

Stephen Makonin, PhD, PEng, smIEEE

Address: 3738 Kincaid Street
Burnaby BC Canada
V5G 1V5

Mobile: +1 604-725-7838
Email: smakonin@sfu.ca
Twitter: @SMakonin

Citizenship: Canadian

Website: <http://makonin.com>
CompSust Lab: <http://compsust.fas.sfu.ca>

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)
- 2018* **Certificate, Software Carpentry Instructor**
Software Carpentry Foundation (Vancouver, BC)
- 2009* **Certificate, Electronics Technician**
George Brown College (Toronto, Canada)

Professional Affiliation

- 2018 – now* **Professional Engineer (PEng)**
Engineers and Geoscientists BC (EGBC)
a.k.a. Association of Professional Engineers and Geoscientists of BC (APEGBC)
- 2014 – now* **Member**
Society for Industrial and Applied Mathematics (SIAM)
- 2013 – now* **Senior Member (smIEEE)**
Institute of Electrical and Electronics Engineers (IEEE)
Student Member and Member since 2008.
- 2010 – 2016* **Information Systems Professional (ISP)**
Canadian Information Processing Society (CIPS)

Research Experience

- 2017 – now* **Adjunct Professor**
Simon Fraser University, School of Engineering Science (Burnaby, Canada)
PI of the Computational Sustainability Lab: <http://compsust.fas.sfu.ca>
- 2016 – 2017* **Postdoctoral Fellow**
University of British Columbia, Electrical and Computer Engineering (Burnaby, Canada)
Advisor: Z. Jane Wang
- 2014 – 2017* **Postdoctoral Fellow & Sessional Instructor**
Simon Fraser University, Engineering Science & Computing Science (Burnaby, Canada)
2015 – 2017 Advisor: Ivan V. Bajic (postdoc)
2014 – 2015 Advisors: Wolfgang Stuerzlinger (postdoc) & Anthony Dixon (instructor)
- 2008 – 2015* **Research Associate**
British Columbia Institute of Technology, Applied Research (Burnaby, Canada)

Graduate Student Co-/Supervision

- 2018 – now* **Senior Supervisor of Alejandro Rodriguez-Silva — PhD Thesis (on going)**
Simon Fraser University, School of Engineering Science (Burnaby, Canada)
Thesis: tbd
- 2018 – now* **Co-Supervisor of Alon Harell — MASc Thesis (on going)**
Simon Fraser University, School of Engineering Science (Burnaby, Canada)
Thesis: tbd
- 2014 – 2015* **Co-Supervisor of 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)
- 1996 – now* **Senior Software Developer Consultant**
Oponix Systems Inc. formerly Makonin Consulting Corp. (1996-2010, Burnaby, Canada)
Clients incl. Telus Mobility, Vancouver Coastal Health, Sierra Wireless, Safeway Canada, and Quartech Systems. Recent clients incl. Green Running (UK), and Itron (USA)
- 2017 – 2018* **Senior Software Engineer** — Knowledge Network (Burnaby, Canada)
- 2006 – 2008* **Co-Founder & CTO** — Vvroom.com (Burnaby, Canada)
- 2006* **Software Development Manager** — AbsolutePoker (Vancouver, Canada)

Grants & Funding

2018 NSERC Discovery Grant (\$140k for 5 years)
Title: Non-Intrusive Load Monitoring (NILM)

2016 IC-IMPACTS NCE Project Grant (\$133k for 2 years, 11.2% success rate) ✱
Title: Energy and Water Disaggregation for Non-Intrusive Load Monitoring in Buildings

2012, 14 SFU GSS Professional Development Grant (2 at \$500 each)

2013 BCIT School of Energy Research Seed Funding Grant (\$10k for 4 months)

✱ Note: was main author and organizer of grant but could not be PI because of University/NSERC rules.

Publications (see citation report at end of CV)

BOOKS

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.

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)

Makonin, S. (2019). HUE: The Hourly Usage of Energy Dataset for Buildings in British Columbia. *Data in Brief*. [in review]

Dinesh, C., **Makonin, S.**, and Bajic, I. V. (2018). Residential Power Forecasting Based on Affinity Aggregation Spectral Clustering. *IEEE Transactions on Smart Grid*. [in review]

Gaur, M., **Makonin, S.**, Bajic, I. V., and Majumdar, A. (2018). Performance evaluation of techniques for identifying abnormal energy consumption in buildings. *IEEE Access*. [in review]

Dinesh, C., **Makonin, S.**, and Bajic, I. V. (2018). Residential Power Forecasting Using Load Identification and Graph Spectral Clustering. *IEEE Transactions on Circuits and Systems II: Express Briefs*. [in press]

Makonin, S., Wang, Z. J., and Tumpach, C. (2018). RAE: The Rainforest Automation Energy Dataset for Smart Grid Meter Data Analysis. *MDPI Data*, 3(1):1-9.

Guzman, L., **Makonin, S.**, and Clapp, R. A. (2016). CarbonKit: a technological platform for personal carbon tracking. *arXiv preprint arXiv:1608.04162*.

