Beyond the Smart Meter. In *Proceedings of the 2013 26th Annual IEEE Canadian Conference on Electrical and Computer Engineering (CCECE)*.
- Makonin, S.,** Kashani, M., and Bartram, L. (2012). The Affect of Lifestyle Factors on Eco-Visualization Design. In *Proceedings of Computer Graphics International (CGI)*.
- Makonin, S.,** Pasquier, P., and Bartram, L. (2011). Elements of Consumption: An abstract visualization of household consumption. In *Smart Graphics*, volume 6815 of LNCS, pages 194–198. Springer Berlin Heidelberg.
- Makonin, S.** and Popowich, F. (2011). An intelligent agent for determining home occupancy using power monitors and light sensors. In *Toward Useful Services for Elderly and People with Disabilities*, volume 6719 of LNCS, pages 236–240. Springer Berlin Heidelberg.

POSTER SESSIONS

- Makonin, S.** (2014). Nonintrusive Load Monitoring (NILM): What an algorithm can tell you about your energy consumption. In *Poster Session at IEEE Vancouver Section Annual General Meeting*.

TECHNICAL REPORTS

- Makonin, S.** (2012). A Visualization Prototype for Detecting Energy Losses on a Power Grid. Awesense Wireless Inc. Mitacs-Accelerate Internship.
- Makonin, S.** (2012). Approaches to Non-Intrusive Load Monitoring (NILM) in the Home. PhD Depth Report, Simon Fraser University, School of Computing Science.
- Makonin, S.** (2008). Map with Wheels. BTech Major Project Final Report. British Columbia Institute of Technology, School of Computing and Academic Studies.

Scholarships, Awards & Grants

- 2014 SFU GSS Professional Development Grant
- 2014 SFU Faculty of Applied Science (FAS) Graduate Fellowship (PhD)
- 2014 The Franklin D. & Helen K. Van Pykstra Graduate Scholarship in Intelligent Systems (Ebco/Eppich)
- 2013 SFU Travel & Minor Research Award
- 2013 BCIT School of Energy Research Seed Funding Grant
- 2013 SFU President's PhD Scholarship
- 2013 SFU Travel & Minor Research Award
- 2013 SFU Graduate Fellowship (PhD)
- 2012 SFU Graduate Fellowship (PhD)
- 2012 SFU GSS Professional Development Grant
- 2012 The Pacific Metals/Leon Lotzkar Memorial Graduate Scholarship in Intelligent Systems (Ebco/Eppich)
- 2010 BCIT Vancouver 2010 Olympic Winter Games Legacy Fund Scholarship

Invited Talks

BCIT TALK INVITATIONS

- 2014 **Why There Is Nothing Smart about the Current Smart Home and Smart Meter**
BCIT, School of Construction and the Environment, Building Sciences Masters Program (Burnaby, Canada), Feb 18.
- 2014 **Using Computing and Engineering to Tackle Sustainability Problems with Energy Consumption**
BCIT, School of Energy (Burnaby, Canada), Feb 21.

SFU TALK INVITATIONS

2013 Load Disaggregation For Energy Conservation

Our Own CMPT 120 Mini-Conference: Research in Computing Science, Sep 27.

2013 Lightning Talks: Sustainability

SFU Research Commons, July 18.

Radio broadcast: CJSF on July 25th at 2:30pm, Sustainable Futures Program.

2013 The Cognitive Power Meter, Not The Smart Meter

SFU Computing Science GSA Scientific Colloquium, June 19.

2010 An Introduction to the Smart Grid

SFU COGS 300 / CMPT 417 "Intelligent Systems" Course Lecture, April 8.

Teaching Experience

Spring 2015, Introduction to the Internet and the World Wide Web (CMPT 165)

Fall 2014 Simon Fraser University, School of Computing Science

Students: in-class 200, dist ed 225. TAs: 6.

Service To Profession

CONFERENCE/WORKSHOP ORGANIZING, CHAIRING & HOSTING

2014 – Local Organizing Committee Member

2016 IEEE World Congress on Computational Intelligence (WCCI)

Vancouver, Canada. July 25 – 29, 2016

2014 Organizer and Host

IEEE Vancouver Kinect and Structure Sensor Hackathon

Burnaby, Canada. November 8 – 9, 2014, 28-hours

2014 Web Co-Chair

2014 IEEE 15th International Conference on High Performance Switching and Routing (HPSR).

Vancouver, Canada. July 1 – 4, 2014

INVITED JOURNAL REVIEWER

2014 IEEE Transactions on Mobile Computing (2 manuscript reviews)

2013 Springer's Energy Efficiency Journal (1 manuscript review)

TECHNICAL PROGRAM COMMITTEE MEMBER

2015 First IEEE Workshop on Pervasive Energy Services (PerEnergy)

2014, 2013, International Symposium on Ubiquitous Computing (UCAmI) and Ambient

2012 Intelligence & International Workshop on Ambient Assisted Living (IWAAL)

2012 2012 IEEE International Conference on Power and Energy (PECON).

2011 International Symposium on Ubiquitous Computing and Ambient Intelligence (UCAmI)

EXTERNAL CONFERENCE REVIEWER

2013, 2011 Canadian Conference on Artificial Intelligence (Canadian AI)

GRANTING AGENCY REVIEWER

2014 Mitacs Accelerate Grant Proposal External Reviewer

Volunteer Work

2014 – **Chair**, IEEE Vancouver Joint Computing Chapter

2014 – **Leader & Organizer**, IEEE/SFU Internet of Things (IoT) Club

2014 **Co-Chair & Treasurer**, Westside Montessori Academy PAC

2013 **Executive-At-Large**, Westside Montessori Academy PAC

2012 – 2014 **Membership Development Chair**, IEEE Vancouver Section