NILM2022

Co-Located with BuildSys 2022

Hybrid (Boston, MA, USA | Online)

Previous Editions

NILM2022

2012	Pittsburgh, PA, USA
2014	Austin, TX, USA
2016	Vancouver, BC, Canada
2018	Austin TX, USA
2020	Online (Co-Located with BuildSys 2020 and in cooperation with European NILM) *
2022	Boston, MA, USA (Hybrid, Co-Located with BuildSys 2022)) *

* Proceedings published by ACM

Organizing Committee

NILM2022

General Co-Chairs

Lucas Pereira, ITI/LARSyS, Instituto Superior Técnico
Stephen Makonin, Simon Fraser University
Wenpeng Luan, Tianjin University

Program Committee Chair

Lina Stankovic, University of Strathclyde

Technical Program Committee

22 TPC Members

BuildSys Workshop Chairs

Zoltan Nagy, University of Texas at Austin
Clayton Miller, National University of Singapore

BuildSys Publication Chair

Dezhi Hong, (Amazon, USA)

NILM 2022 is a BuildSys Workshop NILM2022

- Co-Located with ACM BuildSys 2022

- Hybrid Event

- NILM 2022 papers will be published by ACM
  - In *6th International Workshop on Non-Intrusive Load Monitoring (NILM '22)*, November 9–10, 2022, Boston, MA, USA. ACM, New York, NY, USA, 5 pages. https://doi.org/10.1145/3563357.*******

Schedule (09:00 - 17:00 ET)

NILM2022

09:00 - 09:30	Welcome
09:30 - 10:30	Keynote (Oliver Parson)
10:30 - 10:45	Morning Break
10:45 - 12:00	Technical Session 1 (3 x Talks of 20 minutes + 5 minutes Q&A)
12:00 - 13:00	Lunch Break
13:00 - 14:15	Technical Session 2 (3 x Talks of 20 minutes + 5 minutes Q&A)
14:15 - 15:30	Technical Session 3 (3 x Talks of 20 minutes + 5 minutes Q&A)
15:30 - 15:45	Afternoon Break
15:45 - 16:45	Interactive Tutorial

Keynote

NILM2022

Oliver Parson

Five Predictions for the NILM Industry

In this talk, Oliver will speculate on the **future** of the NILM field through five key predictions. These will cover the dominant applications of NILM, the relationship between NILM and **energy tariffs**, NILM's application **beyond electricity data** and the potential to **fuse disaggregated data** with other data sources. The talk will also cover the effect of various elements of the energy transition on NILM, such as the increasing **prevalence of electric vehicles**, the move away from gas boilers, and our increasing **dependence on renewable electricity** generation over fossil fuel-fired power stations.

Tutorial

NILM2022

Hafsa Bousbiat

Unlocking the Full Potential of Neural NILM: On Automation, Hyperparameters & Modular Pipelines

This hands-on tutorial aims at introducing the NILM community to the new NILM toolkit, titled **Deep-NILMtk**. The toolkit implements the most recent **ML best practices** for efficient, reproducible and transparent NILM research. The tutorial session will first briefly **introduce basic concepts** Deep-NILMtk followed by an **interactive coding session** to demonstrate these best practices and how they can be used.

More details to be provided at 15:30 ET.

How to Attend NILM 2022

NILM2022

in-person

Presentations + Q&A

#NILM2022 | #BuildSys2022

Presentations will be made available after the event

Instructions for Presenters

NILM2022

- In-person
  - Two presentation options: Live vs Video (played by the presenter)
  - Please share your presentation/video to the organizers before your session
  - Q&A Live

- Remote
  - Two presentation options: Live vs Video (played by the host)
  - Please make yourself known to the host team in Zoom before your session and let them know how you prefer to present
  - Q&A: Live

Instructions for Participants

NILM2022

- Live Q&A will follow Technical Sessions 1-3 and the Keynote
- In-person
  - Submit your question near the microphone that will be made available such that the online audience can hear your questions

- Remote
  - Please keep your microphones muted
  - Submit your questions via Zoom's Q&A feature
  - The session chair will coordinate questions and may invite you to unmute your microphone to ask your questions to the presenter directly

Program and Proceedings

NILM2022

PROGRAM & PROCEEDINGS

Time (ET)	Topic	Presentation Details
08:30	Doors Open / Stream Begins	
09:00	Welcome Address	
09:30	Keynote	***Five Predictions for the NILM Industry*** Oliver Parson
10:30	Morning Break	
10:45	Technical Session 1	***Identifying Impactful Devices on Disaggregation Performance*** Sean Barker, Anna Leitner, Andy Stoneman (Bowdoin College)
		A Case Study on Obstacles to Feasible NILM Solutions for Energy Disaggregation in Quebec Residences Sayed Saeed Hosseini (University of Quebec at Trois-Rivieres); Benoit Delcroix (Hydro-Quebec Research Institute); Nilson Henao, Kodjo Agbossou, Sousso Kelouwani (University of Quebec at Trois-Rivieres)
		Using Explainability Tools to Inform NILM Algorithm Performance: A Decision Tree Approach Rachel Stephen Mollel, Lina Stankovic, Vladimir Stankovic (University of Strathclyde)
12:00	Noon Break	
13:00	Technical Session 2	***Unsupervised Energy Disaggregation Using Time Series Decomposition for Commercial Buildings*** Narges Zaeri Esfahani, Burak Gunay (Carleton University); Araz Ashouri (National Research Council Canada)
		An Unsupervised Load Disaggregation Approach based on Graph Signal Processing Featuring Power Sequences Xuhao Li, Bochao Zhao, Wenpeng Luan, Bo Liu (Tianjin University, China)
		LightNILM: Lightweight neural network methods for non-intrusive load monitoring Zhenyu Lu, Yurong Cheng (Beijing Institute of Technology); Mingjun Zhong (University of Aberdeen); Wenpeng Luan (Tianjin University); Ye Yuan, Guoren Wang (Beijing Institute of Technology)
14:15	Technical Session 3	***Appliance Recognition with Combined Single- and Multi-label Approaches*** Marco Manolo Manca (University of Cagliari); Anthony Faustine, Lucas Pereira (ITI, LARSyS, Técnico Lisboa)
		Benefits of Three-Phase Metering for Load Disaggregation Apostolos Vavouris, Lina Stankovic, Vladimir Stankovic (University of Strathclyde); Jiufeng Shi (Discovergy GmbH)
		What's Up for the Weekend? Exploiting Day Type Information in Non-Intrusive Load Monitoring Mazen Bouchur, Daniel Szafranski, Andreas Reinhardt (TU Clausthal)
15:30	Afternoon Break	
15:45	Tutorial	**Unlocking the Full Potential of Neural NILM: On Automation, Hyperparameters & Modular Pipelines** Hafsa Bousbiat (University of Klagenfurt)
16:45	Closing Session	
17:00	Stream Ends	

