

# Dr. Stephen Makonin

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## 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

- 2014 – now* **Postdoctoral Fellow & Research Associate**  
Simon Fraser University, School of Engineering Science (Burnaby, Canada)  
Advisor: Ivan V. Bajic
- 2016 – now* **Postdoctoral Fellow**  
University of British Columbia, Electrical and Computer Engineering (Burnaby, Canada)  
Advisor: Z. Jane Wang
- 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*, **Introduction to the Internet and the World Wide Web (CMPT 165)**  
*Spring 2015* 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)

- 2014 – now* **Co-Founder & Senior Research Scientist** — SweetLightning (Calgary, Canada)
- 2016* **Disaggregation/NILM Contract Scientist (6 mos.)** — Green Running (London, UK)
- 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** — Vvvrroom.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 Coastal Health, Sierra Wireless, Safeway Canada, Quartech Systems, Engineering Central, ApexMail, OAN Services

## Grants & Funding

- 2016 IC-IMPACTS NCE Project Grant (\$133k each, 2 years, 11.2% success rate)
- 2011, 15, 16 NSERC Engage Grants (\$25k each, 6 months each)
- 2012, 14 SFU GSS Professional Development Grant (\$500 each)
- 2013 BCIT School of Energy Research Seed Funding Grant (\$10k, 4 months)
- 2012 Mitacs Accelerate Grant (\$15k, 4 months)

## Publications (see citation report at end of CV)

### 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.

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.

### 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]

**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*, 7(6):2575-2585.  
[impact factor: 4.252]

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

**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]

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

## 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)*.
- 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*.
- 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*, LNCS, 6815:194–198. 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*, LNCS, 6719:236–240. 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*.

## PUBLISHED PUBLICLY AVAILABLE DATASETS

**Makonin, S.** (2016). *AMPds2: Almanac of Minutely Power dataset (Version 2)*, <http://dx.doi.org/10.7910/DVN/FIEoS4>, 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.

**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

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

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

### 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 (UCAml)
- 2012* IEEE Int. Conf. on Power and Energy (PECON)

### MISCELLANEOUS ACTIVITIES

- 2011, 13, 15, 17* **External Paper Reviewer**, Canadian Conference on Artificial Intelligence (AI)
- 2014* **External Grant Reviewer**, Mitacs Accelerate Grant Proposal

## Scholarships & Awards

- 2015 IEEE Vancouver Section Leadership and Contribution Award — Initiative
- 2015 NSERC Postdoctoral Fellowship (PDF) — Application Deemed Meritorious
- 2014 SFU Faculty of Applied Science (FAS) Graduate Fellowship (PhD)
- 2012, 14 Ebco/Eppich Graduate Scholarships in Intelligent Systems
- 2013 SFU Travel & Minor Research Award (2 awards won that year)
- 2013 SFU President's PhD Scholarship
- 2012, 13 SFU Graduate Fellowship (PhD)
- 2010 BCIT Vancouver 2010 Olympic Winter Games Legacy Fund Scholarship

## 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

## Citation Counts Report

This report was generated by <https://github.com/smakonin/ScholarHacks> and reports [Google Scholar results](#).

Report generated on: 2017-03-20 15:48:42.465498

Citations = 326  
 h-index = 11  
 i10-index = 12

Paper Title	Citations
AMPds: A public dataset for load disaggregation and eco-feedback re...	106
A Smarter Smart Home: Case Studies of Ambient Intelligence	34
Visual C++ 5.0 Developer's Guide	34
The cognitive power meter: Looking beyond the smart meter	18
Nonintrusive load monitoring (NILM) performance evaluation	17
The Affect of Lifestyle Factors on Eco-Visualization Design	15
Elements of consumption: an abstract visualization of household con...	15
Efficient Sparse Matrix Processing for Nonintrusive Load Monitoring...	14
Exploiting HMM Sparsity to Perform Online Real-Time Nonintrusive Lo...	11
Home Occupancy Agent: Occupancy and Sleep Detection	11
An intelligent agent for determining home occupancy using power mon...	11
Real-time embedded low-frequency load disaggregation	10
A consumer bill of rights for energy conservation	7
Inspiring energy conservation through open source power monitoring ...	5
Electricity, water, and natural gas consumption of a residential ho...	4
Inspiring energy conservation through open source metering hardware...	4
Mixed-Initiative for Big Data: The Intersection of Human + Visual A...	2
Appliance Water Disaggregation via Non-Intrusive Load Monitoring (N...	2
Cognitive Radio Technology: System Evolution	2
Approaches to Non-Intrusive Load Monitoring (NILM) in the Home	2
Start-Up Creation: The Smart Eco-efficient Built Environment	1
Investigating the Switch Continuity Principle Assumed in Non-Intrus...	1

Also see [Semantic Scholar](#) and [Research Gate](#) for other read/citation statistics.

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## Stephen Makonin

<https://publons.com/a/490319>

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### Publons Rankings










75th percentile of reviewers from University of British Columbia on Publons up until March 2017.

84th percentile of reviewers from Simon Fraser University on Publons up until March 2017.

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### Peer Review Summary

Performed 35 reviews for journals including *IEEE Transactions on Smart Grid* and *Energy Efficiency*; placing in the 94th percentile for verified review contributions on Publons up until March 2017.

	<b>16</b>	IEEE Transactions on Smart Grid
	<b>4</b>	Energy Efficiency
	<b>3</b>	IEEE Transactions on Mobile Computing
	<b>2</b>	Applied Energy
	<b>2</b>	IEEE Pervasive Computing
	<b>2</b>	IEEE International Conference on Power and Energy
	<b>2</b>	IEEE PerEnergy
	<b>1</b>	ACM Transactions on Intelligent Systems and Technology
	<b>1</b>	Scientific Data
	<b>1</b>	Power Engineering Letters
	<b>1</b>	Journal of Thai Interdisciplinary Research

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