List of publications

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December, 2022

Working manuscripts

[WM9] Philipp Von Bachmann, Daniel Gedon, Fredrik K. Gustafsson, Antonio H. Ribeiro, Erik Lampa, Johan Sundström, Stefan Gustafsson and Thomas B. Schön. **ECG-based electrolyte prediction: evaluating regression and probabilistic methods**. December, 2022.

[WM8] Zheng Zhao, Simo Särkkä, Jens Sjölund, and Thomas B. Schön. **Probabilistic estimation of chirp instantaneous frequency using Gaussian processes**. *arXiv:2205.06306*, December, 2022. (in revision)

[WM7] Tim Martin, Thomas B. Schön and Frank Allgöwer. **Gaussian inference for data-driven state feedback design of nonlinear systems**. November, 2022.

[WM6] Bernhard Wullt, Per Matsson, Thomas B. Schön. and Mikael Norrlöf. **Neural motion planning in dynamic environments**. November, 2022.

[WM5] Per Mattsson and Thomas B. Schön. **On the regularization in DeePC**. November, 2022.

[WM4] Dominik Baumann and Thomas B. Schön. **On event-based and periodic state estimation for resource-constrained multi-agent systems**. November, 2022.

[WM3] Antônio H. Ribeiro and Thomas B. Schön. **Overparametrized linear regression under adversarial attacks**. *arXiv:2204.06274*, November, 2022. (in revision)

[WM2] Antônio H. Ribeiro, Dave Zachariah, and Thomas B. Schön. **Surprises in adversarially-trained linear regression**. *arXiv:2205.*, October, 2022.

[WM1] Dominik Baumann and Thomas B. Schön. **Safe reinforcement learning in uncertain contexts**. September, 2022.

Books and monographs

[B1] Andreas Lindholm, Niklas Wahlström, Fredrik Lindsten and Thomas B. Schön. **Machine Learning – A first course for engineers and scientists**. *Cambridge University Press*, 2022.

[M3] Christian A. Naesseth, Fredrik Lindsten and Thomas B. Schön. **Elements of Sequential Monte Carlo**. *Foundations and Trends in Machine Learning*, 12(3):307–392, 2019.

[M2] Manon Kok, Jeroen Hol and Thomas B. Schön. **Using inertial sensors for position and orientation estimation**. *Foundations and trends in signal processing*, 11(1–2):1–153, 2017.

[M1] Fredrik Lindsten and Thomas B. Schön. **Backward simulation methods for Monte Carlo statistical inference**. *Foundations and Trends in Machine Learning*, 6(1): 1–143, 2013.

Peer reviewed journal papers

[J66] Adrian Wills and Thomas B. Schön. **Sequential Monte Carlo: a unified review**. Annual Review of Control, Robotics, and Autonomous Systems, 2023. (Accepted for publication)

[J65] Li-Hui Geng, Adrian Wills , Brett Ninness and Thomas B. Schön. **Smoothed state estimation via efficient solution of linear equations**. *IEEE Transactions on Automatic Control*, 2023. (Accepted for publication)

[J64] Jarrad Courts, Adrian Wills, Thomas B. Schön and Brett Ninness. **Variational system identification for nonlinear state-space models**. *Automatica*, 147:110687, 2023.

[J63] Muhammad Osama, Dave Zachariah, Petre Stoica, and Thomas B. Schön. **Online learning for prediction via covariance fitting: computation, performance and robustness**. *Transactions on Machine Learning Research (TMLR)*, 2022. (Accepted for publication)

[J62] Philipp Pilar, Carl Jidling, Thomas B. Schön and Niklas Wahlström. **Incorporating sum constraints into multitask Gaussian processes**. *Transactions on Machine Learning Research (TMLR)*, 2022.

[J61] Stefan Gustafsson, Daniel Gedon, Erik Lampa, Antônio H. Ribeiro, Martin J. Holzmann, Thomas B. Schön and Johan Sundström. **Development and validation of deep learning ECG-based prediction of myocardial infarction in emergency department patients**. *Scientific Reports*, 12:19615, 2022.

[J60] Andreas Lindholm, Johannes Hendriks, Adrian Wills and Thomas B. Schön. **Predicting political violence using a state-space model**. *International Interactions*, 48(4): 759–777, 2022.

[J59] Conor Rosato, Lee Devlin, Vincent Beraud, Paul Horridge, Thomas B. Schön and Simon Maskell. **Efficient learning of the parameters of non-linear models using differentiable resampling in particle filters**. *IEEE Transactions on Signal Processing*, 70:3676–3692, 2022.

[J58] Carl Jidling, Adrian Wills, Andrew Flemming and Thomas B. Schön. **Memory Efficient Constrained Optimization of Scanning-Beam Lithography**. *Optics Express*, 30(12):20564–20579, 2022.

[J57] Joel Kronander, Daniel Jönsson, Jonas Unger, Thomas B. Schön and Magnus Wrenninge. **Direct transmittance estimation in heterogeneous participating media using approximated Taylor expansions**. *IEEE Transactions on Visualization and Computer Graphics*, 28(7):2602–2614, 2022.

[J56] Anna Wigren, Johan Wågberg, Fredrik Lindsten, Adrian Wills and Thomas B. Schön. **Nonlinear system identification: Learning while respecting physical models using a Sequential Monte Carlo method**. *IEEE Control Systems Magazine (CSM)*, 42(1):75–102, 2022.

[J55] Johannes Hendriks, James Holdsworth, Adrian Wills, Thomas B. Schön and Brett Ninness. **Data to controller for nonlinear systems: an approximate solution**. *IEEE Control Systems Letters (L-CSS)*, 6:1196–1201, 2022. Jointly published at the *IEEE Conference on Decision and Control (CDC)*, Austin, TX, USA, December, 2021.

[J54] Jarrad Courts, Adrian Wills and Thomas B. Schön. **Gaussian variational state estimation for nonlinear state-space models**. *IEEE Transactions on Signal Processing*, 69:5979-5993, 2021.

[J53] Håkan Carlsson, Isaac Skog, Thomas B. Schön and Joakim Jaldén. **Quantifying the uncertainty of the relative geometry in inertial sensors arrays**. *IEEE Sensors Journal*, 21(17):19362–19373, 2021.

[J52] Emilly M. Lima, Antônio H. Ribeiro, Gabriela M.M. Paixão, Manoel H. Ribeiro, Marcelo M P. Filho, Paulo R. Gomes, Derick M. Oliveira, Ester C. Sabino, Bruce B. Duncan, Luana Giatti, Sandhi M. Barreto, Wagner Meira Jr., Thomas B. Schön and Antonio L. P. Ribeiro. **Deep neural network estimated electrocardiographic-age as a mortality predictor**. *Nature Communications*, 12(5117), 2021.

[J51] Fredrik Ronquist, Jan Kudlicka, Viktor Senderov, Johannes Borgström, Nicolas Lartillot, Daniel Lundén, Lawrence Murray, Thomas B. Schön and David Broman. **Probabilistic programming: a powerful new approach to statistical phylogenetics**. *Communications Biology*, 4, 244, 2021.

[J50] Adrian Wills and Thomas B. Schön **Stochastic quasi-Newton with line-search regularization**. *Automatica*, 127:109503, 2021.

[J49] Kristian Soltesz, Fredrik Gustafsson, Toomas Timpka, Joakim Jaldén, Carl Jidling, Albin Heimerson, Thomas B. Schön, Armin Spreco, Joakim Ekberg, Örjan Dahlström, Fredrik Bagge Carlson, Anna Jöud and Bo Bernhardsson. **The effect of interventions on COVID-19**. *Nature*, 588, E26–E28, 2020.

[J48] Antônio H. Ribeiro, Koen Tiels, Jack Umenberger, Thomas B. Schön and Luis A. Aguirre. **On the smoothness of nonlinear system identification**. *Automatica*, 121:109158, November 2020.

[J47] Pierre E. Jacob, Fredrik Lindsten and Thomas B. Schön. **Smoothing with couplings of conditional particle filters**. *Journal of American Statistical Association (JASA)*, 115(530):721–729, 2020.

[J46] Gabriela M. Paixão, Antônio H. Ribeiro, Emilly Lima, Bruna Seewald, Manoel H. Ribeiro, Derick Oliveira, Paulo Gomes, Nathalia Castro, Wagner Meira Jr., Thomas B. Schön and Antonio Luiz P. Ribeiro. **ECG-age from artificial intelligence: a new predictor for mortality? the CODE (clinical outcomes in digital electrocardiography) study**. *Journal of the American College of Cardiology*, 75(11):3672, 2020.

