

# Stephen Makonin, PhD, PEng, smIEEE

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*CompSust Lab:* <http://compsust.fas.sfu.ca>

## Education

- 2010 – 2014 **Doctor of Philosophy (PhD)**, Simon Fraser University, Computing Science (Canada)  
Thesis: Real-Time Embedded Low-Frequency Load Disaggregation  
Advisor: Fred Popowich
- 2007 – 2009 **Bachelor of Technology (BTech)**, British Columbia Institute of Technology (Canada)  
Major: Computer Systems with a Data Communications Specialization
- 1993 – 1996 **Diploma in Computer Technology**, Selkirk College (Canada)
- 2018 **Instructor Certificate**, Software Carpentry Foundation (Canada)
- 2009 **Certificate, Electronics Technician**, George Brown College (Canada)

## Professional Affiliation

- 2018 – now **Professional Engineer (PEng)**, Engineers and Geoscientists BC (EGBC)
- 2013 – now **Senior Member (smIEEE)**, Institute of Electrical and Electronics Engineers (IEEE)  
Student Member and Member since 2008.

## Research Experience

- 2019 – now **Senior Software Engineer**  
Simon Fraser University, Big Data Hub (Canada)
- 2017 – now **Adjunct Professor**  
Simon Fraser University, School of Engineering Science (Canada)  
PI of the Computational Sustainability Lab: <http://compsust.fas.sfu.ca>
- 2018 **Visiting Professor**  
Indraprastha Institute of Information Technology, Delhi (IIIT-Delhi, India)
- 2016 – 2017 **Postdoctoral Fellow**  
University of British Columbia, Electrical and Computer Engineering (Canada)  
Advisor: Z. Jane Wang
- 2014 – 2017 **Postdoctoral Fellow & Sessional Instructor**  
Simon Fraser University, Engineering Science & Computing Science (Canada)  
2015 – 2017 Advisor: Ivan V. Bajić (postdoc)  
2014 – 2015 Advisors: Wolfgang Stuerzlinger (postdoc) & Anthony Dixon (instructor)
- 2008 – 2015 **Research Associate**  
British Columbia Institute of Technology, Applied Research (Canada)

## HQP Supervision

### POSTDOCTORAL FELLOWS

- 2017 – now* **Senior Supervisor of Md. Zulfiqar Ali Bhotto — Postdoctoral Fellow**  
Simon Fraser University, School of Engineering Science (Canada)  
Research Areas: NILM, smart grid optimization

### DOCTORAL STUDENTS

- 2018 – now* **Senior Supervisor of Alejandro Rodriguez-Silva — PhD Thesis (on going)**  
Simon Fraser University, School of Engineering Science (Canada)  
Thesis: tbd

### MASTERS STUDENTS

- TBD* **Senior Supervisor of Maria Tu — MSc Thesis (Starting Jan 2021)**  
Simon Fraser University, School of Engineering Science (Canada)  
Thesis: tbd
- 2019 – now* **Senior Supervisor of Richard Jones — MSc Thesis (defending Dec 2020)**  
Simon Fraser University, School of Engineering Science (Canada)  
Awards/Scholarships: Graduate Dean's Entrance Scholarship (GDES), NSERC CGS-M  
Thesis: tbd
- 2018 – 2020* **Co-Supervisor of Alon Harell — MSc Thesis (defended Aug 19, 2020)**  
Simon Fraser University, School of Engineering Science (Canada)  
Awards/Scholarships: NSERC CGS-M  
Thesis: Deep Learning Applications in Non-Intrusive Load Monitoring
- 2014 – 2015* **Co-Supervisor of Bradley Ellert — MSc Thesis (defended Aug 17, 2015)**  
Simon Fraser University, School of Computing Science (Canada)  
Thesis: Leveraging Submetered Electricity Loads to Disaggregate Household Water-Use

### UNDERGRADUATE RA/CO-OP

- 2020* **Daisy Chen — CompSust RA (on going, 6 months)**  
Simon Fraser University, Sustainable Energy Engineering (Canada)  
Project: NILM Toolkit - develop a testing and training toolset
- 2020* **Xing Chen Cao — CompSust RA (on going, 6 months)**  
Simon Fraser University, Engineering Science (Canada)  
Project: NILM Toolkit - develop a testing and training toolset
- 2020* **Ramy ElMallah — Big Data RA (on going, 5 months)**  
Simon Fraser University, Big Data Hub/Computing Science (Canada)  
Project: Marine acoustic classification (deep learning, federated learning, Raspberry Pi)

