Dr. Stephen Makonin

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Impact: *factor* 8.407, *h-index* 9
Citations: 254 (as of Aug. 24, 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)**
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

2016 – now **Postdoctoral Fellow**
University of British Columbia, Electrical and Computer Engineering (Burnaby, Canada)
Advisor: Z. Jane Wang

2014 – 2016 **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)

2016 – now **Disaggregation/NILM Contract Scientist** — Green Running (London, UK)

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

2015 – 2016 **NSERC Engage Research Assistant (6 mos.)** — BC Hydro (Vancouver, Canada)

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

2011 – 2012 **NSERC Engage Research Assistant (8 mos.)** — Embedded Automation (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

2011, 2015 **NSERC Engage Grants ($25k each, 6 months each)**

2015 IEEE Vancouver Section Leadership and Contribution Award — Initiative

2015 NSERC Postdoctoral Fellowship (PDF) — Application Deemed Meritorious

2012, 2014 **SFU GSS Professional Development Grant ($500 each)**

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 ($10k, 4 months)**

2013 SFU President's PhD Scholarship

2012, 2013 SFU Graduate Fellowship (PhD)

2012 **Mitacs Accelerate Grant ($15k, 4 months)**

2010 BCIT Vancouver 2010 Olympic Winter Games Legacy Fund Scholarship

Publications (see Semantic Scholar, 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.

Makonin, S. (2014). *Real-Time Embedded Low-Frequency Load Disaggregation*. PhD thesis, Simon Fraser University, School of Computing Science. [citations: 6]

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: 33]

JOURNAL ARTICLES (PEER REVIEWED)

Guzman, L., **Makonin, S.**, and Clapp, R. A. (2016). CarbonKit: a technological platform for personal carbon tracking. *Computers, Environment and Urban Systems* [impact factor: 2.092, in submission]

Bhotto, Md. Z. A., **Makonin, S.**, and Bajic, I. V. (2016). Load Disaggregation Based on Aided Linear Integer Programming. *IEEE Transactions on Circuits and Systems II: Express Briefs*, PP(99):1–5. doi: 10.1109/TCSII.2016.2603479 [impact factor: 1.136]

Makonin, S., Ellert, B., Bajic, I. V., and Popowich, F. (2016). Electricity, water, and natural gas consumption of a residential house in Canada from 2012 to 2014. *Scientific Data*, 3(160037):1–12. [impact factor: tbd, citations: 1]

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, citations: 5]

Makonin, S. and Popowich, F. (2014). Nonintrusive Load Monitoring (NILM) Performance Evaluation. *Energy Efficiency*, 8(4):809–814. [impact factor: 1.183, citations: 9]

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: 1.836, citations: 29]

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: 7]

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)*. [citations: 1]

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. [citations: 1]

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)*. [citations: 2]

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)*. [citations: 2]

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 12]

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: 6]

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: 3]

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: 80]

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: 3]

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: 16]

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: 13]

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: 14]

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: 9]

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. (2016). *AMPds2: Almanac of Minutely Power dataset (Version 2)*, http://dx.doi.org/10.7910/DVN/FIE0S4, Harvard Dataverse, V1.

Makonin, S. (2013). *AMPds: Almanac of Minutely Power dataset (R2013)*, http://dx.doi.org/10.7910/DVN/MXB7VO, Harvard Dataverse, V1.

Makonin, S. (2010). *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. [citations: 1]

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.

SFU TALK INVITATIONS (A SELECTED FEW)

2013 **Lightning Talks: Sustainability**
SFU Research Commons, July 18.
Radio broadcast: CJSF on July 25th at 2:30pm, Sustainable Futures Program.

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

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

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

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

WEBSITE & SOCIAL MEDIA CHAIR

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

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

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

LOCAL ARRANGEMENTS CHAIR

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

TECHNICAL PROGRAM COMMITTEE (TPC) MEMBER

2015 – 2017 IEEE Workshop on Pervasive Energy Services (PerEnergy)

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

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

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

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

INVITED JOURNAL REVIEWER (SEE PUBLONS PROFILE)

2016 Nature Scientific Data

2016 IEEE Pervasive Computing

2015 – 2016 IEEE Transactions on Smart Grid

2013 – 2016 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

2016 – now **Vice-Chair**, IEEE Vancouver Signal Processing Chapter

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