[J45] Antônio H. Ribeiro, Manoel H. Ribeiro, Gabriela M.M. Paixão, Derick M. Oliveira, Paulo R. Gomes, Jéssica A. Canazart, Milton P. S. Ferreira, Carl R. Andersson, Peter W. Macfarlane, Wagner Meira Jr., Thomas B. Schön and Antonio Luiz P. Ribeiro. **Automatic diagnosis of the 12-lead ECG using a deep neural network**. *Nature Communications*, 11(1760), 2020.

[J44] Jack Umenberger and Thomas B. Schön. **Nonlinear input design as optimal control of a Hamiltonian system**. *IEEE Control Systems Letters*, 4(1):85–90, 2020. Jointly published at the *IEEE Conference on Decision and Control (CDC)*, Nice, France, December, 2019.

[J43] Mina Ferizbegovic, Jack Umenberger, Håkan Hjalmarsson and Thomas B. Schön. **Learning robust LQ-controllers using application oriented exploration**. *IEEE Control Systems Letters*, 4(1):19–24, 2020. Jointly published at the *IEEE Conference on Decision and Control (CDC)*, Nice, France, December, 2019.

[J42] Manon Kok and Thomas B. Schön. **A fast and robust algorithm for orientation estimation using inertial sensors**. *IEEE Signal Processing Letters*, 26(11): 1673–1677, 2019.

[J41] 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.

[J40] Johannes N. Hendriks, Carl Jidling, Thomas B. Schön, Adrian Wills, Christpher M. Wensrich and Erich H. Kisi. **Neutron transmission strain tomography for non-constant strain-free lattice spacing**. *Nuclear instruments and methods in physics research section B*, 456:64–73, 2019.

[J39] Christian A. Naesseth, Fredrik Lindsten and Thomas B. Schön. **High-dimensional filtering using nested sequential Monte Carlo**. *IEEE Transactions on Signal Processing*, 67(16): 4177–4188, 2019.

[J38] Patricio E. Valenzuela, Thomas B. Schön and Cristian R. Rojas. **On model order priors for Bayesian identification of SISO linear systems**. *International Journal of Control*, 92(7):1645–1661, 2019.

[J37] Andreas Lindholm, Dave Zachariah, Petre Stoica and Thomas B. Schön. **Data consistency approach to model validation**. *IEEE Access*, 7(1):59788–59796, 2019.

[J36] Johan Dahlin and Thomas B. Schön. **Getting started with particle Metropolis-Hastings for inference in nonlinear dynamical models**. *Journal of Statistical Software*, 88(2):1–41, 2019.

[J35] Hildo Bijl and Thomas B. Schön. **Optimal controller/observer gains of discounted-cost LQG systems**. *Automatica*, 101:471–474, 2019.

[J34] Lawrence Murray and Thomas B. Schön. **Automated learning with a probabilistic programming language: Birch**. *Annual Reviews in Control*, 46:29–43, 2018.

[J33] Carl Jidling, Johannes Hendriks, Niklas Wahlström, Alexander Gregg, Thomas B. Schön, Chris Wensrich and Adrian Wills. **Probabilistic modelling and reconstruction of strain**. *Nuclear instruments and methods in physics research section B*, 436:141–155, 2018.

[J32] Jack Umenberger, Johan Wågberg, Ian Manchester and Thomas B. Schön. **Maximum likelihood identification of stable linear dynamical systems**. *Automatica*, 96:280–292, 2018.

[J31] 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.

[J30] Thomas B. Schön, Andreas Svensson, Lawrence Murray and Fredrik Lindsten. **Probabilistic learning of nonlinear dynamical systems using sequential Monte Carlo**. *Mechanical Systems and Signal Processing (MSSP)*, 104:866–883, 2018.

[J29] Andreas Svensson, Thomas B. Schön and Fredrik Lindsten. **Learning of state-space models with highly informative observations: a tempered Sequential Monte Carlo solution**. *Mechanical Systems and Signal Processing (MSSP)*, 104:915-928, 2018.

[J28] Hildo Bijl, Thomas B. Schön, Jan-Willem van Wingerden and Michel Verhaegen. **System identification through online sparse Gaussian process regression with input noise**. *IFAC Journal of Systems and Control*, 2:1–11, 2017.

[J27] Andreas Svensson and Thomas B. Schön. **A flexible state space model for learning nonlinear dynamical systems**. *Automatica*, 80:189–199, 2017.

[J26] Fredrik Lindsten, Adam M. Johansen, Christian A. Naesseth, Bonnie Kirkpatrick, Thomas B. Schön, John Aston and Alexandre Bouchard-Côté. **Divide-and-Conquer with Sequential Monte Carlo**. *Journal of Computational and Graphical Statistics (JCGS)*, 26(2):445–458, 2017.

[J25] Patricio E. Valenzuela, Johan Dahlin, Cristian R. Rojas and Thomas B. Schön. **On robust input design for nonlinear dynamical models**. *Automatica*, 77:268–278, 2017.

[J24] Manon Kok and Thomas B. Schön. **Magnetometer calibration using inertial sensors**. *IEEE Sensors Journal*, 16(14):5679–5689, 2016.

[J23] Hildo Bijl, Jan-Willem van Wingerden, Thomas B. Schön and Michel Verhaegen. **Mean and variance of the LQG cost function**. *Automatica*, 67(5):216–223, 2016.

[J22] Liang Dai and Thomas B. Schön. **Using convolution to estimate the score function for intractable state transition models**. *IEEE Signal Processing Letters*, 23(4):498–501, 2016.

[J21] Fredrik Lindsten, Pete Bunch, Simo Särkkä, Thomas B. Schön and Simon J. Godsill. **Rao-Blackwellized particle smoothers for conditionally linear Gaussian models**. *IEEE Journal of Selected Topics in Signal Processing*, 10(2):353–365, 2016.

[J20] Liang Dai and Thomas B. Schön. **On the exponential convergence of the Kaczmarz algorithm**. *IEEE Signal Processing Letters*, 22(10):1571–1574, 2015.

[J19] Liang Dai and Thomas B. Schön. **A new structure exploiting derivation of recursive direct weight optimization**. *IEEE Transactions on Automatic Control*, 60(6):1683–1685, 2015.

[J18] Manon Kok, Jeroen D. Hol and Thomas B. Schön. **Indoor positioning using ultrawideband and inertial measurements**. *IEEE Transactions on Vehicular Technology*, 64(4):1293–1303, 2015.

[J17] Johan Dahlin, Fredrik Lindsten and Thomas B. Schön. **Particle Metropolis Hastings using gradient and Hessian information**. *Statistics and Computing*, 25(1): 81–92, 2015.

[J16] Fredrik Lindsten, Michael I. Jordan and Thomas B. Schön. **Particle Gibbs with ancestor sampling**. *Journal of Machine Learning Research (JMLR)*, 15: 2145–2184, 2014.

[J15] Fredrik Lindsten, Thomas B. Schön and Michael I. Jordan. **Bayesian semiparametric Wiener system identification**. *Automatica*, 49(7): 2053–2063, 2013.

[J14] Adrian Wills, Thomas B. Schön, Lennart Ljung and Brett Ninness. **Identification of Hammerstein-Wiener models**. *Automatica*, 49(1): 70–81, 2013.

[J13] Karl Granström, Thomas B. Schön, Juan I. Nieto, and Fabio T. Ramos. **Learning to close loops from range data**. *International Journal of Robotics Research (IJRR)*, 30(14): 1728–1754, 2011.

[J12] Christian Lundquist and Thomas B. Schön. **Joint ego-motion and road geometry estimation**. *Information Fusion*, 12(4):253–263, 2011.

[J11] Xiao-Li Hu, Thomas B. Schön, and Lennart Ljung. **A general convergence result for particle filtering**. *IEEE Transactions on Signal Processing*, 59(7):3424–3429, 2011.

[J10] Tianshi Chen, Thomas B. Schön, Henrik Ohlsson and Lennart Ljung. **Decentralized particle filter with arbitrary state decomposition**. *IEEE Transactions on Signal Processing*, 59(2):465-478, 2011.

[J9] Thomas B. Schön, Adrian Wills and Brett Ninness. **System identification of nonlinear state-space models**. *Automatica*, 47(1):39-49, January, 2011. **Awarded Automatica best paper prize 2014.**

[J8] Jeroen D. Hol, Thomas B. Schön, and Fredrik Gustafsson. **Modeling and calibration of inertial and vision sensors**. *International Journal of Robotics Research (IJRR)*, 29(2):231-244, 2010.

[J7] David Törnqvist, Thomas B. Schön, Rickard Karlsson and Fredrik Gustafsson. **Particle filter SLAM with high dimensional vehicle model**. *Journal of Intelligent and Robotic Systems*, 55(4-5):249-266, 2009.

[J6] Xiao-Li Hu, Thomas B. Schön, and Lennart Ljung. **A basic convergence result for particle filtering**. *IEEE Transactions on Signal Processing*, 56(4):1337–1348, 2008.