### VISITING SCHOLARS

- 2019* **David Murray — PhD, University of Strathclyde, UK (2 months)**
- 2019* **Bundit Buddhahai — PhD, KMUTT, Thailand (6 months)**
- 2019* **Christoph Klemenjak — PhD, University of Klagenfurt, Austria (6 months)**
- 2018* **Shikha Singh — PhD, IIIT-Delhi, India (1/2 month)**
- 2017 – 2018* **Megha Gaur — PhD, IIIT-Delhi, India (6 months)**

## External Examiner (Viva)

- 2019 **Georgia Elafoudi (PhD Electronic and Electrical Engineering)**  
University of Strathclyde, Glasgow, UK  
Thesis: Meaningful Information Extraction from IoT Measurements using Signal Information Processing

## 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 (90% ESL Mandarin), dist. ed. section 225  
TAs/TMs: in-class section 3, dist. ed. section 3

## Grants & Funding (PI = Principal Investigator)

- 2020 **Canadian PI** — EUREKA Grant (€1,120,000, 2 years, Canada/South Korea)  
Title: Development of integrated NILM algorithms considering multiple resolutions and designing service scenarios
- 2020 **Co-PI** — SSHRC Knowledge Synthesis Grant (\$50,000, 1 year)  
Title: Tackling the Carbon Footprint of Streaming Media
- 2019 **PI** — NSERC Engage Grant (\$25,000, 6 months)  
Title: Inferring power grid transformer to meter association using inconsistent geospatial data
- 2019 **Investigator** — European Commission Horizon2020 Grant (2 years)  
Title: SENSors and Intelligence in BuLt Environment (SENSIBLE) project  
[indirect moneys to allow for international grad student visits]
- 2019 **PI** — NSERC Discovery Launch Supplement Award (\$12,500)
- 2018 **PI** — NSERC Discovery Grant (\$140,000, 5 years)  
Title: Non-Intrusive Load Monitoring (NILM)
- 2016 **Postdoc** — IC-IMPACTS NCE Project Grant (\$133,000, 2 years, 11.2% success rate)  
Title: Energy and Water Disaggregation for Non-Intrusive Load Monitoring in Buildings  
[I was a main author and organizer of grant but could not be co-PI due to funding rules]
- 2012, 14 **PhD Candidate** — SFU GSS Professional Development Grant (2 at \$500 each)
- 2013 **PI** — BCIT School of Energy Research Seed Funding (\$10,000, 4 months)  
Title: Branch Circuit Ammeter and Data Logger for Smart Grid/Home Application

## 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, 1st Edition*.  
(2020). *Start-Up Creation: The Smart Eco-Efficient Built Environment, 2nd Edition*.  
Woodhead Publishing/Elsevier, ISBN: 9780128199466 / eBook 9780128199473.
- 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)**

- Klemenjak, C., **Makonin, S.**, and Elmenreich, W. (2020). Investigating the Performance Gap between Testing on Real and Denoised Aggregates in Non-Intrusive Load Monitoring. *IEEE Signal Processing Letters*. [in review]
- Bhotto, Md. Z. A., **Makonin, S.**, and Bajić, I. V. (2020). Optimal Battery Usage for Dynamic Nanogrid Energy Management. *IEEE Trans. on Sustainable Energy*. [in review]
- Harell, A., Jones, R., **Makonin, S.**, and Bajić, I. V. (2020). PowerGAN: Synthesizing Appliance Power Signatures Using Generative Adversarial Networks. *IEEE Trans. on Smart Grid*. [in review]
- Bhotto, Md. Z. A., Jones, R., **Makonin, S.**, and Bajić, I. V. (2020). Short-Term Microgrid Demand Prediction Using an Ensemble of Linearly-Constrained Estimators. *IEEE Trans. on Power Systems*. [in revision]
- Dinesh, C., **Makonin, S.**, and Bajić, I. V. (2020). Residential Power Forecasting Based on Affinity Aggregation Spectral Clustering. *IEEE Access*, 8:99431–99444.
- Dinesh, C., **Makonin, S.**, and Bajić, I. V. (2019). Residential Power Forecasting Using Load Identification and Graph Spectral Clustering. *IEEE Trans. on Circuits and Systems II: Express Briefs*, 66(11):1900–1904.
- Gaur, M., **Makonin, S.**, Bajić, I. V., and Majumdar, A. (2019). Performance evaluation of techniques for identifying abnormal energy consumption in buildings. *IEEE Access*, 7:62721–62733.
- Makonin, S.** (2019). HUE: The Hourly Usage of Energy Dataset for Buildings in British Columbia. *Data in Brief*, 23(103744):1–4.
- Makonin, S.**, Wang, Z. J., and Tumpach, C. (2018). RAE: The Rainforest Automation Energy Dataset for Smart Grid Meter Data Analysis. *Data*, 3(1):1–9.
- Bhotto, Md. Z. A., **Makonin, S.**, and Bajić, I. V. (2016). Load Disaggregation Based on Aided Linear Integer Programming. *IEEE Trans. on Circuits and Systems II: Express Briefs*, 64(7):792–796.
- Makonin, S.**, Ellert, B., Bajić, 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., Bajić, I. V., Gill, B., and Bartram, L. (2016). Exploiting HMM Sparsity to Perform Online Real-Time Nonintrusive Load Monitoring. *IEEE Trans. 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)**

