

Karen E Willcox

List of Publications by Year in descending order

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86
papers

5,751
citations

145106

33
h-index

87275

74
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87
all docs

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docs citations

87
times ranked

3885
citing authors

#	ARTICLE	IF	CITATIONS
1	Non-intrusive data-driven model reduction for differential-algebraic equations derived from lifting transformations. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2022, 389, 114296.	3.4	10
2	Certifiable Risk-Based Engineering Design Optimization. <i>AIAA Journal</i> , 2022, 60, 551-565.	1.5	10
3	A level set-based topology optimization approach for thermally radiating structures. <i>Structural and Multidisciplinary Optimization</i> , 2022, 65, .	1.7	2
4	Aerodynamic sensing for hypersonics via scientific machine learning. , 2022, , .		3
5	Localized non-intrusive reduced-order modelling in the operator inference framework. <i>Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences</i> , 2022, 380, .	1.6	8
6	On filtering in non-intrusive data-driven reduced-order modeling. , 2022, , .		4
7	Bayesian operator inference for data-driven reduced-order modeling. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2022, 402, 115336.	3.4	16
8	Reduced Operator Inference for Nonlinear Partial Differential Equations. <i>SIAM Journal of Scientific Computing</i> , 2022, 44, A1934-A1959.	1.3	12
9	Network models and sensor layers to design adaptive learning using educational mapping. <i>Design Science</i> , 2021, 7, .	1.1	1
10	Data-driven reduced-order models via regularised Operator Inference for a single-injector combustion process. <i>Journal of the Royal Society of New Zealand</i> , 2021, 51, 194-211.	1.0	57
11	The imperative of physics-based modeling and inverse theory in computational science. <i>Nature Computational Science</i> , 2021, 1, 166-168.	3.8	50
12	Decision-Making Under Uncertainty for a Digital Thread-Enabled Design Process. <i>Journal of Mechanical Design, Transactions of the ASME</i> , 2021, 143, .	1.7	9
13	mfEGRA: Multifidelity efficient global reliability analysis through active learning for failure boundary location. <i>Structural and Multidisciplinary Optimization</i> , 2021, 64, 797.	1.7	12
14	A probabilistic graphical model foundation for enabling predictive digital twins at scale. <i>Nature Computational Science</i> , 2021, 1, 337-347.	3.8	125
15	Learning physics-based models from data: perspectives from inverse problems and model reduction. <i>Acta Numerica</i> , 2021, 30, 445-554.	6.3	61
16	Scaling digital twins from the artisanal to the industrial. <i>Nature Computational Science</i> , 2021, 1, 313-320.	3.8	104
17	Conditional reliability analysis in high dimensions based on controlled mixture importance sampling and information reuse. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2021, 381, 113826.	3.4	8
18	A multifidelity method for a nonlocal diffusion model. <i>Applied Mathematics Letters</i> , 2021, 121, 107361.	1.5	5

#	ARTICLE	IF	CITATIONS
19	Multifidelity Data Fusion: Application to Blended-Wing-Body Multidisciplinary Analysis Under Uncertainty. <i>AIAA Journal</i> , 2020, 58, 889-906.	1.5	27
20	Operator inference for non-intrusive model reduction of systems with non-polynomial nonlinear terms. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2020, 372, 113433.	3.4	58
21	Multifidelity Dimension Reduction via Active Subspaces. <i>SIAM Journal of Scientific Computing</i> , 2020, 42, A929-A956.	1.3	19
22	Design optimization using multiple dominance relations. <i>International Journal for Numerical Methods in Engineering</i> , 2020, 121, 2481-2502.	1.5	4
23	Lift & Learn: Physics-informed machine learning for large-scale nonlinear dynamical systems. <i>Physica D: Nonlinear Phenomena</i> , 2020, 406, 132401.	1.3	139
24	Information Reuse for Importance Sampling in Reliability-Based Design Optimization. <i>Reliability Engineering and System Safety</i> , 2020, 201, 106853.	5.1	25
25	Multifidelity Method for Locating Aeroelastic Flutter Boundaries. <i>AIAA Journal</i> , 2020, 58, 1772-1784.	1.5	11
26	Learning Physics-Based Reduced-Order Models for a Single-Injector Combustion Process. <i>AIAA Journal</i> , 2020, 58, 2658-2672.	1.5	61
27	A Hardware Testbed for Dynamic Data-Driven Aerospace Digital Twins. <i>Lecture Notes in Computer Science</i> , 2020, , 37-45.	1.0	5
28	Projection-based model reduction: Formulations for physics-based machine learning. <i>Computers and Fluids</i> , 2019, 179, 704-717.	1.3	210
29	Distributionally robust optimization for engineering design under uncertainty. <i>International Journal for Numerical Methods in Engineering</i> , 2019, 120, 835-859.	1.5	2
30	Design Methodology for Aeroelastic Tailoring of Additively Manufactured Lattice Structures Using Low-Order Methods. <i>AIAA Journal</i> , 2019, 57, 4903-4914.	1.5	6
31	Multifidelity probability estimation via fusion of estimators. <i>Journal of Computational Physics</i> , 2019, 392, 385-402.	1.9	17
32	Design for additive manufacturing: cellular structures in early-stage aerospace design. <i>Structural and Multidisciplinary Optimization</i> , 2019, 60, 411-428.	1.7	24
33	Influence of Transonic Flutter on the Conceptual Design of Next-Generation Transport Aircraft. <i>AIAA Journal</i> , 2019, 57, 1973-1987.	1.5	24
34	Nonlinear Model Order Reduction via Lifting Transformations and Proper Orthogonal Decomposition. <i>AIAA Journal</i> , 2019, 57, 2297-2307.	1.5	91
35	Geometric Subspace Updates with Applications to Online Adaptive Nonlinear Model Reduction. <i>SIAM Journal on Matrix Analysis and Applications</i> , 2018, 39, 234-261.	0.7	46
36	Extending Horsetail Matching for Optimization Under Probabilistic, Interval, and Mixed Uncertainties. <i>AIAA Journal</i> , 2018, 56, 849-861.	1.5	9