[J5] Jeroen Hol, Thomas B. Schön, Henk Luinge, Per Slycke, and Fredrik Gustafsson. **Robust real-time tracking by fusing measurements from inertial and vision sensors**. *Journal of Real-Time Image Processing*, 2(2):149–160, 2007.

[J4] J. Chandaria, G. Thomas, B. Bartczak, K. Koeser, R. Koch, M. Becker, G. Bleser, D. Stricker, C. Wohlleber, M. Felsberg, F. Gustafsson, J. Hol, T. B. Schön, J. Skoglund, P. J. Slycke, and S. Smeitz. **Real-time camera tracking in the MATRIS project**. *SMPTE Motion Imaging Journal*, 116(7–8):266–271, 2007.

[J3] Markus Gerdin, Thomas B. Schön, Torkel Glad, Fredrik Gustafsson, and Lennart Ljung. **On parameter and state estimation for linear differential-algebraic equations**. *Automatica*, 43(3):416–425, 2007.

[J2] Rickard Karlsson, Thomas Schön, and Fredrik Gustafsson. **Complexity analysis of the marginalized particle filter**. *IEEE Transactions on Signal Processing*, 53(11):4408–4411, 2005.

[J1] Thomas Schön, Fredrik Gustafsson, and Per-Johan Nordlund. **Marginalized particle filters for mixed linear/nonlinear state-space models**. *IEEE Transactions on Signal Processing*, 53(7):2279–2289, 2005.

Editorials

[E1] Johan Sundström and Thomas B. Schön. **Machine learning in risk prediction**. *Hypertension*, 75(5):1165–1166, 2020.

Debate articles

[D1] Fredrik Gustafsson, Toomas Timpka, Torbjörn Lundh, Armin Spreco, Kristian Soltesz, Joakim Ekberg, Örjan Dahlström, Fredrik Bagge Carlson, Anna Jöud, Joakim Jaldén, Ingemar Petersson, Thomas B. Schön and Bo Bernhardsson. **Forskare: "Se upp med kompexa coronamodeller – de kan överträffa verkligheten"**. *Ny Teknik*, April 24, 2020. (in Swedish)

Popular scientific

[PS1] Johan Sundström and Thomas B. Schön. **Artificiell intelligens för kardiologer**. *Svensk kardiologi*, 3, 21–25, 2022. (in Swedish)

Peer reviewed book chapters

[BC6] Niklas Gunnarsson, Jens Sjölund and Thomas B. Schön (2021). **Learning a deformable registration pyramid**. In: Shusharina, N., Heinrich, M. P., Huang, R. (eds), *Segmentation, Classification, and Registration of Multi-modality Medical Imaging Data*. LNCS 12587, Springer Nature.

[BC5] Thomas B. Schön and Lennart Ljung (2020). **Deep learning in a system identification perspective**. In: Baillieul J., Samad T. (eds), *Encyclopedia of Systems and Control*. Springer, London, UK.

[BC4] Thomas B. Schön (2020, 2015). **Nonlinear system identification using particle filters**. In: Baillieul J., Samad T. (eds), *Encyclopedia of Systems and Control*. Springer, London, UK.

[BC3] Christian Lundquist, Thomas B. Schön and Fredrik Gustafsson (2012). **Situational awareness and road prediction for trajectory control applications**. In: Eskandarian, A. (ed), *Handbook of Intelligent Vehicles*. Springer.

[BC2] Fredrik Gustafsson, Umut Orguner, Thomas B. Schön, Per Skoglar and Rickard Karlsson (2012). **Navigation and tracking of road-bound vehicles**. In: Eskandarian, A. (ed), *Handbook of Intelligent Vehicles*. Springer.

[BC1] Thomas B. Schön, Fredrik Gustafsson, and Rickard Karlsson (2011). **The particle filter in practice**. In: Crisan D. and Rozovskii, B. (eds), *The Oxford Handbook of Nonlinear Filtering.* Oxford University Press.

Peer reviewed conference papers

[C133] Niklas Gunnarsson, Jens Sjölund, Peter Kimstrad and Thomas B. Schön. **Unsupervised dynamic modeling of medical image transformations**. *The 25th International Conference on Information Fusion*, July, 2022, Linköping, Sweden.

[C132] Fredrik K. Gustafsson, Martin Danelljan and Thomas B. Schön. **Learning proposals for practical energy-based regression**. In *Proceedings of the 25nd International Conference on Artificial Intelligence and Statistics (AISTATS)*, Online, March, 2022.

[C131] Mina Ferizbegovic, Håkan Hjalmarsson, Per Mattsson and Thomas B. Schön. **Willems' fundamental lemma based on second-order moments**. In *IEEE Conference on Decision and Control (CDC)*, Online, December 2021.

[C130] Daniel Gedon, Antônio 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)*, Online, September 2021. **(Oral presentation)**

[C129] Antônio H. Ribeiro, Johannes Hendriks, Adrian Wills and Thomas B. Schön. **Beyond Occam's razor in system identification: double-descent when modeling dynamics**. In *Proceedings of the 19th IFAC Symposium on System Identification (SYSID)*, Online, July, 2021.

[C128] Carl Andersson, Niklas Wahlström and Thomas B. Schön. **Learning deep autoregressive models for hierarchical data**. In *Proceedings of the 19th IFAC Symposium on System Identification (SYSID)*, Online, July, 2021.

[C127] Mina Ferizbegovic, Per Mattsson, Thomas B. Schön and Håkan Hjalmarsson. **Bayes control of Hammerstein systems**. In *Proceedings of the 19th IFAC Symposium on System Identification (SYSID)*, Online, July, 2021.

[C126] Jarrad Courts, Johannes Hendriks, Adrian Wills, Thomas B. Schön and Brett Ninness. **Variational state and parameter estimation**. In *Proceedings of the 19th IFAC Symposium on System Identification (SYSID)*, Online, July, 2021.

[C125] Johannes Hendriks, Fredrik K. Gustafsson, Antônio H. Ribeiro, Adrian Wills and Thomas B. Schön. **Deep energy-based NARX models**. In *Proceedings of the 19th IFAC Symposium on System Identification (SYSID)*, Online, July, 2021.

[C124] Daniel Gedon, Niklas Wahlström, Thomas B. Schön and Lennart Ljung. **Deep state space models for nonlinear system identification**. In *Proceedings of the 19th IFAC Symposium on System Identification (SYSID)*, Online, July, 2021.

[C123] Antônio H. Ribeiro and Thomas B. Schön. **How convolutional neural networks deal with aliasing**. In *Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Online, June, 2021.

[C122] Fredrik K. Gustafsson, Martin Danelljan, Radu Timofte and Thomas B. Schön **How to train your energy-based model for regression**. In *Proceedings of the 31st British Machine Vision Conference (BMVC)*, Online, September, 2020.

[C121] Antonio H. Ribeiro, Daniel Gedon, Daniel M. Teixeira, Manoel H. Ribeiro, Antonio L. Ribeiro, Thomas B. Schön and Wagner Meira Jr. **Automatic 12-lead ECG classification using a convolutional network ensemble**. In *Proceedings of the 47th Computing in Cardiology Conference (CinC)*, Rimini, Italy, September, 2020. **(Oral presentation)**

[C120] Fredrik K. Gustafsson, Martin Danelljan, Goutam Bhat and Thomas B. Schön. **Energy-based models for deep probabilistic regression**. In *Proceedings of the European Conference on Computer Vision (ECCV)*, Online, August, 2020.

[C119] Lennart Ljung, Carl Andersson, Koen Tiels, and Thomas B. Schön. **Deep learning and system identfication**. In *Proceedings of the IFAC World Congress*, Berlin, Germany, July, 2020.

[C118] Adrian Wills and Thomas B. Schön and Carl Jidling. **A fast quasi-Newton-type method for large-scale stochastic optimisation**. In *Proceedings of the IFAC World Congress*, Berlin, Germany, July, 2020.

[C117] Jack Umenberger and Thomas B. Schön. **Optimistic robust linear quadratic dual control**. In *Proceedings of Learning for dynamics and control (L4DC)*, Berkeley, CA, USA, June, 2020. **(Oral presentation)**

[C116] Antônio H. Ribeiro, Koen Tiels, Luis A. Aguirre and Thomas B. Schön. **Beyond exploding and vanishing gradients: analysing RNN training using attractors and smoothness**. In *Proceedings of the 23nd International Conference on Artificial Intelligence and Statistics (AISTATS)*, Palermo, Italy, June, 2020.

[C115] Jan Kudlicka, Lawrence M. Murray, Thomas B. Schön and Fredrik Lindsten. **Particle filter with rejection control and unbiased estimator of the marginal likelihood**. In *Proceedings of the 45th International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Barcelona, May, 2020.