- Jones, R., Klemenjak, C., **Makonin, S.**, and Bajić, I. V. (2020). Stop! Exploring Bayesian Surprise to Better Train NILM. In *Proceedings of the 5th International Workshop on Non-Intrusive Load Monitoring*.
- Singh, S., Majumdar, A., and **Makonin, S.** (2020). Compressive Non-Intrusive Load Monitoring. In *Proceedings of the 7th ACM International Conference on Systems for Energy-Efficient Built Environments, Cities, and Transportation (BuildSys)*.
- Jones, R., Rodriguez-Silva, A., and **Makonin, S.** (2020). Increasing the Accuracy and Speed of Universal Non-Intrusive Load Monitoring (UNILM) Using a Novel Real-Time Steady-State Block Filter. In *Proceedings of the 11th Conference on Innovative Smart Grid Technologies (ISGT)*.

- Klemenjak, C., **Makonin, S.**, and Elmenreich, W. (2020). Towards Comparability in Non-Intrusive Load Monitoring: On Data and Performance Evaluation. In *Proceedings of the 11th Conference on Innovative Smart Grid Technologies (ISGT)*.
- Rodriguez-Silva, A., and **Makonin, S.** (2019). Universal Non-Intrusive Load Monitoring (UNILM) Using Filter Pipelines, Probabilistic Knapsack, and Labelled Partition Maps. In *Proceedings of the 11th IEEE PES Asia-Pacific Power and Energy Engineering Conference 2019 (APPEEC)*.
- Klemenjak, C., Reinhardt, A., Pereira, L., **Makonin, S.**, Bergés, M., and Elmenreich, W. (2019). Electricity Consumption Data Sets: Pitfalls and Opportunities. In *Proceedings of the 6th ACM International Conference on Systems for Energy-Efficient Built Environments, Cities, and Transportation (BuildSys)*.
- Harell, A., **Makonin, S.**, and Bajić, I. V. (2019). WaveNILM: A Causal Neural Network for Power Disaggregation from the Complex Power Signal. In *Proceedings of the 44th International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*.
- Guzman, L., **Makonin, S.**, and Clapp, R. A. (2019). CarbonKit: Designing A Personal Carbon Tracking Platform. In *Proceedings of SocialSense '19: Fourth International Workshop on Social Sensing*.
- Dinesh, C., **Makonin, S.**, and Bajić, 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.**, Bajić, 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 Bajić, 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 Bajić, 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 & DEMO SESSIONS

- Harell, A., **Makonin, S.**, and Bajić, I. V. (2018). A Recurrent Neural Network for Multisensory Non-Intrusive Load Monitoring on a Raspberry Pi. In *Proceedings of the IEEE 20th International Workshop on Multimedia Signal Processing (MMSP)*.

## 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.

## Service To Profession

### ADVISORY BOARDS/COMMITTEES

2020 – now **Advisory Board Member**, *IEEE DataPort*

### JOURNAL EDITORSHIPS

2020 – now **Editor in Chief**, *IEEE DataPort Metadata Review Board*

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

### GRANT REVIEWER

2014, 17, 19 **External Grant Reviewer**, Mitacs Accelerate Grant Proposal, Canada

2018 **External Grant Reviewer**, EPSRC Grant Proposal, UK

### GENERAL CHAIR & ORGANIZER

2020 5th International Workshop on Non-Intrusive Load Monitoring (NILM)  
Yokohama, Japan [virtual/online]. November 18 – 20

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

2018 4th International Workshop on Non-Intrusive Load Monitoring (NILM)  
Austin, 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

### 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

- 2020 eSim 2020, International Building Performance Simulation Association (IBPSA-Canada)
- 2019 11th IEEE PES Asia-Pacific Power and Energy Engineering Conference (APPEEC)
- 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)

### Keynotes, Invited Talks & News/Media Interviews

- 2020 **Laura Marks and Stephen Makonin: Streaming video is overheating the planet**  
The Vancouver Sun (Vancouver, BC, Canada), Op-Ed, August 15.
- 2019 **News Talk Show Interview/Discussion on CarbonKit and Personal Carbon Tracking**  
The Danielle Smith Show (Calgary, AB, Canada), 22 min, October 2.
- 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.

