Thomas B Schön

List of Publications by Year
in descending order

148 papers	4,779 citations	218381 26 h-index	128067 60 g-index
154 all docs	154 docs citations	154 times ranked	3927 citing authors

#	Article	IF	Citations
1	Marginalized particle filters for mixed linear/nonlinear state-space models. IEEE Transactions on Signal Processing, 2005, 53, 2279-2289.	3.2	476
2	System identification of nonlinear state-space models. Automatica, 2011, 47, 39-49.	3.0	432
3	Automatic diagnosis of the 12-lead ECG using a deep neural network. Nature Communications, 2020, 11, 1760.	5.8	351
4	On Resampling Algorithms for Particle Filters. , 2006, , .		236
5	Identification of Hammerstein–Wiener models. Automatica, 2013, 49, 70-81.	3.0	232
6	Using Inertial Sensors for Position and Orientation Estimation. Foundations and Trends in Signal Processing, 2017, 11, 1-153.	12.0	226
7	Indoor Positioning Using Ultrawideband and Inertial Measurements. IEEE Transactions on Vehicular Technology, 2015, 64, 1293-1303.	3.9	149
8	Complexity analysis of the marginalized particle filter. IEEE Transactions on Signal Processing, 2005, 53, 4408-4411.	3.2	133
9	Magnetometer Calibration Using Inertial Sensors. IEEE Sensors Journal, 2016, 16, 5679-5689.	2.4	121
10	A Basic Convergence Result for Particle Filtering. IEEE Transactions on Signal Processing, 2008, 56, 1337-1348.	3.2	108
11	Tightly coupled UWB/IMU pose estimation. , 2009, , .		98
12	The effect of interventions on COVID-19. Nature, 2020, 588, E26-E28.	13.7	97
13	An optimization-based approach to human body motion capture using inertial sensors. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2014, 47, 79-85.	0.4	92
14	Backward Simulation Methods for Monte Carlo Statistical Inference. Foundations and Trends in Machine Learning, 2013, 6, 1-143.	46.6	86
15	Deep Learning and System Identification. IFAC-PapersOnLine, 2020, 53, 1175-1181.	0.5	82
16	Deep neural network-estimated electrocardiographic age as a mortality predictor. Nature Communications, 2021, 12, 5117.	5.8	77
17	A flexible state–space model for learning nonlinear dynamical systems. Automatica, 2017, 80, 189-199.	3.0	70
18	Modeling and Interpolation of the Ambient Magnetic Field by Gaussian Processes. IEEE Transactions on Robotics, 2018, 34, 1112-1127.	7.3	68

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19	Modeling and Calibration of Inertial and Vision Sensors. International Journal of Robotics Research, 2010, 29, 231-244.	5.8	64
20	Learning to close loops from range data. International Journal of Robotics Research, 2011, 30, 1728-1754.	5.8	57
21	Bayesian semiparametric Wiener system identification. Automatica, 2013, 49, 2053-2063.	3.0	55
22	Robust real-time tracking by fusing measurements from inertial and vision sensors. Journal of Real-Time Image Processing, 2007, 2, 149-160.	2.2	46
23	A General Convergence Result for Particle Filtering. IEEE Transactions on Signal Processing, 2011, 59, 3424-3429.	3.2	45
24	Particle Filter SLAM with High Dimensional Vehicle Model. Journal of Intelligent and Robotic Systems: Theory and Applications, 2009, 55, 249-266.	2.0	34
25	Decentralized Particle Filter With Arbitrary State Decomposition. IEEE Transactions on Signal Processing, 2011, 59, 465-478.	3.2	32
26	Modeling magnetic fields using Gaussian processes. , 2013, , .		31
27	Learning deep dynamical models from image pixels. IFAC-PapersOnLine, 2015, 48, 1059-1064.	0.5	30
28	Deep Convolutional Networks in System Identification. , 2019, , .		29
29	Sequential Monte Carlo Methods for System Identification**This work was supported by the projects Learning of complex dynamical systems (Contract number: 637-2014-466) and Probabilistic modeling of dynamical systems (Contract number: 621-2013-5524), both funded by the Swedish Research Council.. IFAC-PapersOnLine, 2015, 48, 775-786.	0.5	28
30	Maximum likelihood calibration of a magnetometer using inertial sensors. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2014, 47, 92-97.	0.4	27
31	Automated learning with a probabilistic programming language: Birch. Annual Reviews in Control, 2018, 46, 29-43.	4.4	27
32	Probabilistic modelling and reconstruction of strain. Nuclear Instruments & Methods in Physics Research B, 2018, 436, 141-155.	0.6	26
33	Recursive Identification of Cornering Stiffness Parameters for an Enhanced Single Track Model. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2009, 42, 1726-1731.	0.4	25
34	Maximum likelihood identification of stable linear dynamical systems. Automatica, 2018, 96, 280-292.	3.0	25
35	A Fast and Robust Algorithm for Orientation Estimation Using Inertial Sensors. IEEE Signal Processing Letters, 2019, 26, 1673-1677.	2.1	25
36	Deep State Space Models for Nonlinear System Identification. IFAC-PapersOnLine, 2021, 54, 481-486.	0.5	25