[C114] Jack Umenberger, Mina Ferizbegovic, Thomas B. Schön and Håkan Hjalmarsson. **Robust exploration in linear quadratic reinforcement learning**. In *Conference on Neural Information Processing Systems (NeurIPS)*, Vancouver, Canada, December, 2019. **(Spotlight presentation)**

[C113] Jack Umenberger, Thomas B. Schön and Fredrik Lindsten. **Bayesian identification of state-space models via adaptive thermostats**. In *IEEE Conference on Decision and Control (CDC)*, Nice, France, December, 2019.

[C112] Carl Andersson, Antônio H. Ribeiro, Koen Tiels, Niklas Wahlström and Thomas B. Schön. **Deep convolutional networks are useful in system identification**. In *IEEE Conference on Decision and Control (CDC)*, Nice, France, December, 2019.

[C111] Jan Kudlicka, Lawrence M. Murray, Fredrik Ronquist and Thomas B. Schön. **Probabilistic programming for birth-death models of evolution using an alive particle filter with delayed sampling**. In *The Conference on Uncertainty in Artificial Intelligence (UAI)*, Tel Aviv, Israel, July, 2019.

[C110] Muhammad Osama, Dave Zachariah and Thomas B. Schön. **Inferring heterogeneous causal effects in presence of spatial confounding**. In *36th International Conference on Machine Learning (ICML)*, Long Beach, CA, USA, June, 2019.

[C109] Jalil Taghia and Thomas B. Schön. **Conditionally independent multiresolution Gaussian processes**. In *Proceedings of the 22nd International Conference on Artificial Intelligence and Statistics (AISTATS)*, Naha, Japan, April, 2019. **(Oral presentation)**

[C108] Juozas Vaicenavičius, David Widmann, Carl Andersson, Fredrik Lindsten, Jacob Roll and Thomas B. Schön. **Evaluating model calibration in classification**. In *Proceedings of the 22nd International Conference on Artificial Intelligence and Statistics (AISTATS)*, Naha, Japan, April, 2019.

[C107] Timothy J. Rogers, Thomas B. Schön, Andreas Lindholm, Keith Worden, and Elizabeth J. Cross. **Identification of a Duffing oscillator using particle Gibbs with ancestor sampling**. In *Proceedings of the International Conference on Recent Advances in Structural Dynamics (RASD)*, Lyon, France, April, 2019.

[C106] Jack Umenberger and Thomas B. Schön. **Learning convex bounds for linear quadratic control policy synthesis**. In *Proceedings of Neural Information Processing Systems (NeurIPS)*, Montréal, Canada, December 2018. **(Spotlight presentation)**

[C105] Muhammad Osama, Dave Zachariah and Thomas B. Schön. **Learning localized spatio-temporal models from streaming data**. In *Proceedings of the 35th International Conference on Machine Learning (ICML)*, Stockholm, Sweden, July, 2018.

[C104] 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, July, 2018.

[C103] Andreas Svensson, Dave Zachariah and Thomas B. Schön. **How consistent is my model with the data? Information-theoretic model check**. In *Proceedings of the 18th IFAC Symposium on System Identification (SYSID)*, Stockholm, Sweden, July, 2018.

[C102] Andreas Svensson, Fredrik Lindsten and Thomas B. Schön. **Learning nonlinear state-space models using smooth particle-filter-based likelihood approximations**. In *Proceedings of the 18th IFAC Symposium on System Identification (SYSID)*, Stockholm, Sweden, July, 2018.

[C101] Roland Hostettler and Thomas B. Schön. **Auxiliary particle filter-based two-filter smoothing for Wiener state-space models**. In *Proceedings of the 21st International Conference on Information Fusion*, Cambridge, UK, July, 2018.

[C100] Johan Wågberg, Dave Zachariah and Thomas B. Schön. **Regularized parametric system identification: a decision-theoretic formulation**. In *Proceedings of the American Control Conference (ACC)*, Milwaukee, WI, USA, June, 2018.

[C99] Lawrence M. Murray, Daniel Lundén, Jan Kudlicka, David Broman and Thomas B. Schön. **Delayed sampling and automatic Rao-Blackwellization of probabilistic programs**. In *Proceedings of the 21st International Conference on Artificial Intelligence and Statistics (AISTATS)*, Lanzarote, Spain, April, 2018. **(Oral presentation)**

[C98] Adrian G. Wills and Thomas B. Schön. **On the construction of probabilistic Newton-type algorithms**. In *Proceedings of the 56th IEEE Conference on Decision and Control (CDC)*, Melbourne, Australia, December 2017.

[C97] Carl Jidling, Niklas Wahlström, Adrian G. Wills and Thomas B. Schön. **Linearly constrained Gaussian processes**. In *Advances in Neural Information Processing Systems (NIPS)*, Long Beach, CA, USA, December, 2017.

[C96] Li-Hui Geng, Brett Ninness, Adrian G. Wills and Thomas B. Schön. **Smoothed state estimation via efficient solution of linear equations**. In *Proceedings of the 20th World Congress of the International Federation of Automatic Control (IFAC)*, Toulouse, France, July, 2017.

[C95] Johan Wågberg, Dave Zachariah, Thomas B. Schön and Petre Stoica. **Prediction performance after learning in Gaussian process regression**. In *Proceedings of the 20th International Conference on Artificial Intelligence and Statistics (AISTATS)*, Fort Lauderdale, FL, USA, April, 2017.

[C94] Patricio E. Valenzuela, Johan Dahlin, Cristian R. Rojas and Thomas B. Schön. **Particle-based Gaussian process optimization for input design in nonlinear dynamical models**. In *Proceedings of the 55th IEEE Conference on Decision and Control (CDC)*, Las Vegas, NV, USA, December, 2016.

[C93] Manon Kok, Sina Khoshfetrat Pakazad, Thomas B. Schön, Anders Hansson and Jeroen D. Hol. **A scalable and distributed solution to the inertial motion capture problem**. In *Proceedings of the 19th International conference on information fusion*, Heidelberg, Germany, June, 2016.

[C92] Fredrik Olsson, Manon Kok, Kjartan Halvorsen and Thomas B. Schön. **Accelerometer calibration using sensor fusion with a gyroscope**. In *Proceedings of the IEEE Workshop on Statistical Signal Processing (SSP)*, Palma de Mallorca, Spain, June, 2016.

[C91] Andreas Svensson, Arno Solin, Simo Särkkä and Thomas B. Schön. **Computationally efficient Bayesian learning of Gaussian process state space models**. In *Proceedings of the 19th International Conference on Artificial Intelligence and Statistics (AISTATS)*, Cadiz, Spain, May, 2016.

[C90] Andreas Svensson, Thomas B. Schön, Arno Solin and Simo Särkkä. **Nonlinear state space model identification using a regularized basis function expansion**. In *Proceedings of the IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, Cancun, Mexico, December 2015.

[C89] Andreas Svensson, Johan Dahlin and Thomas B. Schön. **Marginalizing Gaussian process hyperparameters using sequential Monte Carlo methods**. In *Proceedings of the IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, Cancun, Mexico, December 2015.

[C88] Joel Kronander, Thomas B. Schön and Jonas Unger. **Pseudo-marginal Metropolis light transport**. In *Proceedings of SIGGRAPH Asia Technical Briefs*, Kobe, Japan, November 2015.

[C87] Andreas Svensson, Thomas B. Schön and Manon Kok. **Nonlinear state space smoothing using the conditional particle filter**. In *Proceedings of the 17th IFAC Symposium on System Identification (SYSID)*, Beijing, China, October 2015.

[C86] Johan Dahlin, Fredrik Lindsten and Thomas B. Schön. **Quasi-Newton particle Metropolis-Hastings applied to intractable likelihood models**. In *Proceedings of the 17th IFAC Symposium on System Identification (SYSID)*, Beijing, China, October 2015.

[C85] 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.

[C84] Hildo Bijl, Jan-Willem van Wingerden, Thomas B. Schön, and Michel Verhaegen. **Online sparse Gaussian process regression using FITC and PITC approximations**. In *Proceedings of the 17th IFAC Symposium on System Identification (SYSID)*, Beijing, China, October 2015.

[C83] Jerker Nordh, Torbjörn Wigren, Thomas B. Schön, and Bo Bernhardsson. **Particle filtering based identification for autonomous nonlinear ODE models**. In *Proceedings of the 17th IFAC Symposium on System Identification (SYSID)*, Beijing, China, October 2015.

[C82] Manon Kok, Johan Dahlin, Thomas B. Schön, and Adrian Wills. **Newton-based maximum likelihood estimation in nonlinear state space models**. In *Proceedings of the 17th IFAC Symposium on System Identification (SYSID)*, Beijing, China, October 2015.