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37	Physics-Based Low-Order Model for Transonic Flutter Prediction. <i>AIAA Journal</i> , 2018, 56, 1519-1531.	1.5	21
38	Model adaptivity for goal-oriented inference using adjoints. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2018, 331, 1-22.	3.4	3
39	Conditional-Value-at-Risk Estimation via Reduced-Order Models. <i>SIAM-ASA Journal on Uncertainty Quantification</i> , 2018, 6, 1395-1423.	1.1	18
40	Generalized information reuse for optimization under uncertainty with non-sample average estimators. <i>International Journal for Numerical Methods in Engineering</i> , 2018, 115, 1457-1476.	1.5	4
41	Multifidelity Preconditioning of the Cross-Entropy Method for Rare Event Simulation and Failure Probability Estimation. <i>SIAM-ASA Journal on Uncertainty Quantification</i> , 2018, 6, 737-761.	1.1	31
42	Survey of Multifidelity Methods in Uncertainty Propagation, Inference, and Optimization. <i>SIAM Review</i> , 2018, 60, 550-591.	4.2	513
43	Research and Education in Computational Science and Engineering. <i>SIAM Review</i> , 2018, 60, 707-754.	4.2	43
44	Optimal Approximations of Coupling in Multidisciplinary Models. <i>AIAA Journal</i> , 2018, 56, 2412-2428.	1.5	2
45	Sensitivity-guided decision-making for wind farm micro-siting. <i>International Journal for Numerical Methods in Fluids</i> , 2017, 83, 52-72.	0.9	5
46	Data to decisions: Real-time structural assessment from sparse measurements affected by uncertainty. <i>Computers and Structures</i> , 2017, 182, 296-312.	2.4	15
47	Combining multiple surrogate models to accelerate failure probability estimation with expensive high-fidelity models. <i>Journal of Computational Physics</i> , 2017, 341, 61-75.	1.9	34
48	Feedback Control for Systems with Uncertain Parameters Using Online-Adaptive Reduced Models. <i>SIAM Journal on Applied Dynamical Systems</i> , 2017, 16, 1563-1586.	0.7	16
49	Methodology for Path Planning with Dynamic Data-Driven Flight Capability Estimation. <i>AIAA Journal</i> , 2017, 55, 2727-2738.	1.5	26
50	A decomposition-based uncertainty quantification approach for environmental impacts of aviation technology and operation. <i>Artificial Intelligence for Engineering Design, Analysis and Manufacturing: AIEDAM</i> , 2017, 31, 251-264.	0.7	4
51	A Certified Trust Region Reduced Basis Approach to PDE-Constrained Optimization. <i>SIAM Journal of Scientific Computing</i> , 2017, 39, S434-S460.	1.3	29
52	Goal-Oriented Optimal Approximations of Bayesian Linear Inverse Problems. <i>SIAM Journal of Scientific Computing</i> , 2017, 39, S167-S196.	1.3	14
53	Data-Driven Reduced Model Construction with Time-Domain Loewner Models. <i>SIAM Journal of Scientific Computing</i> , 2017, 39, A2152-A2178.	1.3	47
54	Network models for mapping educational data. <i>Design Science</i> , 2017, 3, .	1.1	12