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37	Rao-Blackwellized Particle Smoothers for Conditionally Linear Gaussian Models. IEEE Journal on Selected Topics in Signal Processing, 2016, 10, 353-365.	7.3	24
38	On parameter and state estimation for linear differentialâ€"algebraic equations. Automatica, 2007, 43, 416-425.	3.0	23
39	Joint ego-motion and road geometry estimation. Information Fusion, 2011, 12, 253-263.	11.7	23
40	System identification through online sparse Gaussian process regression with input noise. IFAC Journal of Systems and Control, 2017, 2, 1-11.	1.1	23
41	On the use of backward simulation in the particle Gibbs sampler. , 2012, , .		22
42	Particle Metropolisâ€"Hastings using gradient and Hessian information. Statistics and Computing, 2015, 25, 81-92.	0.8	22
43	Probabilistic learning of nonlinear dynamical systems using sequential Monte Carlo. Mechanical Systems and Signal Processing, 2018, 104, 866-883.	4.4	22
44	MAXIMUM LIKELIHOOD NONLINEAR SYSTEM ESTIMATION. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2006, 39, 1003-1008.	0.4	21
45	Parameter Estimation for Discrete-Time Nonlinear Systems Using EM. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2008, 41, 4012-4017.	0.4	21
46	On the smoothness of nonlinear system identification. Automatica, 2020, 121, 109158.	3.0	21
47	Estimation of Linear Systems using a Gibbs Sampler*. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2012, 45, 203-208.	0.4	20
48	Smoothing With Couplings of Conditional Particle Filters. Journal of the American Statistical Association, 2020, 115, 721-729.	1.8	20
49	Online sparse Gaussian process regression using FITC and PITC approximations™This research is supported by the Dutch Technology Foundation STW, which is part of the Netherlands Organisation for Scientific Research (NWO), and which is partly funded by the Ministry of Economic Affairs. The work was also supported by the Swedish research Council (VR) via the project Probabilistic modeling of dynamical systems (Contract number: 621-2013-5524). IFAC PapersOnLine, 2015, 48, 703-708.	0.5	19
50	Learning Robust LQ-Controllers Using Application Oriented Exploration. , 2020, 4, 19-24.		19
51	Experimental comparison of observers for tool position estimation of industrial robots. , 2009, , .		18
52	Geo-referencing for UAV navigation using environmental classification. , 2010, , .		18
53	Adaptive stopping for fast particle smoothing. , 2013, , .		18
54	Ultra-wideband calibration for indoor positioning. , 2010, , .		17