[C81] Johan Wågberg, Fredrik Lindsten and Thomas B. Schön. **Bayesian nonparametric identification of piecewise affine ARX systems**. In *Proceedings of the 17th IFAC Symposium on System Identification (SYSID)*, Beijing, China, October 2015.

[C80] Jack Umenberger, Johan Wågberg, Ian R. Manchester and Thomas B. Schön. **On identification via EM with latent disturbances and Lagrangian relaxation**. In *Proceedings of the 17th IFAC Symposium on System Identification (SYSID)*, Beijing, China, October 2015.

[C79] Thomas B. Schön, Fredrik Lindsten, Johan Dahlin, Johan Wågberg, Christian A. Naesseth, Andreas Svensson and Liang Dai. **Sequential Monte Carlo methods for system identification**. In *Proceedings of the 17th IFAC Symposium on System Identification (SYSID)*, Beijing, China, October 2015.

[C78] Christian A. Naesseth, Fredrik Lindsten and Thomas B. Schön. **Nested sequential Monte Carlo methods**. In *Proceedings of the 32nd International Conference on Machine Learning (ICML)*, Lille, France, July, 2015.

[C77] Christian A. Naesseth, Fredrik Lindsten and Thomas B. Schön. **Sequential Monte Carlo methods for graphical models**. In *Advances in Neural Information Processing Systems (NIPS) 27*, Montreal, Quebec, Canada, December, 2014.

[C76] Andreas Svensson, Thomas B. Schön and Fredrik Lindsten. **Identification of jump Markov linear models using particle filters**. In *Proceedings of the 53rd IEEE Conference on Decision and Control (CDC)*, Los Angeles, CA, USA, December, 2014.

[C75] Christian A. Naesseth, Fredrik Lindsten and Thomas B. Schön. **Capacity estimation of two-dimensional channels using Sequential Monte Carlo**. In *Proceedings of the IEEE Information Theory Workshop (ITW)*, Hobart, Tasmania, Australia, November, 2014.

[C74] Joel Kronander, Johan Dahlin, Daniel Jönsson, Manon Kok, Thomas B. Schön and Jonas Unger. **Real-time video based lighting using GPU raytracing**. In *Proceedings of the 22nd European Signal Processing Conference (EUSIPCO)*, Lisabon, Portugal, September 2014.

[C73] Roger Frigola, Fredrik Lindsten, Thomas B. Schön and Carl E. Rasmussen. **Identification of Gaussian Process state-space models with particle stochastic approximation EM**. In *Proceedings of the 19th World Congress of the International Federation of Automatic Control (IFAC)*, Cape Town, South Africa, August 2014.

[C72] Manon Kok and Thomas B. Schön. **Maximum likelihood calibration of a magnetometer using inertial sensors**. In *Proceedings of the 19th World Congress of the International Federation of Automatic Control (IFAC)*, Cape Town, South Africa, August 2014.

[C71] Manon Kok, Jeroen D. Hol and Thomas B. Schön. **An optimization-based approach to human body motion capture using inertial sensors**. In *Proceedings of the 19th World Congress of the International Federation of Automatic Control (IFAC)*, Cape Town, South Africa, August 2014. **Honorable mention, nominated for the best application paper award.**

[C70] Johan Dahlin, Fredrik Lindsten and Thomas B. Schön. **Second-order Particle MCMC for Bayesian parameter inference**. In *Proceedings of the 19th World Congress of the International Federation of Automatic Control (IFAC)*, Cape Town, South Africa, August 2014.

[C69] Patricio E. Valenzuela, Johan Dahlin, Cristian R. Rojas and Thomas B. Schön. **A graph/particle-based method for experiment design in nonlinear systems**. In *Proceedings of the 19th World Congress of the International Federation of Automatic Control (IFAC)*, Cape Town, South Africa, August 2014.

[C68] André Carvalho Bittencourt and Thomas B. Schön. **Data-driven anomaly detection based on a bias change model**. In *Proceedings of the 19th World Congress of the International Federation of Automatic Control (IFAC)*, Cape Town, South Africa, August 2014.

[C67] Joel Kronander and Thomas B. Schön. **Robust auxiliary particle filters using multiple importance sampling**. In *Proceeding of the IEEE Statistical Signal Processing Workshop (SSP)*, Gold Coast, Australia, July 2014.

[C66] Joel Kronander, Thomas B. Schön and Johan Dahlin. **Backward sequential Monte Carlo for marginal smoothing**. In *Proceeding of the IEEE Statistical Signal Processing Workshop (SSP)*, Gold Coast, Australia, July 2014.

[C65] Daniel Hultqvist, Jacob Roll, Fredrik Svensson, Johan Dahlin and Thomas B. Schön. **Detecting and positioning of overtaking vehicles using 1D optical flow**. In *Proceedings of the IEEE Intelligent Vehicles (IV) Symposium*, Dearborn, MI, USA, June 2014.

[C64] Roger Frigola, Fredrik Lindsten, Thomas B. Schön and Carl E. Rasmussen. **Bayesian inference and learning in Gaussian process state-space models with particle MCMC**. In *Advances in Neural Information Processing Systems (NIPS) 26*, Lake Tahoe, NV, USA, December 2013.

[C63] Fredrik Lindsten, Pete Bunch, Thomas B. Schön and Simon J. Godsill. **Rao-Blackwellized particle smoothers for mixed linear/nonlinear state-space models**. In *Proceedings of the 38th International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Vancouver, Canada, May 2013.

[C62] 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)*, Vancouver, Canada, May 2013.

[C61] Niklas Wahlström, Manon Kok, Thomas B. Schön and Fredrik Gustafsson. **Modeling magnetic fields using Gaussian processes**. In *Proceedings of the 38th International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Vancouver, Canada, May 2013.

[C60] Johan Dahlin, Fredrik Lindsten and Thomas B. Schön. **Particle Metropolis Hastings using Langevin dynamics**. In *Proceedings of the 38th International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Vancouver, Canada, May 2013.

[C59] Ehsan Taghavi, Fredrik Lindsten, Lennart Svensson and Thomas B. Schön. **Adaptive stopping for fast particle smoothing**. In *Proceedings of the 38th International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Vancouver, Canada, May 2013.

[C58] Fredrik Lindsten, Michael I. Jordan and Thomas B. Schön. **Ancestor sampling for particle Gibbs**. In *Proceedings of Neural Information Processing Systems (NIPS)*, Lake Tahoe, NV, USA, December 2012.

[C57] Manon Kok, Jeroen Hol, Thomas B. Schön, Fredrik Gustafsson and Henk Luinge. **Calibration of a magnetometer in combination with inertial sensors**. In *Proceedings of the 15th International Conference on Information Fusion*, Singapore, July 2012.

[C56] Tohid Ardeshiri, Umut Orguner, Christian Lundquist, Thomas B. Schön. **On mixture reduction for multiple target tracking**. In *Proceedings of the 15th International Conference on Information Fusion*, Singapore, July 2012.

[C55] Fredrik Lindsten, Thomas B. Schön and Michael I. Jordan. **A semiparametric Bayesian approach to Wiener system identification**. In *Proceedings of the 16th IFAC Symposium on System Identification (SYSID)*, Brussels, Belgium, July 2012.

[C54] Johan Dahlin, Fredrik Lindsten, Thomas B. Schön and Adrian Wills. **Hierarchical Bayesian ARX models for robust inference**. In *Proceedings of the 16th IFAC Symposium on System Identification (SYSID)*, Brussels, Belgium, July 2012.

[C53] Fredrik Lindsten, Thomas B. Schön and Lennart Svensson. **A non-degenerate Rao-Blackwellised particle filter for estimating static parameters in dynamical models**. In *Proceedings of the 16th IFAC Symposium on System Identification (SYSID)*, Brussels, Belgium, July 2012.

[C52] Soren Henriksen, Adrian Wills, Thomas B. Schön and Brett Ninness. **Parallel implementation of particle MCMC methods on a GPU**. In *Proceedings of the 16th IFAC Symposium on System Identification (SYSID)*, Brussels, Belgium, July 2012.

[C51] Adrian Wills, Thomas B. Schön, Fredrik Lindsten and Brett Ninness. **Estimation of linear systems using a Gibbs sampler**. In *Proceedings of the 16th IFAC Symposium on System Identification (SYSID)*, Brussels, Belgium, July 2012.

[C50] Fredrik Lindsten and Thomas B. Schön. **On the use of backward simulation in the particle Gibbs sampler**. In *Proceedings of the 37th International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Kyoto, Japan, March 2012.

[C49] Adrian G. Wills, Thomas B. Schön, Lennart Ljung and Brett Ninness. **Blind identification of Wiener models**. In *Proceedings of the 18th World Congress of the International Federation of Automatic Control (IFAC)*, Milan, Italy, August-September 2011.