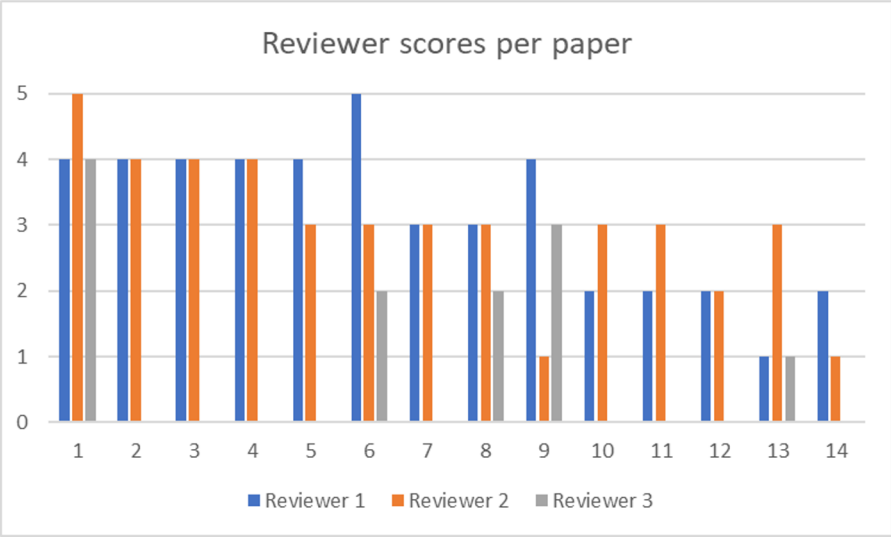
TPC Report

NILM2022

NILM 2022 Review Process

NILM2022

- 14 papers submitted by Sept 11 2022
- 33 blind reviews from 17 TPC reviewers
- Author conflicts with TPC reviewers taken into account
- Each submission received 2-3 reviews from reject (1) to strong accept (5)
- Most reviews were in agreement, and moderated by organizing committee
- 3=Weak accept, average threshold
- 9 accepted papers
- Author notification, with reviewer feedback, on Sept 30 2022



Technical Sessions

NILM2022

- Technical Session 1 (Session Chair: Sean Barker)
  - Identifying Impactful Devices on Disaggregation Performance
  - A Case Study on Obstacles to Feasible NILM Solutions for Energy Disaggregation in Quebec Residences
  - Using Explainability Tools to Inform NILM Algorithm Performance: A Decision Tree Approach
- Technical Session 2 (Session Chair: Burak Gunay)
  - Unsupervised Energy Disaggregation Using Time Series Decomposition for Commercial Buildings
  - An Unsupervised Load Disaggregation Approach based on Graph Signal Processing Featuring Power Sequences
  - LightNILM: Lightweight Neural Network Methods for Non-Intrusive Load Monitoring
- Technical Session 3 (Session Chair: Lucas Pereira)
  - Appliance Recognition with Combined Single- and Multi-label Approaches
  - Benefits of Three-Phase Metering for Load Disaggregation
  - What's Up for the Weekend? Exploiting Day Type Information in Non-Intrusive Load Monitoring

TPC Members (Thank You)

NILM2022

Technical Program Committee

Andreas Reinhardt, TU Clausthal
Anthony Faustine, ITI/LARSyS, Instituto Superior Técnico
Bochao Zhao, Tianjin University
Bo Liu, Tianjin University
Christoforos Nalmpantis, Aristotle University of Thessaloniki
Christoph Klemenjak, University of Klagenfurt
David Irwin, University of Massachusetts, Amherst
Dimitrios Doukas, NET2GRID
Dimitris Vrakas, Aristotle University of Thessaloniki
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Haiwang Zhong, Tsinghua University
Iosif Mporas, University of Hertfordshire
Lina Stankovic, University of Strathclyde
Lucas Pereira, ITI/LARSyS, Instituto Superior Técnico
Maria Kaselimi, National Technical University of Athens
Mario Bergés, Carnegie Mellon University
Mingjun Zhong, University of Aberdeen
Nipun Batra, IIT Gandhinagar
Oliver Parson
Peter Davies, Austin Consultants
Shiming Tian, China Electric Power Research Institute
Wenpeng Luan, Tianjin University