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55	Divide-and-Conquer With Sequential Monte Carlo. Journal of Computational and Graphical Statistics, 2017, 26, 445-458.	0.9	17
56	Utilizing Model Structure for Efficient Simultaneous Localization and Mapping for a UAV Application. Aerospace Conference Proceedings IEEE, 2008, , .	0.0	16
57	Tracking stationary extended objects for road mapping using radar measurements. , 2009, , .		16
58	Elements of Sequential Monte Carlo. Foundations and Trends in Machine Learning, 2019, 12, 187-306.	46.6	16
59	Learning to close the loop from 3D point clouds. , 2010, , .		15
60	Parallel Implementation of Particle MCMC Methods on a GPU. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2012, 45, 1143-1148.	0.4	15
61	Identification of jump Markov linear models using particle filters. , 2014, , .		14
62	The marginalized particle filter for automotive tracking applications. , 2005, , .		13
63	Relative pose calibration of a spherical camera and an IMU. , 2008, , .		13
64	Blind Identification of Wiener Models*. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2011, 44, 5597-5602.	0.4	13
65	Detecting and positioning overtaking vehicles using 1D optical flow. , 2014, , .		13
66	Identification of Gaussian Process State-Space Models with Particle Stochastic Approximation EM. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2014, 47, 4097-4102.	0.4	13
67	Accelerometer calibration using sensor fusion with a gyroscope. , 2016, , .		13
68	High-Dimensional Filtering Using Nested Sequential Monte Carlo. IEEE Transactions on Signal Processing, 2019, 67, 4177-4188.	3.2	13
69	An explicit variance reduction expression for the Rao-Blackwellised particle filter. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2011, 44, 11979-11984.	0.4	12
70	Rao-Blackwellized particle smoothers for mixed linear/nonlinear state-space models. , 2013, , .		12
71	Road geometry estimation and vehicle tracking using a single track model. , 2008, , .		11
72	Estimation of the Free Space in Front of a Moving Vehicle. , 0, , .		11

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73	Improved target tracking with road network information. , 2009, , .		11
74	Input Design for Nonlinear Stochastic Dynamic Systems â€" A Particle Filter Approach. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2011, 44, 13191-13196.	0.4	11
75	MEMS-based inertial navigation based on a magnetic field map. , 2013, , .		11
76	Universal probabilistic programming offers a powerful approach to statistical phylogenetics. Communications Biology, 2021, 4, 244.	2.0	11
77	Particle metropolis hastings using Langevin dynamics. , 2013, , .		10
78	A framework for simultaneous localization and mapping utilizing model structure. , 2007, , .		9
79	Estimation of general nonlinear state-space systems. , 2010, , .		9
80	Estimating state-space models in innovations form using the expectation maximisation algorithm. , 2010, , .		9
81	Hierarchical Bayesian ARX models for robust inference. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2012, 45, 131-136.	0.4	9
82	Robust auxiliary particle filters using multiple importance sampling. , 2014, , .		9
83	Marginalizing Gaussian process hyperparameters using sequential Monte Carlo. , 2015, , .		9
84	Stochastic quasi-Newton with line-search regularisation. Automatica, 2021, 127, 109503.	3.0	9
85	Navigation and Tracking of Road-Bound Vehicles Using Map Support. , 2012, , 397-434.		9
86	Getting Started with Particle Metropolis-Hastings for Inference in Nonlinear Dynamical Models. Journal of Statistical Software, 2019, 88, .	1.8	9
87	A new algorithm for calibrating a combined camera and IMU sensor unit. , 2008, , .		8
88	A semiparametric Bayesian approach to Wiener system identification*. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2012, 45, 1137-1142.	0.4	8
89	On the Exponential Convergence of the Kaczmarz Algorithm. IEEE Signal Processing Letters, 2015, 22, 1571-1574.	2.1	8
90	Learning of state-space models with highly informative observations: A tempered sequential Monte Carlo solution. Mechanical Systems and Signal Processing, 2018, 104, 915-928.	4.4	8