[C48] Fredrik Lindsten, Thomas B. Schön and Jimmy Olsson. **An explicit variance reduction expression for the Rao-Blackwellised particle filter**. In *Proceedings of the 18th World Congress of the International Federation of Automatic Control (IFAC)*, Milan, Italy, August-September 2011.

[C47] R. Bhushan Gopaluni, Thomas B. Schön and Adrian G. Wills. **Input design for nonlinear stochastic dynamic systems − a particle filter approach**. In *Proceedings of the 18th World Congress of the International Federation of Automatic Control (IFAC)*, Milan, Italy, August-September 2011.

[C46] Zoran Sjanic, Martin A. Skoglund, Thomas B. Schön and Fredrik Gustafsson. **A nonlinear least-squares approach to the SLAM problem**. In *Proceedings of the 18th World Congress of the International Federation of Automatic Control (IFAC)*, Milan, Italy, August-September 2011.

[C45] Emil Nilsson, Christian Lundquist, Thomas B. Schön, David Forslund and Jacob Roll. **Vehicle motion estimation using an infrared camera**. In *Proceedings of the 18th World Congress of the International Federation of Automatic Control (IFAC)*, Milan, Italy, August-September 2011.

[C44] Tohid Ardeshiri, Fredrik Larsson, Fredrik Gustafsson, Thomas B. Schön and Michael Felsberg. **Bicycle tracking using ellipse extraction**. In *Proceedings of the 14th International Conference on Information Fusion*, Chicago, IL, USA, July, 2011. **Honorable mention, nominated for the best student paper award.**

[C43] Fredrik Lindsten and Thomas B. Schön. **Identification of mixed linear/nonlinear state-space models**. In *Proceedings of the 49th IEEE Conference on Decision and Control (CDC)*, Atlanta, USA, December 2010.

[C42] Brett Ninness, Adrian Wills and Thomas B. Schön. **Estimation of general nonlinear state-space systems**. In *Proceedings of the 49th IEEE Conference on Decision and Control (CDC)*, Atlanta, USA, December 2010.

[C41] Adrian Wills, Thomas B. Schön and Brett Ninness. **Estimating state-space models in innovations form using the expectation maximisation algorithm**. In *Proceedings of the 49th IEEE Conference on Decision and Control (CDC)*, Atlanta, USA, December 2010.

[C40] Tianshi Chen, Thomas B. Schön, Henrik Ohlsson and Lennart Ljung. **Decentralization of particle filters using arbitrary state decomposition**. In *Proceedings of the 49th IEEE Conference on Decision and Control (CDC)*, Atlanta, USA, December 2010.

[C39] Karl Granström and Thomas B. Schön. **Learning to close the loop from 3D point clouds**. In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Taipei, Taiwan, October 2010.

[C38] Jeroen Hol, Thomas B. Schön and Fredrik Gustafsson. **Ultra-wideband calibration for indoor positioning**. In *Proceedings of the IEEE International Conference on Ultra-Wideband (ICUWB)*, Nanjing, China, September 2010.

[C37] Magnus Axholt, Martin Skoglund, Stephen D. Peterson, Matthew D. Cooper, Thomas B. Schön, Fredrik Gustafsson, Anders Ynnerman and Stephen. R. Ellis. **Optical see-through head mounted display direct linear transformation calibration robustness in the presence of user alignment noise**. In *Proceedings of the 54th Annual Meeting of the Human Factors and Ergonomics Society (HFES)*, San Francisco, CA, USA, September 2010.

[C36] Michael Felsberg, Fredrik Larsson, Wang Han, Anders Ynnerman and Thomas B. Schön. **Torchlight navigation**. In *Proceedings of the 20th International Conference on Pattern Recognition (ICPR)*, Istanbul, Turkey, August 2010.

[C35] Fredrik Lindsten, Jonas Callmer, Henrik Ohlsson, David Törnqvist, Thomas B. Schön, Fredrik Gustafsson. **Geo-referencing for UAV navigation using environmental classification**. In *Proceedings of the International Conference on Robotics and Automation (ICRA)*, Anchorage, Alaska, USA, May 2010.

[C34] Carsten Fritsche, Thomas B. Schön and Anja Klein. **The marginalized auxiliary particle filter**. In *Proceedings of the Third International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, Aruba, Dutch Antilles, December 2009.

[C33] Robert Henriksson, Mikael Norrlöf, Stig Moberg, Erik Wernholt and Thomas B. Schön. **Experimental comparison of observers for tool position estimation of industrial robots**. In *Proceedings of the 48th IEEE Conference on Decision and Control (CDC)*, Shanghai, China, December 2009.

[C32] Jeroen Hol, Fred Dijkstra, Henk Luinge and Thomas B. Schön. **Tightly coupled UWB/IMU pose estimation**. In *Proceedings of the IEEE International Conference on Ultra-Wideband (ICUWB)*, Vancouver, Canada, September 2009. Best Student Paper Award.

[C31] Christian Lundquist and Thomas B. Schön. **Recursive identification of cornering stiffness parameters for an enhanced single track model**. In *Proceedings of the 15th IFAC Symposium on System Identification (SYSID)*, Saint-Malo, France, July 2009.

[C30] Bhushan Gopaluni, Thomas B. Schön and Adrian Wills. **Particle filter approach to nonlinear system identification under missing observations with a real application**. In *Proceedings of the 15th IFAC Symposium on System Identification (SYSID)*, Saint-Malo, France, July 2009.

[C29] Henrik Tidefelt and Thomas B. Schön. **Robust point-mass filters on manifolds**. In *Proceedings of the 15th IFAC Symposium on System Identification (SYSID)*, Saint-Malo, France, July 2009.

[C28] Thomas B. Schön and Jacob Roll. **Ego-motion and indirect road geometry estimation using night vision**. In *Proceedings of the IEEE Intelligent Vehicle Symposium (IV)*, Xi'an, Shaanxi, China, June 2009.

[C27] Christian Lundquist, Umut Orguner and Thomas B. Schön. **Tracking stationary extended objects for road mapping using radar measurements**. In *Proceedings of the IEEE Intelligent Vehicle Symposium (IV)*, Xi'an, Shaanxi, China, June 2009.

[C26] Christian Lundquist and Thomas B. Schön. **Estimation of the free space in front of a moving vehicle**. In *Proceedings of the SAE 2009 World Congress*, Detroit, MI, USA, April 2009.

[C25] Umut Orguner, Thomas B. Schön, and Fredrik Gustafsson. **Improved target tracking with road network information**. In *Proceedings 2008 IEEE Aerospace Conference*, Big Sky, MT, USA, March 2009.

[C24] Jeroen D. Hol, Thomas B. Schön, and Fredrik Gustafsson. **A new algorithm for calibrating a combined camera and IMU sensor unit**. In *Proceedings of the 10th International Conference on Control, Automation, Robotics and Vision (ICARCV)*, Hanoi, Vietnam, December 2008.

[C23] David Törnqvist, Thomas B. Schön, and Fredrik Gustafsson. **Detecting spurious features using parity space**. In *Proceedings of the 10th International Conference on Control, Automation, Robotics and Vision (ICARCV)*, Hanoi, Vietnam, December 2008.

[C22] Jeroen D. Hol, Thomas B. Schön, and Fredrik Gustafsson. **Relative pose calibration of a spherical camera and an IMU**. In *Proceedings of the 7th IEEE and ACM International Symposium on Mixed and Augmented Reality (ISMAR)*, Cambridge, United Kingdom, September 2008.

[C21] Adrian Wills, Thomas B. Schön, and Brett Ninness. **Parameter estimation for discrete-time nonlinear systems using EM**. In *Proceedings of the 17th World Congress of the International Federation of Automatic Control (IFAC)*, Seoul, South Korea, July 2008.

[C20] Fredrik Gustafsson, Thomas B. Schön, and Jeroen Hol. **Sensor fusion for augmented reality**. In *Proceedings of the 17th World Congress of the International Federation of Automatic Control (IFAC)*, Seoul, South Korea, July 2008.

[C19] Christian Lundquist and Thomas B. Schön. **Road geometry estimation and vehicle tracking using a single track model**. In *Proceedings of IEEE Intelligent Vehicles Symposium (IV)*, Eindhoven, The Netherlands, June 2008.

[C18] Rickard Karlsson, Thomas B. Schön, David Törnqvist, Gianpaolo Conte, and Fredrik Gustafsson. **Utilizing model structure for efficient simultaneous localization and mapping for a UAV application**. In *Proceedings of IEEE Aerospace Conference*, Big Sky, MT, USA, March 2008.

[C17] Xiao-Li Hu, Thomas B. Schön, and Lennart Ljung. **A robust particle filter for state estimation − with convergence results**. In *Proceedings of the 46th IEEE Conference on Decision and Control (CDC)*, New Orleans, USA, December 2007.

