Wilhelm Wermelin

Curriculum Vitae

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Summary

I am a researcher in industrial data analytics and machine learning at RISE. I work in various research projects relating to predictive maintenance, prognostics and health management, and industrial data analytics and machine learning. I am also a PhD student at Mälardalen University, focusing on research in machine learning for predictive maintenance of industrial assets.

Education

2021– **PhD**, *Mälardalen University*, Västerås.

2021–2025 **Licentiate degree**, *Mälardalen University*, Västerås,
Degree in Energy and Environmental Engineering.
Licentiate thesis: Data-Driven Remaining Useful Life Prediction of Energy-Intensive Industrial Assets

2017–2019 **Masters's degree**, *Chalmers University of Technology*, Gothenburg,
Degree in Engineering Mathematics and Computational Science.
Master's thesis: Discovering Patterns in Driving Data

2013–2016 **Bachelor's degree**, *Karlstad University*, Karlstad, *Degree in Physics.*
Bachelor's thesis: 3+1 Approach to Cosmological Perturbations

Experience

2019– **Researcher**, *Materials and production*, RISE AB, Mölndal.
I am a researcher in data analysis and machine learning for various industrial purposes.

2019 **Thesis worker**, *Propulsion Software Development*, Volvo Cars AB, Torslanda.
My thesis concerns finding patterns in time series data using various machine learning techniques.

2018–2019 **Project student**, *Active Safety*, Volvo Cars AB, Mölndal.
I was involved in a student project discovering patterns in naturalistic driving data.

2015–2017 **Teaching assistant**, *Karlstad University, Sundsta Älvkullegymnasiet*, Karlstad.
Various short term teaching jobs, mainly teaching mathematics and physics.

Technical skills

- Machine learning and data science
- Mathematical modeling, e.g., statistics and optimization
- Python programming
- Rust programming

Languages

Native **Swedish**

Fluent **English**

Publications

Arturs Nikulins, Kārlis Freivalds, Ivars Namatēvs, Kaspars Sudars, Audris Arzovs, Wilhelm Söderkvist Vermelin, Madhav Mishra, and Kaspars Ozols. Differentially private federated learning for remaining useful life prediction. *Applied Sciences*, 16(6), 2026.

Simon Mählkvist, Wilhelm Söderkvist Vermelin, Thomas Helander, and Konstantinos Kyprianidis. Comparing feature and trajectory-based remaining useful life modeling of electrical resistance heating wires. volume 16. PHM Society, 2024.

Wilhelm Söderkvist Vermelin, Madhav Mishra, Mattias P. Eng, Dag Andersson, and Konstantinos Kyprianidis. Collaborative training of data-driven remaining useful life prediction models using federated learning. *International Journal of Prognostics and Health Management*, 15(2), Oct 2024.

Mattias P. Eng, Madhav Mishra, Wilhelm Söderkvist Vermelin, Dag Andersson, and Klas Brinkfeldt. A link between the lab and the real world - a setup for accelerated aging of power electronics using mission profiles from the field. In *2024 25th International Conference on Thermal, Mechanical and Multi-Physics Simulation and Experiments in Microelectronics and Microsystems (EuroSimE)*, pages 1–6, April 2024.

Wilhelm Söderkvist Vermelin, Andreas Lövberg, Maciej Misiorny, Mattias P. Eng, and Klas Brinkfeldt. Data-driven remaining useful life estimation of discrete power electronic devices. In *Proceedings of the 33rd European Safety and Reliability Conference (ESREL 2023)*, volume 33. European Safety and Reliability Conference, 2023.

Mattias P Eng, Andreas Lövberg, Maciej Misiorny, Wilhelm Söderkvist Vermelin, Klas Brinkfeldt, and Madhav Mishra. A simple hybrid model for estimating remaining useful life of sic mosfets in power cycling experiments. In *PHM Society Asia-Pacific Conference*, volume 4, 2023.

Wilhelm Söderkvist Vermelin, Andreas Lövberg, and Konstantinos Kyprianidis. Self-supervised learning for efficient remaining useful life prediction. In *Vol. 14 No. 1 (2022): Proceedings of the Annual Conference of the PHM Society 2022*, volume 14, 2022.