## Scholarships & Awards

- 2017 IEEE Signal Processing Society Appreciation Certificate — Leadership & Support  
2015 IEEE Vancouver Section Leadership and Contribution Award — Initiative  
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

## 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, 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 (Canada)  
2006 – 2008 **Co-Founder & CTO** — Vvvroom.com (Canada)  
2006 **Director of Software Development, Vancouver** — AbsolutePoker (Vancouver, Canada)  
Reporting staff: 3 Software Developers, 1 QA Manager, 3 QA Testers  
Department budget: \$600,000/year

## Volunteer Work

- 2020 – now **Strata Council Executive**, The Peak (EPS5447) at Simon Fraser University  
2017 – now **Yearly Scholarship for Aboriginal Undergraduates** (Donor of), Simon Fraser University  
2016 – now **Executive Member**, IEEE Vancouver Section  
Vice-Chair, Signal Processing Chapter: 2016 – now  
Chair, IEEE Vancouver Joint Computing Chapter: 2014 – 2016  
Membership Development Chair, IEEE Vancouver Section: 2012 – 2014  
2018 – 2020 **Director of Communication**, Burnaby Mountain Mantas Swim Club  
2012 – 2019 **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



## Citation Counts Report

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

Report generated on: 2020-10-22 10:28:34.894555

Citations = 1,196  
h-index = 16  
i10-index = 26

Paper Title	Citations	Journal IF
AMPds: A public dataset for load disaggregation and eco-feedback re...	253	
Exploiting HMM Sparsity to Perform Online Real-Time Nonintrusive Lo...	182	10.486
Nonintrusive load monitoring (NILM) performance evaluation	112	1.961
Electricity, water, and natural gas consumption of a residential ho...	110	6.776
A Smarter Smart Home: Case Studies of Ambient Intelligence	63	3.022
Load Disaggregation Based on Aided Linear Integer Programming	42	3.250
Visual C++ 5.0 Developer's Guide	34	
The cognitive power meter: Looking beyond the smart meter	33	
Real-time embedded low-frequency load disaggregation	31	
Efficient Sparse Matrix Processing for Nonintrusive Load Monitoring...	30	
RAE: The Rainforest Automation Energy Dataset for Smart Grid Meter ...	28	tbd
WaveNILM: A Causal Neural Network for Power Disaggregation from the...	26	
Investigating the Switch Continuity Principle Assumed in Non-Intrus...	20	
Mixed-Initiative for Big Data: The Intersection of Human + Visual A...	20	
The Affect of Lifestyle Factors on Eco-Visualization Design	20	
Electricity consumption data sets: Pitfalls and opportunities	16	
Elements of consumption: an abstract visualization of household con...	16	
Approaches to Non-Intrusive Load Monitoring (NILM) in the Home	15	
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An intelligent agent for determining home occupancy using power mon...	14	
Towards Comparability in Non-Intrusive Load Monitoring: On Data and...	13	
Appliance Water Disaggregation via Non-Intrusive Load Monitoring (N...	13	
Inspiring energy conservation through open source metering hardware...	12	
Incorporating Time-Of-Day Usage Patterns Into Non-Intrusive Load Mo...	11	
Inspiring energy conservation through open source power monitoring ...	11	
Home Occupancy Agent: Occupancy and Sleep Detection	11	tbd
Residential power forecasting using load identification and graph s...	9	3.250
Start-Up Creation: The Smart Eco-efficient Built Environment	7	
Increasing the Accuracy and Speed of Universal Non-Intrusive Load M...	5	
Universal Non-Intrusive Load Monitoring (UNILM) Using Filter Pipeli...	5	
Cognitive Radio Technology: System Evolution	5	
Performance evaluation of techniques for identifying abnormal energ...	4	4.098
HUE: The Hourly Usage of Energy Dataset for Buildings in British Co...	4	1.430
Transmitting Patient Vitals Over a Reliable ZigBee Mesh Network	4	
Residential Power Forecasting Based on Affinity Aggregation Spectra...	1	4.098
On Metrics to Assess the Transferability of Machine Learning Models...	1	
A Recurrent Neural Network for Multisensory Non-Intrusive Load Moni...	1	
Peer-Reviewed Conferences:	31 papers	589
Peer-Reviewed Journals:	11 papers	566
Books Co-authored/Co-edited:	2 books	41
Grand Totals:	44 papers	1,196
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\*\*\* Papers with [in submission] status: 3 journal manuscript(s), 0 conference paper(s)

**Note:** Papers without a citation count are not listed above unless they are a journal paper.