[C16] Thomas B. Schön, David Törnqvist, and Fredrik Gustafsson. **Fast particle filters for multi-rate sensors**. In *15th European Signal Processing Conference (EUSIPCO)*, Poznań, Poland, September 2007.

[C15] Xiao-Li Hu, Thomas B. Schön, and Lennart Ljung. **A basic convergence result for particle filtering**. In *Proceedings of the 7th IFAC Symposium on Nonlinear Control Systems (NOLCOS)*, Pretoria, South Africa, August 2007.

[C14] Thomas B. Schön, Rickard Karlsson, David Törnqvist, and Fredrik Gustafsson. **A framework for simultaneous localization and mapping utilizing model structure**. In *Proceedings of the 10th international conference on information fusion*, Québec, Canada, July 2007.

[C13] Fredrik Gustafsson, Thomas B. Schön, Rickard Karlsson, and Per-Johan Nordlund. **State-of-the-art for the marginalized particle filter**. In *Nonlinear Statistical Signal Processing Workshop*, Cambridge, UK, September 2006.

[C12] Jeroen D. Hol, Thomas B. Schön, and Fredrik Gustafsson. **On resampling algorithms for particle filters**. In *Nonlinear Statistical Signal Processing Workshop*, Cambridge, UK, September 2006.

[C11] J. Chandaria, G. Thomas, B. Bartczak, K. Koeser, R. Koch, M. Becker, G. Bleser, D. Stricker, C. Wohlleber, M. Felsberg, F. Gustafsson, J. Hol, T. B. Schön, J. Skoglund, P. J. Slycke, and S. Smeitz. **Real-time camera tracking in the MATRIS project**. In *Proceedings of the International Broadcasting Convention (IBC)*, Amsterdam, The Netherlands, September 2006.

[C10] Jeroen D. Hol, Thomas B. Schön, Fredrik Gustafsson, and Per J. Slycke. **Sensor fusion for augmented reality**. In *The 9th International Conference on Information Fusion*, Florence, Italy, July 2006.

[C9] Thomas B. Schön, Rickard Karlsson, and Fredrik Gustafsson. **The marginalized particle filter – analysis, applications and generalizations**. In *Workshop on Sequential Monte Carlo Methods, filtering and other applications*, Oxford, UK, July 2006.

[C8] Thomas B. Schön, Andreas Eidehall, and Fredrik Gustafsson. **Lane departure detection for improved road geometry estimation**. In *Proceedings of the IEEE Intelligent Vehicle Symposium (IV)*, Tokyo, Japan, June 2006.

[C7] Thomas B. Schön, Adrian Wills, and Brett Ninness. **Maximum likelihood nonlinear system estimation**. In *Proceedings of the 14th IFAC Symposium on System Identification (SYSID)*, Newcastle, Australia, March 2006.

[C6] Thomas B. Schön, Rickard Karlsson, and Fredrik Gustafsson. **The marginalized particle filter in practice**. In *Proceedings of IEEE Aerospace Conference*, Big Sky, MT, USA, March 2006.

[C5] Thomas B. Schön and Fredrik Gustafsson. **Integrated navigation of cameras for augmented reality**. In *Proceedings of the 16th World Congress of the International Federation of Automatic Control (IFAC)*, Prague, Czech Republic, July 2005.

[C4] Andreas Eidehall, Thomas B. Schön, and Fredrik Gustafsson. **The marginalized particle filter for automotive tracking applications**. In *Proceedings of the IEEE Intelligent Vehicle Symposium (IV)*, Las Vegas, NV, USA, June 2005.

[C3] Thomas Schön, Markus Gerdin, Torkel Glad, and Fredrik Gustafsson. **A modeling and filtering framework for linear differential-algebraic equations**. In *Proceedings of the 42nd Conference on Decision and Control (CDC)*, Maui, Hawaii, USA, December 2003.

[C2] Thomas Schön and Fredrik Gustafsson. **Particle filters for system identification of state-space models linear in either parameters or states**. In *Proceedings of the 13th IFAC Symposium on System Identification (SYSID)*, pages 1287–1292, Rotterdam, The Netherlands, September 2003.

[C1] Thomas Schön, Fredrik Gustafsson, and Anders Hansson. **A note on state estimation as a convex optimization problem**. In *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, pages 61–64, Hong Kong, April 2003.

Relevant national conference papers

[NC7] Fredrik K. Gustafsson, Martin Danelljan and Thomas B. Schön. **Ensembling as approximate Bayesian inference for predictive uncertainty estimation in deep learning**. In *The Third Swedish Symposium on Deep Learning (SSDL)*, Norrköping, Sweden, June 2019.

[NC6] Jalil Taghia, Fredrik Lindsten and Thomas B. Schön. **A measure for uncertainty quantification in neural networks**. In *The Third Swedish Symposium on Deep Learning (SSDL)*, Norrköping, Sweden, June 2019.

[NC5] Andreas Svensson and Thomas B. Schön. **Comparing two recent particle filter implementations of Bayesian system identification**. In *Proceedings of Reglermöte (Swedish Control Conference)*, Göteborg, Sweden, June 2016.

[NC4] Johan Kihlberg, Simon Tegelid, Manon Kok and Thomas B. Schön. **Map aided indoor positioning using particle filters**. In *Proceedings of Reglermöte (Swedish Control Conference)*, Linköping, Sweden, June 2014.

[NC3] Joel Hermansson, Andreas Gising, Martin Skoglund and Thomas B. Schön. **Autonomous landing of an unmanned aerial vehicle**. In *Proceedings of Reglermöte (Swedish Control Conference)*, Lund, Sweden, June 2010.

[NC2] Michael Felsberg, Fredrik Larsson, Wang Han, Anders Ynnerman and Thomas B. Schön. **Torch guided navigation**. In *Proceedings of the Swedish Symposium on Image Analysis (SSBA)*, Uppsala, Sweden, March 2010. **Nominated for the best industry-relevant paper award.**

[NC1] Viktor Kolbe, Folke Isaksson, Thomas Beckman and Thomas B. Schön. **Indoor photorealistic 3D mapping using stereo images from SLR cameras**. In *Proceedings of the Swedish Symposium on Image Analysis (SSBA)*, Halmstad, Sweden, March 2009. **Nominated for the best industry-relevant paper award.**

Limited peer reviewed workshop, conference papers and abstracts

[CA21] Daniel Gedon, Stefan Gustafsson, Erik Lampa, Antônio H. Ribeiro, Martin J. Holzmann, Thomas B. Schön and Johan Sundström. **ResNet-based ECG diagnosis of myocardial infarction in the emergency department**. In *Workshop on Machine learning from ground truth: new medical imaging datasets for unsolved medical problems at the Conference on Neural Information Processing Systems (NeurIPS)*, Online, 2021.

[CA20] Fredrik K. Gustafsson, Martin Danelljan and Thomas B. Schön **Accurate 3D object detection using energy-based models**. In *the Workshop on Autonomous Driving (WAD) at the conference on Computer Vision and Pattern Recognition (CVPR)*, Online, 2021.

[CA19] Antônio H. Ribeiro and Thomas B. Schön. **Overparametrized regression under ℓ_2 adversarial attacks**. In *Workshop on the Theory of Overparametrized Machine Learning (TOPML)*, online, April, 2021.

[CA18] Bo M. Bernhardsson, Fredrik Gustafsson, Torbjörn Lundh, Kristian Soltesz, Joakim Jaldén, Carl Jidling and Thomas B. Schön. **On choice of model complexity and data sources for prediction of ongoing pandemics**. In *Proceedings of the 59th IEEE Conference on Decision and Control (CDC)*, online, December, 2020.

[CA17] Andreas Lindholm, Johannes Hendriks, Adrian Wills, and Thomas B. Schön. **Developing a state-space model for predicting conflict data**. Forecasting changes in monthly fatalities in armed conflict, October, 2020.

[CA16] Fredrik K. Gustafsson, Martin Danelljan and Thomas B. Schön. **Evaluating scalable Bayesian deep learning methods for robust computer vision**. In *2nd Workshop on safe artificial intelligence for automated driving (SAIAD) at the conference on Computer Vision and Pattern Recognition (CVPR)*, Seattle, Washington, June, 2020.

[CA15] Jan Kudlicka, Lawrence M. Murray, Fredrik Ronquist and Thomas B. Schön. **Probabilistic programming for birth-death models of evolution using an alive particle filter with delayed sampling**. In *The International Conference on Probabilistic Programming (PROBPROG)*, Cambridge, MA, USA, April, 2020. (Syndicated paper, formally published at UAI in 2019)

[CA14] Fredrik K. Gustafsson, Martin Danelljan and Thomas B. Schön. **Evaluating scalable Bayesian deep learning methods for robust computer vision**. In *Bayesian deep learning Workshop at the Conference on Neural Information Processing Systems (NeurIPS)*, Vancouver, Canada, December 2019.

