Dr. Stephen Makonin

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Impact: *factor* 6.86, *h-index* 8
Citations: 189 (as of Feb. 1, 2016)

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)

Professional Affiliation

under review **Professional Engineer (PEng) — *Expected Mar/2016***
Association of Professional Engineers and Geoscientists of BC (APEGBC)
1. Status of Academic Assessment is ***completed***.
2. Status of Experience Assessment is ***in progress***.
3. Status of Law and Ethics Seminars is ***completed***.
4. Status of Professional Practice Examination (PPE) is ***completed*** and ***passed***.

2013 – now **Senior Member (smIEEE)**
Institute of Electrical and Electronics Engineers (IEEE)
Student Member and Member since 2008.

2010 – now **Information Systems Professional (ISP)**
Canadian Information Processing Society (CIPS)

Research Experience

2014 – now **Postdoctoral Fellow & Research Associate**
Simon Fraser University, School of Engineering Science (Burnaby, Canada)
Advisor: Ivan V. Bajic

2014 – 2015 **Postdoctoral Fellow & Sessional Instructor**
Simon Fraser University, School of Computing Science (Burnaby, Canada)
Advisors: Wolfgang Stuerzlinger (postdoc) & Anthony Dixon (instructor)

2008 – 2015 **Research Associate**
British Columbia Institute of Technology, Applied Research (Burnaby, Canada)

Graduate Student Co-/Supervision

2014 – 2015 **Co-Supervised Bradley Ellert — MSc Thesis (defended Aug 17, 2015)**
Simon Fraser University, School of Computing Science (Burnaby, Canada)
Thesis: Leveraging Submetered Electricity Loads to Disaggregate Household Water-Use

Teaching Experience

Fall 2014, Spring 2015 **Introduction to the Internet and the World Wide Web (CMPT 165)**
Simon Fraser University, School of Computing Science
Students each semester: in-class section 200, dist ed section 225
TAs/TMs: in-class section 3, dist ed section 3

Industry Experience (Software Engineering)

2015 – now **NSERC Engage Research Assistant**
BC Hydro (Vancouver, Canada)

2014 – now **Co-Founder & Senior Research Scientist**
SweetLightning (Calgary, Canada)

2012 **Mitacs Accelerate Intern (4 months)**
Awesense Wireless Inc. (Vancouver, Canada)

2011 – 2012 **NSERC Engage Research Assistant (8 months)**
Embedded Automation, Inc. (Surrey, Canada)

2006 – 2008 **Co-Founder & CTO**
Vvvroom.com (Burnaby, Canada)

2006 **Vancouver Office Software Development Manager**
AbsolutePoker.com: ePrado Management, Inc. (Vancouver, Canada)

1998 – 1999 **Co-Founder & Applications Developer**
Levaly Software (Vancouver, Canada)

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

Scholarships, Awards & Grants

2015 IEEE Vancouver Section Leadership and Contribution Award — Initiative

2015 NSERC Postdoctoral Fellowship (PDF) — Application Deemed Meritorious

2012, 2014 SFU GSS Professional Development Grant

2014 SFU Faculty of Applied Science (FAS) Graduate Fellowship (PhD)

2012, 2014 Ebco/Eppich Graduate Scholarships in Intelligent Systems

2013, 2013 SFU Travel & Minor Research Award

2013 BCIT School of Energy Research Seed Funding Grant

2013 SFU President's PhD Scholarship

2012, 2013 SFU Graduate Fellowship (PhD)

2010 BCIT Vancouver 2010 Olympic Winter Games Legacy Fund Scholarship

Publications (see Google Scholar & Research Gate)

BOOKS & THESES

Pacheco-Torgal, F., Rasmussen, E., Granqvist, C.-G., Ivanov, V., Kaklauskas, H. A., and **Makonin, S.**, editors (2016). *Start-Up Creation: The Smart Eco-Efficient Built Environment*. Woodhead Publishing/Elsevier, ISBN: 978-0-08-100546-0. Authored: **Makonin, S.** (2015) Chapter 18: App programming and its use in smart buildings. [in press, on sale June/2016]

Makonin, S. (2014). *Real-Time Embedded Low-Frequency Load Disaggregation*. PhD thesis, Simon Fraser University, School of Computing Science. [citations: 3]

Bennett, D., **Makonin, S.**, Mayfield, V. W., Neustaedter, T., and Wrenn, M. R. (1996). *Visual C++ 5.0 Developer's Guide*. Sams Publishing, ISBN: 978-0-672-31031-7. [citations: 29]

JOURNAL ARTICLES (PEER REVIEWED)

Makonin, S., Ellert, B., Bajic, I. V., and Popowich, F. (2015). Electricity, water, and natural gas consumption of a residential house in Canada from 2012 to 2014. *Scientific Data*, NPG. [in revised submission]

Makonin, S., Popowich, F., Bajic, I. V., Gill, B., and Bartram, L. (2015). Exploiting HMM Sparsity to Perform Online Real-Time Nonintrusive Load Monitoring. *IEEE Transactions on Smart Grid*, PP(99):1–11. doi: 10.1109/TSG.2015.2494592 [impact factor: 4.252]

Makonin, S. and Popowich, F. (2014). Nonintrusive Load Monitoring (NILM) Performance Evaluation. *Energy Efficiency*, 8(4):809–814. Springer. [impact factor: 1.060, citations: 5]