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*, 64(7):792-796.

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.

Makonin, S., Popowich, F., Bajic, I. V., Gill, B., and Bartram, L. (2016). Exploiting HMM Sparsity to Perform Online Real-Time Nonintrusive Load Monitoring. *IEEE Transactions on Smart Grid*, 7(6):2575-2585.

Makonin, S. and Popowich, F. (2015). Nonintrusive Load Monitoring (NILM) Performance Evaluation. *Energy Efficiency*, 8(4):809–814.

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)

Harell, A., **Makonin, S.**, and Bajic, I. V. (2018). WaveNILM: A Causal Neural Network for Power Disaggregation from the Complex Power Signal. In Review for the *44th International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*. [in review]

Dinesh, C., **Makonin, S.**, and Bajic, I. V. (2017). Incorporating Time-Of-Day Usage Patterns Into Non-Intrusive Load Monitoring. In *Proceedings of the 5th IEEE Global Conference on Signal and Information Processing (GlobalSIP)*.

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*.

TECHNICAL REPORTS

- Makonin, S.** (2012). *Approaches to Non-Intrusive Load Monitoring (NILM) in the Home*. PhD Depth Report, Simon Fraser University, School of Computing Science.

Keynotes & Invited Talks

- 2018 Data, Datasets, and Data Engineering**
The 5th EU Nonintrusive Load Monitoring Workshop (Duisburg, Germany), October 1.
- 2018 NILM Real-World Testing: An Emulator for NILM and Smart Home Research**
4th International Workshop on Non-Intrusive Load Monitoring (Austin, USA), March 8.
- 2017 The Expectations of Non-Intrusive Load Monitoring (NILM)**
The International Conference on Application of Demand-Side Management (DSM) and Data Driven Technology in Energy Saving (Taipei, Taiwan), November 22.
- 2017 NILM Real-World Testing: The Case for an Emulator**
The 4th EU Nonintrusive Load Monitoring Workshop (London, UK), November 7.
- 2015 From Socioeconomic Concerns to Standardizing Accuracy to Water NILM**
The 2nd EU Nonintrusive Load Monitoring Workshop (London, UK), July 8.

Service To Profession

GENERAL CHAIR & ORGANIZER

- 2019 Advanced Signal Processing for Non-intrusive Load Monitoring Special Session
44th International Conference on Acoustics, Speech, and Signal Processing (ICASSP)
Brighton, UK. May 12 [to be held]
- 2018 4th International Workshop on Non-Intrusive Load Monitoring (NILM)
Auston, TX, USA. March 7 – 8
- 2017 The Plenty of Fish (POF) 24hr Hackathon
Burnaby, Canada. October 13 – 14, 24-hours
- 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

JOURNAL EDITORSHIP

- 2019 – now Editorial Board Member, *Scientific Data*, Nature

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

TECHNICAL PROGRAM COMMITTEE (TPC) MEMBER

- 2017 5th IFIP Conference on Sustainable Internet and ICT for Sustainability (SustainIT)
- 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)

MISCELLANEOUS ACTIVITIES

- 2014, 17, 19 **External Grant Reviewer**, Mitacs Accelerate Grant Proposal, Canada
- 2018 **External Grant Reviewer**, EPSRC Grant Proposal, UK
- 2011, 13, 15, 17 **External Paper Reviewer**, Canadian Conference on Artificial Intelligence (AI)

Scholarships & Awards

- 2017 IEEE Signal Processing Society Appreciation Certificate — Leadership & Support
- 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

Philanthropic Work

- 2017 – now **Yearly Scholarship for Aboriginal Undergraduates in Engineering** (Donor of), Simon Fraser University
- 2017 – now **Leadership Circle Ambassador**, Knowledge Network Corporation
BC's Public Broadcaster
- 2014 – now **Campaign Backer**, Kickstarter [10 project backed]
- 2014 – now **Campaign Backer**, Indiegogo [3 project backed]

Volunteer Work

- 2018 – now **Director of Communication**, Burnaby Mountain Mantas Swim Club
- 2016 – now **Vice-Chair**, IEEE Vancouver Signal Processing Chapter
- 2012 – now **Executive Member**, Westside Montessori Academy PAC
Co-Chair: 2014/15 school year
Treasurer: 2014/15, 2015/16, 2016/17, and 2017/18 school years
Executive-at-Large: 2012/13 and 2018/19 school years
- 2014 – 2016 **Chair**, IEEE Vancouver Joint Computing Chapter
- 2012 – 2014 **Membership Development Chair**, IEEE Vancouver Section

