Dr. Stephen Makonin, PhD, ISP, smIEEE

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Blog: http://eco-sustain.org

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)

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 – 2015 **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 gird 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 Costal 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)

Wallace, J., Richardson, K., Gill, B., and **Makonin, S.** (2015). Cognitive Radio Technology: System Evolution. In *Proceedings of the 4th International Conference On Wireless Networks and Embedded Systems (WECON)*.

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 Embed-

ded 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 LNSC, 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

2015 IEEE Vancouver Section Leadership and Contribution Award — Initiative

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, Fall 2014 **Introduction to the Internet and the World Wide Web (CMPT 165)**
Simon Fraser University, School of Computing Science
Students: in-class 200, dist ed 225. TAs: 6.

Service To Profession

CONFERENCE/WORKSHOP ORGANIZING, CHAIRING & HOSTING

2015 **Technical Program Co-Chair**
6th Int. Conf. and Workshop on Computing and Communication (IEMCON)
Vancouver, Canada. October 15 – 17, 2015

2015 **Organizer and Host**
IEEE Vancouver Windows 10 Hackathon
Burnaby, Canada. May 16 – 17, 2015, 28-hours

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**
IEEE 15th Int. Conf. on High Performance Switching and Routing (HPSR).
Vancouver, Canada. July 1 – 4, 2014

INVITED JOURNAL REVIEWER

2015 IEEE Transactions on Smart Grid (2 manuscript reviews)

2015 – 2014 IEEE Transactions on Mobile Computing (3 manuscript reviews)

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

TECHNICAL PROGRAM COMMITTEE MEMBER

2015 Int. Conf. on Ubiquitous Computing and Ambient Intelligence (UCAmI); Int. Work-Conf. on Ambient Assisted Living (IWAAL); Int. Conf. on Ambient Intelligence for Health (AmIHEALTH)

2015 First IEEE Workshop on Pervasive Energy Services (PerEnergy)

2014, 2013, 2012 Int. Symp. on Ubiquitous Computing (UCAmI); Ambient Intelligence & Int. Workshop on Ambient Assisted Living (IWAAL)

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

2011 Int. Symp. on Ubiquitous Computing and Ambient Intelligence (UCAmI)

EXTERNAL CONFERENCE REVIEWER

2015, 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