

1 Journal Papers

Articles published in peer-reviewed international journals listed in reverse chronological order.

- [J11] Philipp Pilar, Martin Ravn, Christian Glaser, and **Niklas Wahlström**. A differentiable surrogate model for the generation of radio pulses from in-ice neutrino interactions. *Machine Learning: Science and Technology*, 7(2):025017, March 2026.
- [J10] Philipp Pilar and **Niklas Wahlström**. Probabilistic matching of real and generated data statistics in generative adversarial networks. *Transactions on Machine Learning Research*, 2024.
- [J9] Daniel Gedon, Antonio H. Ribeiro, **Niklas Wahlström**, and Thomas B. Schön. Invertible kernel PCA with random fourier features. *IEEE Signal Processing Letters*, 30:563–567, 2023.
- [J8] Philipp Pilar, Carl Jidling, Thomas B. Schön, and **Niklas Wahlström**. Incorporating sum constraints into multitask Gaussian processes. *Transactions on Machine Learning Research*, 2022.
- [J7] Zenith Purisha, Carl Jidling, **Niklas Wahlström**, Thomas B. Schön, and Simo Särkkä. Probabilistic approach to limited-data computed tomography reconstruction. *Inverse Problems*, 35(10):105004, 2019.
- [J6] Carl Jidling, Johannes Hendriks, **Niklas Wahlström**, Alexander Gregg, Thomas B. Schön, Christopher Wensrich, and Adrian Wills. Probabilistic modelling and reconstruction of strain. *Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms*, 436:141 – 155, 2018.
- [J5] Arno Solin, Manon Kok, **Niklas Wahlström**, Thomas B. Schön, and Simo Särkkä. Modeling and interpolation of the ambient magnetic field by Gaussian processes. *IEEE Transactions on Robotics*, 34(4):1112 – 1127, 2018.
- [J4] Gustaf Hendeby, Fredrik Gustafsson, **Niklas Wahlström**, and Svante Gunnarsson. A Platform for Teaching Sensor Fusion Using a Smartphone. *International Journal of Engineering Education*, 33(2B):781–789, 2017.
- [J3] **Niklas Wahlström** and Emre Özkan. Extended target tracking using Gaussian processes. *IEEE Transactions on Signal Processing*, 63(16):4165–4178, 2015.
- [J2] **Niklas Wahlström**, Roland Hostettler, Fredrik Gustafsson, and Wolfgang Birk. Classification of driving direction in traffic surveillance using magnetometers. *IEEE Transactions on Intelligent Transportation Systems*, 15(4):1405–1418, 2014.
- [J1] **Niklas Wahlström** and Fredrik Gustafsson. Magnetometer modeling and validation for tracking metallic targets. *IEEE Transactions on Signal Processing*, 62(3):545–556, 2014.

2 Conference Papers

Conference papers in peer-reviewed international conferences and workshops, listed in reverse chronological order.

- [C25] Jan-Hendrik Ewering, Max Bartholdt, Simon F. G. Ehlers, **Niklas Wahlström**, Thomas B. Schön, and Thomas Seel. Simultaneous state estimation and online model learning in a soft robotic system. In *Proceedings of the 29th International Conference on Information Fusion (FUSION)*, Trondheim, Norway, June 2026. Accepted. Also available as Pre-print arXiv:2602.14092.

- [C24] Jan-Hendrik Ewering, Robin Erik Herrmann, **Niklas Wahlström**, Thomas B. Schön, and Thomas Seel. Learning dynamics from input-output data with hamiltonian gaussian processes. In *8th Annual Learning for Dynamics and Control Conference*, 2026. Accepted. Also available as Pre-print arXiv:2602.14092.
- [C23] Martin Langgård Ravn, Philipp Pilar, Christian Glaser, **Niklas Wahlström**, and Thorsten Glüsenkamp. Optimization pipeline for in-ice radio neutrino detectors. In *Proceedings of Fifth MODE Workshop on Differentiable Programming for Experiment Design*, 2025.
- [C22] Philipp Pilar and **Niklas Wahlström**. Physics-informed neural networks with unknown measurement noise. In *Learning for Dynamics & Control Conference, Oxford, July 2024*, Oxford, UK, July 2024. Also presented at NeurIPS 2023 workshop on Machine Learning and the Physical Sciences, New Orleans, US, December 2023.
- [C21] Daniel Gedon, Antonio H. Ribeiro, **Niklas Wahlström**, and Thomas B. Schön. First steps towards self-supervised pretraining of the 12-lead ECG. In *Proceedings of the 48th Computing in Cardiology Conference (CinC)*, Virtual conference, September 2021.
- [C20] Carl Andersson, **Niklas Wahlström**, and Thomas B. Schön. Learning deep autoregressive models for hierarchical data. In *19th IFAC Symposium on System Identification (SYSID)*, Virtual conference, July 2021.
- [C19] Daniel Gedon, **Niklas Wahlström**, Thomas B. Schön, and Lennart Ljung. Deep state space models for nonlinear system identification. In *19th IFAC Symposium on System Identification (SYSID)*, Virtual conference, July 2021.
- [C18] Carl Andersson, Antonio H. Ribeiro, Koen Tiels, **Niklas Wahlström**, and Thomas B. Schön. Deep convolutional networks in system identification. In *IEEE 58th Conference on Decision and Control (CDC)*, pages 3670–3676, Nice, France, December 2019.
- [C17] Carl Andersson, **Niklas Wahlström**, and Thomas B. Schön. Data-driven impulse response regularization via deep learning. In *Proceedings of the 18th IFAC Symposium on System Identification (SYSID)*, Stockholm, Sweden, 2018.
- [C16] Carl Jidling, **Niklas Wahlström**, Adrian Wills, and Thomas B. Schön. Linearly constrained Gaussian processes. In *Advances in Neural Information Processing Systems 30 (NIPS)*, pages 1215–1224, Long Beach, CA, US, December 2017.
- [C15] Emre Özkan, **Niklas Wahlström**, and Simon J. Godsill. Rao-blackwellised particle filter for star-convex extended target tracking models. In *19th International Conference on Information Fusion (FUSION)*, Heidelberg, Germany, July 2016.
- [C14] Francesca Ceragioli, Gustav Lindmark, Clas Veibäck, **Niklas Wahlström**, Martin Lindfors, and Claudio Altafini. A bounded confidence model that preserves the signs of the opinion. In *European Control Conference*, Aalborg, Denmark, June 2016.
- [C13] John-Alexander M. Assael, **Niklas Wahlström**, Thomas B. Schön, and Marc P. Deisenroth. Data-efficient learning of feedback policies from image pixels using deep dynamical models. In *Deep Reinforcement Learning Workshop at the Annual Conference on Neural Information Processing Systems (NIPS)*, Montréal Canada, December 2015.
- [C12] **Niklas Wahlström**, Thomas B. Schön, and Marc P. Deisenroth. Learning deep dynamical models from image pixels. In *Proceedings of the 17th IFAC Symposium on System Identification (SYSID)*, Beijing, China, October 2015.