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55	Data-driven operator inference for nonintrusive projection-based model reduction. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2016, 306, 196-215.	3.4	222
56	Scalable posterior approximations for large-scale Bayesian inverse problems via likelihood-informed parameter and state reduction. <i>Journal of Computational Physics</i> , 2016, 315, 363-387.	1.9	34
57	Optimal Model Management for Multifidelity Monte Carlo Estimation. <i>SIAM Journal of Scientific Computing</i> , 2016, 38, A3163-A3194.	1.3	144
58	Multifidelity importance sampling. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2016, 300, 490-509.	3.4	91
59	Monte-Carlo Information-Reuse Approach to Aircraft Conceptual Design Optimization Under Uncertainty. <i>Journal of Aircraft</i> , 2016, 53, 427-438.	1.7	32
60	Detecting and Adapting to Parameter Changes for Reduced Models of Dynamic Data-driven Application Systems. <i>Procedia Computer Science</i> , 2015, 51, 2553-2562.	1.2	32
61	A Survey of Projection-Based Model Reduction Methods for Parametric Dynamical Systems. <i>SIAM Review</i> , 2015, 57, 483-531.	4.2	1,039
62	Online Adaptive Model Reduction for Nonlinear Systems via Low-Rank Updates. <i>SIAM Journal of Scientific Computing</i> , 2015, 37, A2123-A2150.	1.3	140
63	A Domain Decomposition Approach for Uncertainty Analysis. <i>SIAM Journal of Scientific Computing</i> , 2015, 37, A103-A133.	1.3	21
64	Dynamic data-driven reduced-order models. <i>Computer Methods in Applied Mechanics and Engineering</i> , 2015, 291, 21-41.	3.4	143
65	Data-driven model reduction for the Bayesian solution of inverse problems. <i>International Journal for Numerical Methods in Engineering</i> , 2015, 102, 966-990.	1.5	122
66	Localized Discrete Empirical Interpolation Method. <i>SIAM Journal of Scientific Computing</i> , 2014, 36, A168-A192.	1.3	168
67	Multifidelity approaches for optimization under uncertainty. <i>International Journal for Numerical Methods in Engineering</i> , 2014, 100, 746-772.	1.5	139
68	Nonlinear Goal-Oriented Bayesian Inference: Application to Carbon Capture and Storage. <i>SIAM Journal of Scientific Computing</i> , 2014, 36, B427-B449.	1.3	8
69	Uncertainty assessment of complex models with application to aviation environmental policy-making. <i>Transport Policy</i> , 2014, 34, 109-113.	3.4	8
70	Uncertainty quantification of an Aviation Environmental Toolsuite. <i>Reliability Engineering and System Safety</i> , 2014, 126, 14-24.	5.1	24
71	A decomposition-based approach to uncertainty analysis of feed-forward multicomponent systems. <i>International Journal for Numerical Methods in Engineering</i> , 2014, 100, 982-1005.	1.5	39
72	Goal-Oriented Inference: Approach, Linear Theory, and Application to Advection Diffusion. <i>SIAM Review</i> , 2013, 55, 493-519.	4.2	11

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73	Goal-Oriented Inference: Approach, Linear Theory, and Application to Advection Diffusion. SIAM Journal of Scientific Computing, 2012, 34, A1880-A1904.	1.3	7
74	A variance-based sensitivity index function for factor prioritization. Reliability Engineering and System Safety, 2012, 107, 107-114.	5.1	21
75	Provably Convergent Multifidelity Optimization Algorithm Not Requiring High-Fidelity Derivatives. AIAA Journal, 2012, 50, 1079-1089.	1.5	113
76	Constrained multifidelity optimization using model calibration. Structural and Multidisciplinary Optimization, 2012, 46, 93-109.	1.7	56
77	Development of a computational model for astronaut reorientation. Journal of Biomechanics, 2010, 43, 2309-2314.	0.9	9
78	Parameter and State Model Reduction for Large-Scale Statistical Inverse Problems. SIAM Journal of Scientific Computing, 2010, 32, 2523-2542.	1.3	168
79	Self-Rotations in Simulated Microgravity: Performance Effects of Strategy Training. Aviation, Space, and Environmental Medicine, 2009, 80, 5-14.	0.6	6
80	Kinetics and Kinematics for Translational Motions in Microgravity During Parabolic Flight. Aviation, Space, and Environmental Medicine, 2009, 80, 522-531.	0.6	241
81	Krylov projection framework for Fourier model reduction. Automatica, 2008, 44, 209-215.	3.0	17
82	Missing Point Estimation in Models Described by Proper Orthogonal Decomposition. IEEE Transactions on Automatic Control, 2008, 53, 2237-2251.	3.6	318
83	Explicit Model Predictive Control for Large-Scale Systems via Model Reduction. Journal of Guidance, Control, and Dynamics, 2008, 31, 918-926.	1.6	49
84	Value-Based Multidisciplinary Optimization for Commercial Aircraft Design and Business Risk Assessment. Journal of Aircraft, 2006, 43, 913-921.	1.7	30
85	Simultaneous Optimization of a Multiple-Aircraft Family. Journal of Aircraft, 2003, 40, 616-622.	1.7	63
86	Value-Based Multidisciplinary Techniques for Commercial Aircraft System Design. AIAA Journal, 2003, 41, 2004-2012.	1.5	25