

Lukas Sekanina

List of Publications by Year in descending order

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185
papers

2,756
citations

313897

21
h-index

356229

35
g-index

189
all docs

189
docs citations

189
times ranked

1474
citing authors

#	ARTICLE	IF	CITATIONS
1	EvoApprox8b: A Library of Approximate Adders and Multipliers for Circuit Design and Benchmarking of Approximation Methods. , 2017, , .		208
2	Design of power-efficient approximate multipliers for approximate artificial neural networks. , 2016, , .		116
3	Evolutionary Approach to Approximate Digital Circuits Design. IEEE Transactions on Evolutionary Computation, 2015, 19, 432-444.	11.4	113
4	Improving the Accuracy and Hardware Efficiency of Neural Networks Using Approximate Multipliers. IEEE Transactions on Very Large Scale Integration (VLSI) Systems, 2020, 28, 317-328.	3.2	99
5	Photomodulation of ionic current through hemithioindigo-modified gramicidin channels. Organic and Biomolecular Chemistry, 2004, 2, 2798-2801.	2.9	88
6	ALWANN: Automatic Layer-Wise Approximation of Deep Neural Network Accelerators without Retraining. , 2019, , .		81
7	Virtual Reconfigurable Circuits for Real-World Applications of Evolvable Hardware. Lecture Notes in Computer Science, 2003, , 186-197.	1.0	76
8	Mapping Grain Iron and Zinc Content Quantitative Trait Loci in an Inbred-Derived Immortal Population of Pearl Millet. Genes, 2018, 9, 248.	2.4	67
9	autoAx. , 2019, , .		55
10	An evolvable hardware system in Xilinx Virtex II Pro FPGA. International Journal of Innovative Computing and Applications, 2007, 1, 63.	0.3	49
11	Formal verification of candidate solutions for post-synthesis evolutionary optimization in evolvable hardware. Genetic Programming and Evolvable Machines, 2011, 12, 305-327.	2.6	44
12	Image Filter Design with Evolvable Hardware. Lecture Notes in Computer Science, 2002, , 255-266.	1.0	43
13	Self-Reconfigurable Evolvable Hardware System for Adaptive Image Processing. IEEE Transactions on Computers, 2013, 62, 1481-1493.	3.6	42
14	Libraries of Approximate Circuits: Automated Design and Application in CNN Accelerators. IEEE Journal on Emerging and Selected Topics in Circuits and Systems, 2020, 10, 406-418.	4.2	42
15	Scalable Construction of Approximate Multipliers With Formally Guaranteed Worst Case Error. IEEE Transactions on Very Large Scale Integration (VLSI) Systems, 2018, 26, 2572-2576.	3.2	39
16	Novel Hardware Implementation of Adaptive Median Filters. , 2008, , .		36
17	Adaptive and Energy-Efficient Architectures for Machine Learning: Challenges, Opportunities, and Research Roadmap. , 2017, , .		36
18	Evolutionary Design of Gate-Level Polymorphic Digital Circuits. Lecture Notes in Computer Science, 2005, , 185-194.	1.0	35

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19	Evolutionary Design of Arbitrarily Large Sorting Networks Using Development. Genetic Programming and Evolvable Machines, 2005, 6, 319-347.	2.6	34
20	Physical Demonstration of Polymorphic Self-Checking Circuits. , 2008, , .		34
21	Approximate circuit design by means of evolvable hardware. , 2013, , .		34
22	Towards evolvable systems based on the Xilinx Zynq platform. , 2013, , .		32
23	Error Mitigation Using Approximate Logic Circuits: A Comparison of Probabilistic and Evolutionary Approaches. IEEE Transactions on Reliability, 2016, 65, 1871-1883.	5.3	31
24	An Evolvable Image Filter: Experimental Evaluation of a Complete Hardware Implementation in FPGA. Lecture Notes in Computer Science, 2005, , 76-85.	1.0	29
25	Fault Tolerance Analysis and Self-Healing Strategy of Autonomous, Evolvable Hardware Systems. , 2011, , .		29
26	Approximating complex arithmetic circuits with formal error guarantees: 32-bit multipliers accomplished. , 2017, , .		29
27	Dynamic modeling and operation strategy of natural gas fueled SOFC-Engine hybrid power system with hydrogen addition by metal hydride for vehicle applications. ETransportation, 2020, 5, 100074.	14.9	29
28	REPOMO32 - New reconfigurable polymorphic integrated circuit for adaptive hardware. , 2009, , .		28
29	Evolutionary design of complex approximate combinational circuits. Genetic Programming and Evolvable Machines, 2016, 17, 169-192.	2.6	27
30	TFApprox: Towards a Fast Emulation of DNN Approximate Hardware Accelerators on GPU. , 2020, , .		27
31	Neural Architecture Search and Hardware Accelerator Co-Search: A Survey. IEEE Access, 2021, 9, 151337-151362.	4.4	26
32	An Area-Efficient Alternative to Adaptive Median Filtering in FPGAs. , 2007, , .		24
33	Fitness Landscape Analysis and Image Filter Evolution Using Functional-Level CGP. Lecture Notes in Computer Science, 2007, , 311-320.	1.0	24
34	Evaluation of a New Platform For Image Filter Evolution. , 2007, , .		23
35	Image Processing and CGP. Natural Computing Series, 2011, , 181-215.	0.0	23
36	Towards highly optimized cartesian genetic programming. , 2014, , .		23