- [C11] **Niklas Wahlström**, Thomas B. Schön, and Marc P. Deisenroth. From pixels to torques: Policy learning with deep dynamical models. In *Deep Learning Workshop at the International Conference on Machine Learning (ICML)*, Lille, France, July 2015. Also available as Preprint arXiv:1502.02251.
- [C10] **Niklas Wahlström**, Patrik Axelsson, and Fredrik Gustafsson. Discretizing stochastic dynamical systems using Lyapunov equations. In *Proceedings of the The 19th World Congress of the International Federation of Automatic Control (IFAC)*, pages 3726–3731, Cape Town, South Africa, August 2014.
- [C9] Gustaf Hendeby, Fredrik Gustafsson, and **Niklas Wahlström**. Teaching Sensor Fusion and Kalman Filtering using a Smartphone. In *Proceedings of the The 19th World Congress of the International Federation of Automatic Control (IFAC)*, pages 10586–10591, Cape Town, South Africa, August 2014.
- [C8] Viktor Deleskog, Hans Habberstad, Gustaf Hendeby, David Lindgren, and **Niklas Wahlström**. Robust NLS sensor localization using MDS initialization. In *Proceedings of 17th International Conference on Information Fusion (FUSION)*, Madrid, Spain, July 2014.
- [C7] **Niklas Wahlström**, Manon Kok, Thomas B. Schön, and Fredrik Gustafsson. Modeling magnetic fields using Gaussian processes. In *Proceedings of the the 38th International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pages 3522–3526, Vancouver, Canada, May 2013.
- [C6] Manon Kok, **Niklas Wahlström**, Thomas B. Schön, and Fredrik Gustafsson. MEMS-based inertial navigation based on a magnetic field map. In *Proceedings of the 38th International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pages 6466–6470, Vancouver, Canada, May 2013.
- [C5] **Niklas Wahlström**, Fredrik Gustafsson, and Susanne Åkesson. A Voyage to Africa by Mr Swift. In *Proceedings of the 15th International Conference on Information Fusion (FUSION)*, pages 808–815, Singapore, July 2012.
- [C4] **Niklas Wahlström**, Roland Hostettler, Fredrik Gustafsson, and Wolfgang Birk. Rapid classification of vehicle heading direction with two-axis magnetometer. In *Proceedings of the International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pages 3385–3388, Kyoto, Japan, March 2012.
- [C3] **Niklas Wahlström**, Jonas Callmer, and Fredrik Gustafsson. Single target tracking using vector magnetometers. In *Proceedings of the International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pages 4332–4335, Prague, Czech Republic, May 2011.
- [C2] **Niklas Wahlström**, Jonas Callmer, and Fredrik Gustafsson. Magnetometers for tracking metallic targets. In *Proceedings of 13th International Conference on Information Fusion (FUSION)*, Edinburgh, Scotland, July 2010.
- [C1] Erik Almqvist, Daniel Eriksson, Andreas Lundberg, Emil Nilsson, **Niklas Wahlström**, Erik Frisk, and Mattias Krysaner. Solving the ADAPT benchmark problem - A student project study. In *21st International Workshop on Principles of Diagnosis (DX-10)*, Portland, Oregon, USA, October 2010.

3 Books and book chapters

- [B1] Andreas Lindholm, **Niklas Wahlström**, Fredrik Lindsten, and Thomas B. Schön. *Machine Learning - A First Course for Engineers and Scientists*. Cambridge University Press, 2022.

4 Preprints

- [W1] Philipp Pilar, Markus Heinonen, and **Niklas Wahlström**. Repulsive ensembles for bayesian inference in physics-informed neural networks. *Pre-print arXiv:2505.17308*, 2025.

5 Patents

- [P2] Carmen Lee, Jalil Taghia, and **Niklas Wahlström**. Generating a knowledge graph, Worldwide patent application WO 2023/078550 A1, Issued 2021, Published 2023.
- [P1] Fredrik Gustafsson and **Niklas Wahlström**. Method and device for pose tracking using vector magnetometers, U.S. Patent 10228428, Issued 2012, Granted 2019.