Makonin, S., Bartram, L., and Popowich, F. (2013). A Smarter Smart Home: Case Studies of Ambient Intelligence. *IEEE Pervasive Computing*, 12(1):58–66. [impact factor: 1.545, citations: 25]

Makonin, S. and Popowich, F. (2012). Home Occupancy Agent: Occupancy and Sleep Detection. *GSTF Journal on Computing*, 2(1):182–186. [impact factor: tbd, citations: 6]

CONFERENCE PROCEEDINGS (PEER REVIEWED)

Makonin, S. (2016). Investigating the Switch Continuity Principle Assumed in Non-Intrusive Load Monitoring (NILM). In *Proceedings of the 29th Annual IEEE Canadian Conference on Electrical and Computer Engineering (CCECE)*. [to appear]

Makonin, S., McVeigh, D., Stuerzlinger, W., Tran, K., and Popowich, F. (2016). Mixed-Initiative for Big Data: The Intersection of Human + Visual Analytics + Prediction. In *Proceedings of the 49th Hawaii International Conference on System Sciences (HICSS)*, pp. 1427-1436.

Ellert, B., **Makonin, S.**, and Popowich, F. (2015). Appliance Water Disaggregation via Non-Intrusive Load Monitoring (NILM). In *Proceedings of the EAI International Conference on Big Data and Analytics for Smart Cities (BigDASC)*.

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*. [citations 10]

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)*. [citations: 2]

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)*. [citations: 2]

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)*. [citations: 63]

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*. [citations: 2]

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)*. [citations: 11]

Makonin, S., Kashani, M., and Bartram, L. (2012). The Affect of Lifestyle Factors on Eco-Visualization Design. In *Proceedings of Computer Graphics International (CGI)*. [citations: 12]

Makonin, S., Pasquier, P., and Bartram, L. (2011). Elements of Consumption: An abstract visualization of household consumption. In *Smart Graphics*, LNCS, 6815:194–198. Springer Berlin Heidelberg. [citations: 11]

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*, LNCS, 6719:236–240. Springer Berlin Heidelberg. [citations: 8]

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*.

PUBLISHED PUBLICLY AVAILABLE DATASETS

Makonin, S. (2015). *AMPds2: Almanac of Minutely Power dataset (Version 2)*, http://dx.doi.org/10.7910/DVN/FIE0S4, Harvard Dataverse, V1. [to be released, previous release 2013 below].

Makonin, S. (2015). *AMPds: Almanac of Minutely Power dataset (R2013)*, http://dx.doi.org/10.7910/DVN/MXB7VO, Harvard Dataverse, V1.

Makonin, S. (2015). *ODDs: Occupancy Detection Dataset*, http://dx.doi.org/10.7910/DVN/2K9FFE, Harvard Dataverse, V1.

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.

Invited Talks

INTERNATIONAL INVITATIONS

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

2015 **Probabilistic Modelling and Inference with Application to Understanding Home Energy Use**
SFU CMPT 310 "Artificial Intelligence Survey" 2-hour Course Lecture, Nov 16.

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" 2-hour Course Lecture, April 8.

Service To Profession

GENERAL CHAIR & ORGANIZER

2015 – now 3rd International Workshop on Non-Intrusive Load Monitoring (NILM)
Vancouver, Canada. May 14 – 15, 2016

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

2014 IEEE Vancouver Kinect and Structure Sensor Hackathon
Burnaby, Canada. November 8 – 9, 2014, 28-hours

WEBSITE & SOCIAL MEDIA CHAIR

2015 – now 14th IEEE International NEW Circuits And Systems (NEWCAS) Conference
Vancouver, Canada. June 26 – 29, 2016

2015 – now 29th Annual IEEE Canadian Conf. on Electrical and Computer Engineering (CCECE)
Vancouver, Canada. May 15 – 18, 2016

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

LOCAL ARRANGEMENTS CHAIR

2014 – now 2016 IEEE World Congress on Computational Intelligence (WCCI)
Vancouver, Canada. July 25 – 29, 2016

TECHNICAL PROGRAM COMMITTEE (TPC) MEMBER

2016 Int. Workshop on Computational Energy Management in Smart Grids (CEMiSG)

2015 – 2016 IEEE Workshop on Pervasive Energy Services (PerEnergy)

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

2011 – 2015 Int. Conf. on Ubiquitous Computing and Ambient Intelligence (UCAmI)

2012 2012 IEEE Int. Conf. on Power and Energy (PECON).

INVITED JOURNAL REVIEWER (SEE PUBLONS PROFILE)

2015 – 2016 IEEE Transactions on Smart Grid

2013 – 2015 Springer's Energy Efficiency Journal

2014 – 2015 IEEE Transactions on Mobile Computing

MISCELLANEOUS ACTIVITIES

2011, 2013, 2015 **External Paper Reviewer**, Canadian Conference on Artificial Intelligence (AI)

2014 **External Grant Reviewer**, Mitacs Accelerate Grant Proposal

Volunteer Work

2014 – now **Treasurer**, Westside Montessori Academy PAC (incl. Co-Chair for 2014/15 school year)

2014 – 2016 **Chair**, IEEE Vancouver Joint Computing Chapter

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