

Dr. Stephen Makonin, PhD, ISP, smIEEE

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Citizenship: Canadian

Education

2014 – 2010 **Doctor of Philosophy**

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

Thesis: Real-Time Embedded Low-Frequency Load Disaggregation

Advisor: Fred Popowich

2009 – 2007 **Bachelor of Technology**

British Columbia Institute of Technology

School of Computing and Academic Studies (Burnaby, Canada)

Major: Computer Systems with a Data Communications Specialization

1996 – 1993 **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)

2015 – 2008 Research Associate

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

2013 – 2012 Research Project and Capstone Project Mentor

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

Electrical and Computer Engineering Technology Program

Industry Experience

2012 Mitacs Accelerate Intern (4 months)

Awesense Wireless Inc. (Vancouver, Canada)

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

2012 – 2011 NSERC Engage Research Assistant (8 months)

Embedded Automation, Inc. (Surrey, Canada)

2008 – 2006 Co-Founder & CTO

Vvvroom.com (Burnaby, Canada)

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

2008 – 1996 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).

2006 Vancouver Office Software Development Manager

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

Data analytics summary: one million financial transactions per day.

Publications

BOOKS & THESES

Pacheco-Torgal, F., Rasmussen, E., Granqvist, C.-G., Ivanov, V., Kaklauskas, H. A., and **Makonin, S.**, editors (in draft). *Start-Up Creation: The Smart Eco-Efficient Built Environment*. Elsevier, ISBN: tbd.

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., Popowich, F., Bajic, I. V., Bartram, L., and Gill, B. (2015). Real-Time Nonintrusive Load Monitoring (NILM). *IEEE Transactions on Smart Grid*, [under review].

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 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

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

INTERNATIONAL INVITATIONS

2015 **From Socioeconomic Concerns to Standardizing Accuracy to Water NILM**
The 2nd EU Nonintrusive Load Monitoring Workshop (London, UK), Jul 8.

BCIT TALK INVITATIONS

- 2014 **Why There Is Nothing Smart about the Current Smart Home & 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

2016 – 2014 Local Arrangements Chair

2016 IEEE World Congress on Computational Intelligence (WCCI)
Vancouver, Canada. July 25 – 29, 2016

2015 Posters and PhD Track Chair

Int. Conf. on Big Data and Analytics for Smart Cities (BigDASC)
Toronto, Canada. October 13, 2015

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 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 [regular reviewer, 1 manuscript/month]

2015 – 2014 IEEE Transactions on Mobile Computing [periodic reviewer]

2013 Springer's Energy Efficiency Journal [periodic reviewer]

TECHNICAL PROGRAM COMMITTEE MEMBER

2015 – 2011 Int. Conf. on Ubiquitous Computing and Ambient Intelligence (UCAmI)
[regular, yearly TPC member]

2015 Int. Conf. on Big Data and Analytics for Smart Cities (BigDASC)

2015 First IEEE Workshop on Pervasive Energy Services (PerEnergy)

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

EXTERNAL CONFERENCE REVIEWER

2015, 2013, Canadian Conference on Artificial Intelligence (Canadian AI)
2011

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

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

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