Citation Counts Report

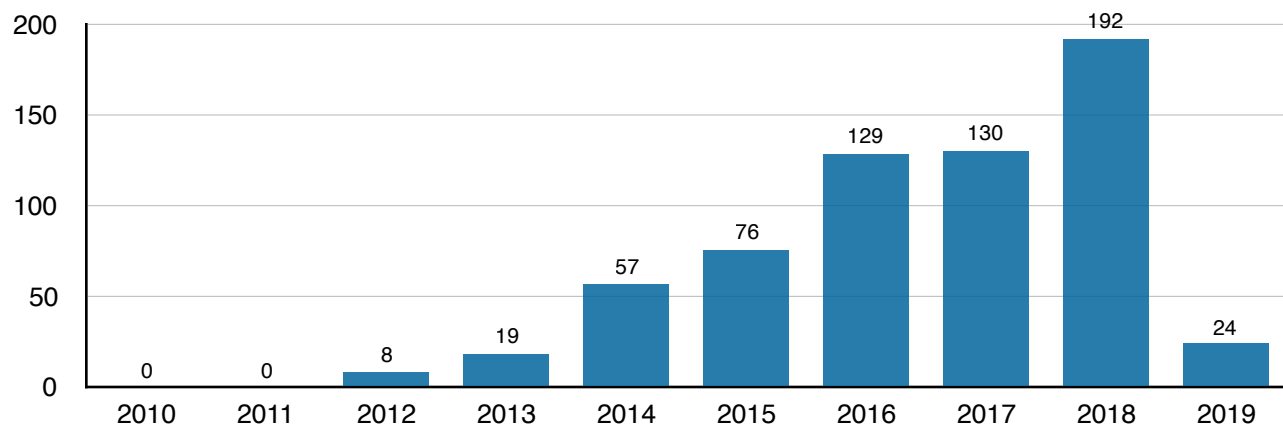
This report was generated by <https://github.com/smakonin/ScholarHacks> and reports [Google Scholar results](#).

Report generated on: 2019-02-02 10:34:24.400662

Citations = 675
h-index = 13
i10-index = 18

Paper Title	Citations	Journal IF
AMPds: A public dataset for load disaggregation and eco-feedback re...	168	
Exploiting HMM Sparsity to Perform Online Real-Time Nonintrusive Lo...	82	7.364
Nonintrusive load monitoring (NILM) performance evaluation	63	1.634
Electricity, water, and natural gas consumption of a residential ho...	51	4.836
A Smarter Smart Home: Case Studies of Ambient Intelligence	51	3.022
Visual C++ 5.0 Developer's Guide	35	
The cognitive power meter: Looking beyond the smart meter	23	
Efficient Sparse Matrix Processing for Nonintrusive Load Monitoring...	19	
The Affect of Lifestyle Factors on Eco-Visualization Design	19	
Real-time embedded low-frequency load disaggregation	18	
Elements of consumption: an abstract visualization of household con...	18	
Load Disaggregation Based on Aided Linear Integer Programming	15	2.450
A consumer bill of rights for energy conservation	14	
Inspiring energy conservation through open source power monitoring ...	11	
Home Occupancy Agent: Occupancy and Sleep Detection	11	tbd
An intelligent agent for determining home occupancy using power mon...	11	
Mixed-Initiative for Big Data: The Intersection of Human + Visual A...	10	
Approaches to Non-Intrusive Load Monitoring (NILM) in the Home	10	
Inspiring energy conservation through open source metering hardware...	9	
Investigating the Switch Continuity Principle Assumed in Non-Intrus...	8	
RAE: The Rainforest Automation Energy Dataset for Smart Grid Meter ...	7	tbd
Appliance Water Disaggregation via Non-Intrusive Load Monitoring (N...	7	
Start-Up Creation: The Smart Eco-efficient Built Environment	5	
Cognitive Radio Technology: System Evolution	5	
Incorporating Time-Of-Day Usage Patterns Into Non-Intrusive Load Mo...	3	
Transmitting Patient Vitals Over a Reliable ZigBee Mesh Network	2	
Total Number of Papers = 34	675	19.306

Note: Papers without a citation count are not listed above.



Note: Citation counts earlier than 2010 are from: [Visual C++ 5.0 Developer's Guide](#).

Stephen Makonin

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

Publons Rankings

85th percentile of reviewers from Simon Fraser University on Publons up until January 2019.

78th percentile of reviewers from University of British Columbia on Publons up until January 2019.

95th percentile of reviewers in Computer Science (all) on Publons up until January 2019.

Peer Review Summary

Performed 61 reviews for journals including *IEEE Transactions on Smart Grid* and *Applied Energy*, placing in the 97th percentile for verified review contributions on Publons up until January 2019.

	18	IEEE Transactions on Smart Grid
	6	Applied Energy
	5	IEEE Transactions on Industrial Informatics
	4	Energy Efficiency
	3	IEEE Transactions on Mobile Computing
	3	International Journal of Electrical Power & Energy Systems
	2	ACM Transactions on Intelligent Systems and Technology
	2	IEEE Pervasive Computing
	2	Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery
	2	IEEE International Conference on Power and Energy
	2	IEEE PerEnergy
	1	Energy and Buildings
	1	ACM Transactions on Sensor Networks
	1	IEEE Signal Processing Magazine
	1	Data Mining and Knowledge Discovery
	1	Sensors
	1	Scientific Data
	1	IEEE Transactions on Neural Networks and Learning Systems
	1	Data in Brief
	1	IEEE Access
	1	Information
	1	Power Engineering Letters
	1	Journal of Thai Interdisciplinary Research