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91	A non-degenerate Rao-Blackwellised particle filter for estimating static parameters in dynamical models. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2012, 45, 1149-1154.	0.4	7
92	INTEGRATED NAVIGATION OF CAMERAS FOR AUGMENTED REALITY. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2005, 38, 1119-1124.	0.4	6
93	The marginalized auxiliary particle filter. , 2009, , .		6
94	Vehicle Motion Estimation Using an Infrared Camera. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2011, 44, 12952-12957.	0.4	6
95	Second-order particle MCMC for Bayesian parameter inference. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2014, 47, 8656-8661.	0.4	6
96	A graph/particle-based method for experiment design in nonlinear systems. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2014, 47, 1404-1409.	0.4	6
97	Newton-based maximum likelihood estimation in nonlinear state space models**E-mail address to corresponding author: manon.kok@liu.se. This work is supported by CADICS, a Linnaeus Center, and by the project Probabilistic modeling of dynamical systems (Contract number: 621-2013-5524), both funded by the Swedish Research Council (VR).. IFAC-PapersOnLine, 2015, 48, 398-403.	0.5	6
98	Quasi-Newton particle Metropolis-Hastings**E-mail address to corresponding author: johan.dahlin@liu.se. This work was supported by: Learning of complex dynamical systems (Contract) Tj ETQq0 0 0 rgBT /Overlock 10 Tf 5 CADICS, a Linnaeus Center, all funded by the Swedish Research Council.. IFAC-PapersOnLine, 2015, 48, 981-986.	0.5	6
99	Learning a Deformable Registration Pyramid. Lecture Notes in Computer Science, 2021, , 80-86.	1.0	6
100	Nonlinear System Identification: Learning While Respecting Physical Models Using a Sequential Monte Carlo Method. IEEE Control Systems, 2022, 42, 75-102.	1.0	6
101	Realtime Camera Tracking in the MATRIS Project. Smpte Motion Imaging Journal, 2007, 116, 266-271.	0.2	5
102	Ego-motion and indirect road geometry estimation using night vision. , 2009, , .		5
103	Identification of mixed linear/nonlinear state-space models. , 2010, , .		5
104	A Nonlinear Least-Squares Approach to the SLAM Problem*. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2011, 44, 4759-4764.	0.4	5
105	Nonlinear State Space Smoothing Using the Conditional Particle Filter**This work was supported by the project Probabilistic modelling of dynamical systems (Contract number: 621-2013-5524) and CADICS, a Linnaeus Center, both funded by the Swedish Research Council (VR).. IFAC-PapersOnLine, 2015, 48, 975-980.	0.5	5
106	Nonlinear state space model identification using a regularized basis function expansion. , 2015, , .		5
107	On the construction of probabilistic Newton-type algorithms. , 2017, , .		5
108	Optimal controller/observer gains of discounted-cost LQG systems. Automatica, 2019, 101, 471-474.	3.0	5

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109	Deep Energy-Based NARX Models. IFAC-PapersOnLine, 2021, 54, 505-510.	0.5	5
110	Beyond Occam's Razor in System Identification: Double-Descent when Modeling Dynamics. IFAC-PapersOnLine, 2021, 54, 97-102.	0.5	5
111	Variational State and Parameter Estimation. IFAC-PapersOnLine, 2021, 54, 732-737.	0.5	5
112	First Steps Towards Self-Supervised Pretraining of the 12-Lead ECG. , 2021, , .		5
113	Efficient Learning of the Parameters of Non-Linear Models Using Differentiable Resampling in Particle Filters. IEEE Transactions on Signal Processing, 2022, 70, 3676-3692.	3.2	5
114	Situational Awareness and Road Prediction for Trajectory Control Applications. , 2012, , 365-396.		4
115	Bayesian nonparametric identification of piecewise affine ARX systems**This work was supported by the projects: Learning of complex dy-namical systems (Contract number: 637-2014-466) and Probabilistic modeling of dynamical systems (Contract number: 621-2013-5524), both funded by the Swedish Research Council.. IFAC-PapersOnLine, 2015, 48, 709-714.	0.5	4
116	Mean and variance of the LQG cost function. Automatica, 2016, 67, 216-223.	3.0	4
117	On robust input design for nonlinear dynamical models. Automatica, 2017, 77, 268-278.	3.0	4
118	Data Consistency Approach to Model Validation. IEEE Access, 2019, 7, 59788-59796.	2.6	4
119	Nonlinear Input Design as Optimal Control of a Hamiltonian System. , 2020, 4, 85-90.		4
120	A fast quasi-Newton-type method for large-scale stochastic optimisation. IFAC-PapersOnLine, 2020, 53, 1249-1254.	0.5	4
121	Backward sequential Monte Carlo for marginal smoothing. , 2014, , .		3
122	Particle filtering based identification for autonomous nonlinear ODE models**This work was supported by the project Probabilistic modeling of dynamical systems (Contract number: 621-2013-5524) funded by the Swedish Research Council. (*) are members of the LCCC Linnaeus Center and the ELLIIT Excellence Center at Lund University. IFAC-PapersOnLine, 2015, 48, 415-420.	0.5	3
123	On Identification via EM with Latent Disturbances and Lagrangian Relaxation**This work was supported by the Australian Research Council (DP130100551), and the Swedish Research Council (VR) as part of the project: Probabilistic modeling of dynamical systems (Contract number: 621-2013-5524).. IFAC-PapersOnLine, 2015, 48, 69-74.	0.5	3
124	Data-Driven Impulse Response Regularization via Deep Learning. IFAC-PapersOnLine, 2018, 51, 1-6.	0.5	3
125	Data to Controller for Nonlinear Systems: An Approximate Solution. , 2022, 6, 1196-1201.		3
126	Gaussian Variational State Estimation for Nonlinear State-Space Models. IEEE Transactions on Signal Processing, 2021, 69, 5979-5993.	3.2	3

