

CHRISTOPH KLEMENJAK

Experienced Applied ML Researcher looking for new challenges in 2021.

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EXPERIENCE

Research and Teaching Assistant

University of Klagenfurt

📅 Mar 2017 – July 2021 📍 Klagenfurt, Austria

- Applied CNN, DAE, LSTM, GRU networks for Energy Disaggregation
- Taught courses on Machine Learning for Energy Informatics
- Contributed bug fixes to the NILMTK project (Python)
- Conducted research on performance evaluation for NILM
- Served as mentor for Bachelor and Master students

Visiting PhD Scholar

Simon Fraser University

📅 May 2019 – Aug 2019 📍 Vancouver, Canada

- Acquired funding independently by competing for research grants
- Collaborated with renowned experts in the field (see BuildSys'19)
- Investigated pitfalls and opportunities for electricity datasets
- Established a close partnership between CSL and Klagenfurt

Technical Support Assistant

University of Klagenfurt

📅 Oct 2011 – Mar 2017 📍 Klagenfurt, Austria

- Part-time job during Bachelor and Master studies
- Maintained Linux servers and provided software services to researchers

EDUCATION

PhD in Information and Communications Engineering

University of Klagenfurt

📅 Mar 2017 – now 📍 Klagenfurt, Austria

- Working towards my PhD thesis entitled: *Machine Learning Approaches to Energy Disaggregation*
- Presented several contributions at international conferences
- Investigated the use of Deep Neural Networks for NILM

Master in Information and Communications Engineering

University of Klagenfurt

📅 Oct 2014 – Feb 2017 📍 Klagenfurt, Austria

- Focused on Energy Informatics and Smart Metering in the master thesis, which investigates a simple and effective approach for appliance detection
- Gained insights into best practices of research & development by attending scientific conferences and publishing peer-reviewed papers

Bachelor of Science in Information Technology

University of Klagenfurt

📅 Oct 2010 – Sep 2014 📍 Klagenfurt, Austria

- Invented a low-cost energy meter based on the Arduino platform
- Gained teaching experience by serving as tutor for circuit design

PROUD OF



Research Output

Published 10 peer-reviewed papers in the past 12 months.



Service to Academia

Served 21 times as reviewer in the past 2 years.

PHD THESIS

IN PROGRESS



Machine Learning Approaches to Energy Disaggregation

Investigates how the performance of state-of-the-art approaches varies from dataset to dataset; explores the similarity of real and synthetic energy readings; assesses how well models can be transferred.

SKILLS

Misc

Docker Git mongoDB MySQL

Libraries

Jupyter Keras Matplotlib Numpy
Pandas Scikit-Learn SciPy

Programming Languages

Python (advanced) C (basics)
Java (basics) SQL (basics)

Operating Systems

macOS Ubuntu Windows

SOFT SKILLS

teamwork mutual respect
verbal & written communication
critical thinking meeting deadlines
curiosity desire to learn resilience

LANGUAGES

German native
English proficient

SELECTED PUBLICATIONS

1. Klemenjak, C., Makonin, S., & Elmenreich, W. (2021). **Investigating the performance gap between testing on real and denoised aggregates in non-intrusive load monitoring**. Energy Informatics, 4(1).
2. Bousbiat, H., Klemenjak, C., & Elmenreich, W. (2020). **Exploring time series imaging for load disaggregation**. In proceedings of the 7th ACM international conference on systems for energy-efficient buildings, cities, and transportation (pp. 254-257).
3. Reinhardt, A., & Klemenjak, C. (2020). **How does load disaggregation performance depend on data characteristics? Insights from a benchmarking study**. In proceedings of the eleventh ACM international conference on future energy systems (pp. 167-177).
4. Klemenjak, C., Kovatsch, C., Herold, M., & Elmenreich, W. (2020). **A synthetic energy dataset for non-intrusive load monitoring in households**. Scientific data, 7(1), 1-17.
5. Klemenjak, C., Reinhardt, A., Pereira, L., Makonin, S., Bergés, M., & Elmenreich, W. (2019). **Electricity consumption data sets: Pitfalls and opportunities**. In proceedings of the 6th ACM international conference on systems for energy-efficient buildings, cities, and transportation (pp. 159-162).

PROJECT CONTRIBUTIONS

Contributor to the Non-Intrusive Load Monitoring Toolkit

📅 Apr 2018 – now

📍 github.com

- Contributed new features such as data set converters (CSV to HDF)
- Identified numerous issues and delivered bug fixes

Creator of the Synthetic Energy Dataset (SynD)

📅 Mar 2018

📍 figshare.com

- Supervised data collection, designed a custom simulator, and validated the outcome
- 244 downloads and 14 citations since its release in 2020

Inventor of a low-cost energy meter based on Arduino

📅 Jul 2014

📍 sourceforge.net

- The project enables energy savings by providing immediate feedback
- 2302 downloads since its release in 2014

VOLUNTEER EXPERIENCE

Elected Student Representative

Austrian Students Union (ÖH)

📅 Jul 2011 – Jul 2015

📍 Klagenfurt, Austria

- Represented more than 300 ICT students at conferences and events
- Impacted the realignment of ICT study programs
- Gained insights on formal processes by serving in commissions

Elected Spokesman

Dormitory Mozarthheim

📅 Oct 2015 – Oct 2017

📍 Klagenfurt, Austria

- Stood in for the interests of more than 150 residents (mostly students)
- Helped international students settle in Klagenfurt

ACHIEVEMENTS



Shortlisted at Ars Docendi 2019

Ars Docendi is an annual state prize awarded for excellent teaching at Austrian universities.



Design Thinking Challenge 2017

Among the winning team of the Clean Energy Design Thinking Challenge, organized by SAP University Alliances.

CERTIFICATES

M001: MongoDB Basics

MongoDB University

📅 Issued Aug 2021

Bayesian Statistics: Concepts

Coursera - UC SC

📅 Issued Mar 2019

Machine Learning

Coursera - Stanford Online

📅 Issued Aug 2018

DeepLearn 2018 in Genova

Summer School

📅 July 2018

INTERESTS

Technical

Coding

Drones

Electric Vehicles

Machine Learning

Renewable Energy

Non-Technical

Documentaries

Floorball

Jogging

Mentoring

Reading

Writing

REFEREES

Prof. Dr. Wilfried Elmenreich

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✉ University of Klagenfurt, Austria

Dr. Stephen Makonin

@ smakonin@sfu.ca

✉ Simon Fraser University, Canada

Dr. habil. Andreas Reinhardt

@ reinhardt@ieee.org

✉ TU Clausthal, Germany