[CA13] John Wallert, Ronnie Pingel, Thomas B. Schön, Erik M.G. Olsson, Guy Madison, Johan Hallqvist, Kirk Geale and Claes Held. **Derivation and validation of an instrument for predicting smoking cessation post myocardial infarction**. In *European Congress on Preventive Cardiology (EuroPrevent)*, Lisabon, Portugal, April, 2019.

[CA12] Antônio H. Ribeiro, Manoel H. Ribeiro, Gabriela Paixao, Derick Oliveira, Paulo R. Gomes, Jessica A. Canazart, Milton Pifano, Wagner Meira Jr., Thomas B. Schön and Antonio Luiz Ribeiro. **Automatic diagnosis of short-duration 12-lead ECG using a deep convolutional network**. In *ML4H: Machine Learning for Health Workshop at the Conference on Neural Information Processing Systems (NeurIPS)*, Montréal, Canada, December 2018.

[CA11] Matteo Scandella, Lawrence Murray and Thomas B. Schön. **Probabilistic programming allows for automated inference in factor graph models**. In *The International Conference on Probabilistic Programming (PROBPROG)*, Cambridge, MA, USA, October, 2018.

[CA10] Thomas B. Schön, Christian A. Naesseth and Fredrik Lindsten. **Inference in probabilistic graphical models using sequential Monte Carlo**. In *The 9th International Conference on Computational and Methodological Statistics (CMStatistics)*, Seville, Spain, December, 2016.

[CA9] Jeroen D. Hol, Giovanni Bellusci, Fabian Girrbach, Manon Kok and Thomas B. Schön. **MHE for human body motion capture using inertial sensors**. In *The 4th European Conference on Computational Optimization (EUCCO)*, Leuven, Belgium, September 2016.

[CA8] Pierre Jacob, Fredrik Lindsten and Thomas B. Schön. **Couplings of particle filters**. In *World Congress in Probability and Statistics*, Toronto, Canada, July 2016.

[CA7] Christian A. Naesseth, Fredrik Lindsten and Thomas B. Schön. **Towards automated sequential Monte Carlo for probabilistic graphical models**. In *Black box learning and inference workshop at the Conference on Neural Information Processing Systems (NIPS)*, Montréal, Canada, December 2015.

[CA6] John-Alexander M. Assael, Niklas Wahlström, Thomas B. Schön and Marc Peter Deisenroth. **Data-efficient learning of feedback policies from image pixels using deep dynamical models**. In *Deep Reinforcement Learning Workshop at the Conference on Neural Information Processing Systems (NIPS)*, Montréal, Canada, December 2015.

[CA5] Niklas Wahlström, Thomas B. Schön and Marc Peter 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.

[CA4] Manon Kok, Jeroen Hol and Thomas B. Schön. **An optimization-based approach to human body motion capture using inertial sensors**. In *Conference on Technically Assisted Rehabilitation (TAR)*, Berlin, Germany, March, 2015. (invited paper).

[CA3] Christian A. Naesseth, Fredrik Lindsten and Thomas B. Schön. **Sequential Monte Carlo to estimate the partition function of rectangular graphical models**. In *Second Bayesian Young Statisticians Meeting (BAYSM)*, Vienna, Austria, September, 2014.

[CA2] Martin Singull and Thomas B. Schön. **Expectation-Maximization algorithms for the multilinear normal distribution**. In *Joint Statistical Meeting (JSM)*, Boston, MA, USA, August 2014.

[CA1] Thomas B. Schön. **Fusion of data from different sources**. In *Proceedings of the 10th International Symposium on 3D Analysis of Human Movement (3DMA)*, Invited plenary lecture (the H. J. Woltring lecture), Santpoort-Amsterdam, The Netherlands, October 2008.

Technical reports not published elsewhere

[TR20] Niklas Gunnarsson, Jens Sjölund, and Thomas B. Schön. **Latent linear dynamics in spatiotemporal medical data**. *arXiv:2103.00930*, March, 2021.

[TR19] Filip de Roos, Carl Jidling, Adrian Wills, Thomas B. Schön and Philipp Hennig. **A probabilistically motivated learning rate adaptation for stochastic optimization**. *arXiv:2102.10880*, February, 2021.

[TR18] Johannes Hendriks, Carl Jidling, Adrian Wills and Thomas B. Schön. **Linearly constrained neural networks**. arXiv:2002.01600, July, 2020.

[TR17] Niklas Gunnarsson, Jens Sjölund and and Thomas B. Schön. **Registration by tracking for sequential 2D MRI.** arXiv:2003.10819, March 2020.

[TR16] Carl Jidling, Johannes Hendriks, Thomas B. Schön and Adrian Wills. **Deep kernel learning for integral measurements.** arXiv:1909.01844, March, 2020

[TR15] Jalil Taghia, Maria Bånkestad, Fredrik Lindsten, and Thomas B. Schön. **Constructing the matrix multilayer perceptron and its application to the VAE.** arXiv:1902.01182, February 2020.

[TR14] Xiuming Liu, Dave Zachariah, Johan Wågberg and Thomas B. Schön. **Reliable semi-supervised learning when labels are missing at random.** arXiv:1811.10947, October, 2019.

[TR13] Johannes N. Hendriks, Carl Jidling, Adrian Wills and Thomas B. Schön. **Evaluating the squared-exponential covariance function in Gaussian processes with integral observations.** arXiv:1812.07319, December, 2018.

[TR12] Dave Zachariah, Petre Stoica and Thomas B. Schön. **Online learning for distribution-free prediction.** arXiv:1703.05060, July 2017.

[TR11] Johan Dahlin, Mattias Villani and Thomas B. Schön. **Bayesian optimisation for fast approximate inference in state-space models with intractable likelihoods.** arXiv:1506.06975, June, 2017.

[TR10] Hildo Bijl, Thomas B. Schön, Jan-Willem van Wingerden and Michel Verhaegen. **A sequential Monte Carlo approach to Thompson sampling for Bayesian optimization.** arXiv:1604.00169, May, 2017.

[TR9] Dave Zachariah, Petre Stoica and Thomas B. Schön. **Online learning for distribution-free prediction.** arXiv:1703.05060, March, 2017.

[TR8] Johan Dahlin, Fredrik Lindsten, Joel Kronander and Thomas B. Schön. **Accelerating pseudo-marginal Metropolis-Hastings by correlating auxiliary variables.** arXiv:1511.05483, November, 2015.

[TR7] Fredrik Lindsten, Pete Bunch, Sumeetpal S. Singh and Thomas B. Schön. **Particle ancestor sampling for near-degenerate or intractable state transition models.** arXiv:1505.06356, May, 2015.

[TR6] Johan Dahlin, Fredrik Lindsten and Thomas B. Schön. **Inference in Gaussian models with missing data using Equalisation Maximisation.** arXiv:1308.4601, August 2013.

[TR5] Fredrik Lindsten and Thomas B. Schön. **On the use of backward simulation in particle Markov chain Monte Carlo methods.** arXiv:1110.2873v2, March 2012.

[TR4] Fredrik Lindsten and Thomas B. Schön. **Rao-Blackwellised particle smoothers for mixed linear/nonlinear state-space models.** Division of Automatic Control, Linköping University, Linköping, Sweden, January 2011.

[TR3] Thomas B. Schön and Fredrik Lindsten. **Manipulating the multivariate Gaussian density.** Division of Automatic Control, Linköping University, Linköping, Sweden, January 2011.

[TR2] Fredrik Lindsten and Thomas B. Schön. **Inference in mixed linear/nonlinear state-space models using sequential Monte Carlo.** Division of Automatic Control, Linköping University, Linköping, Sweden, Technical Report LiTH-ISY-R-2946, March 2010.

[TR1] Thomas B. Schön. **An Explanation of the expectation maximization algorithm.** Division of Automatic Control, Linköping University, Linköping, Sweden, Technical Report LiTH-ISY-R-2915, August 2009.

Theses

[T3] Thomas B. Schön. **Estimation of nonlinear dynamic systems – theory and applications**. *PhD thesis* No 998, Linköping Studies in Science and Technology, Department of Electrical Engineering, Linköping University, Sweden, February 2006. **Received the best PhD thesis award 2013 by The European Association for Signal Processing (EURASIP). The award is based on the impact of the thesis.**

[T2] Thomas Schön. **On computational methods for nonlinear estimation**. *Licentiate Thesis* No 1047, Linköping Studies in Science and Technology, Department of Electrical Engineering, Linköping University, Sweden, October 2003.

[T1] Thomas Schön. **Identification for predictive control – a multiple model approach**. *Master's Thesis* No LiTH-ISY-EX-3164, Department of Electrical Engineering, Linköping University, Sweden, October 2001.