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127	A robust particle filter for state estimation — with convergence results. , 2007, , .		2
128	Torchlight Navigation. , 2010, , .		2
129	Pseudo-marginal metropolis light transport. , 2015, , .		2
130	Learning Nonlinear State-Space Models Using Smooth Particle-Filter-Based Likelihood Approximations. IFAC-PapersOnLine, 2018, 51, 652-657.	0.5	2
131	Direct Transmittance Estimation in Heterogeneous Participating Media Using Approximated Taylor Expansions. IEEE Transactions on Visualization and Computer Graphics, 2020, PP, 1-1.	2.9	2
132	Auxiliary-Particle-Filter-Based Two-Filter Smoothing for Wiener State-Space Models. , 2018, , .		2
133	State-of-the-Art for the Marginalized Particle Filter. , 2006, , .		1
134	Detecting spurious features using parity space. , 2008, , .		1
135	Decentralization of particle filters using arbitrary state decomposition. , 2010, , .		1
136	Capacity estimation of two-dimensional channels using Sequential Monte Carlo. , 2014, , .		1
137	Using Convolution to Estimate the Score Function for Intractable State-Transition Models. IEEE Signal Processing Letters, 2016, 23, 498-501.	2.1	1
138	Regularized parametric system identification: a decision-theoretic formulation. , 2018, , .		1
139	Nonlinear System Identification Using Particle Filters. , 2020, , 1-10.		1
140	Sensor Fusion for Augmented Reality. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2008, 41, 14100.	0.4	0
141	A New Structure Exploiting Derivation of Recursive Direct Weight Optimization. IEEE Transactions on Automatic Control, 2015, 60, 1683-1685.	3.6	0
142	Particle-based Gaussian process optimization for input design in nonlinear dynamical models. , 2016, , .		0
143	Smoothed State Estimation via Efficient Solution of Linear Equations. IFAC-PapersOnLine, 2017, 50, 1613-1618.	0.5	0
144	How consistent is my model with the data? Information-Theoretic Model Check. IFAC-PapersOnLine, 2018, 51, 407-412.	0.5	0

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145	On model order priors for Bayesian identification of SISO linear systems. International Journal of Control, 2019, 92, 1645-1661.	1.2	0
146	Particle Filter with Rejection Control and Unbiased Estimator of the Marginal Likelihood. , 2020, , .		0
147	Nonlinear System Identification Using Particle Filters. , 2021, , 1483-1492.		0
148	Quantifying the Uncertainty of the Relative Geometry in Inertial Sensors Arrays. IEEE Sensors Journal, 2021, 21, 19362-19373.	2.4	0