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37	ApproxFPGAs: Embracing ASIC-Based Approximate Arithmetic Components for FPGA-Based Systems. , 2020, , .		23
38	Evolutionary functional recovery in virtual reconfigurable circuits. ACM Journal on Emerging Technologies in Computing Systems, 2007, 3, 8.	2.4	22
39	Image filter evolution on the Xilinx Zynq Platform. , 2013, , .		21
40	Hardware Accelerators for Cartesian Genetic Programming. Lecture Notes in Computer Science, 2008, , 230-241.	1.0	20
41	Low-Level Flexible Architecture with Hybrid Reconfiguration for Evolvable Hardware. ACM Transactions on Reconfigurable Technology and Systems, 2015, 8, 1-24.	2.7	19
42	How to evolve complex combinational circuits from scratch?. , 2014, , .		18
43	On logic synthesis of conventionally hard to synthesize circuits using genetic programming. , 2010, , .		17
44	Evolutionary Approximation of Software for Embedded Systems. , 2015, , .		17
45	<i><scp>NLRP</scp>3</i> gene polymorphisms in Iranian patients with recurrent aphthous stomatitis. Journal of Oral Pathology and Medicine, 2016, 45, 136-140.	2.7	17
46	Evolutionary design of secrecy amplification protocols for wireless sensor networks. , 2009, , .		17
47	Evolutionary design of approximate multipliers under different error metrics. , 2014, , .		16
48	Automated Search-Based Functional Approximation for Digital Circuits. , 2019, , 175-203.		16
49	Reducing the number of transistors in digital circuits using gate-level evolutionary design. , 2007, , .		15
50	Evolution of synthetic RTL benchmark circuits with predefined testability. ACM Transactions on Design Automation of Electronic Systems, 2008, 13, 1-21.	2.7	15
51	A global postsynthesis optimization method for combinational circuits. , 2011, , .		15
52	Evolvable Hardware. , 2012, , 1657-1705.		15
53	Design of Quality-Configurable Approximate Multipliers Suitable for Dynamic Environment. , 2018, , .		15
54	A fast Reconfigurable 2D HW core architecture on FPGAs for evolvable Self-Adaptive Systems. , 2011, , .		14

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55	Evolving component library for approximate high level synthesis. , 2016, , .		14
56	Exploring the experiences of operating room health care professionals' from the challenges of the COVID-19 pandemic. BMC Surgery, 2021, 21, 434.	1.4	14
57	Design and Analysis of a New Self-Testing Adder Which Utilizes Polymorphic Gates. , 2007, , .		13
58	Gate-level optimization of polymorphic circuits using Cartesian Genetic Programming. , 2009, , .		13
59	Evolution of efficient real-time non-linear image filters for FPGAs. Soft Computing, 2013, 17, 2163-2180.	3.8	13
60	Automated Circuit Approximation Method Driven by Data Distribution. , 2019, , .		13
61	Metal ion displacements in noncentrosymmetric chalcogenides La ₃ Ga _{1.67} S ₇ , La ₃ Ag _{0.6} GaCh ₇ (Ch=S, Se), and La ₃ MGaSe ₇ (M=Zn, Cd). Journal of Solid State Chemistry, 2016, 243, 221-231.	3.0	12
62	Introduction to approximate computing: Embedded tutorial. , 2016, , .		12
63	Using Libraries of Approximate Circuits in Design of Hardware Accelerators of Deep Neural Networks. , 2020, , .		12
64	Transistor-Level Evolution of Digital Circuits Using a Special Circuit Simulator. Lecture Notes in Computer Science, 2008, , 320-331.	1.0	11
65	Polymorphic FIR Filters with Backup Mode Enabling Power Savings. , 2009, , .		11
66	A method for design of impulse bursts noise filters optimized for FPGA implementations. , 2010, , .		11
67	Evolvable 2D computing matrix model for intrinsic evolution in commercial FPGAs with native reconfiguration support. , 2011, , .		11
68	Evolutionary design of efficient and robust switching image filters. , 2011, , .		11
69	Evolution of Electronic Circuits. Natural Computing Series, 2011, , 125-179.	0.0	11
70	Intrinsic Evolution of Sorting Networks: A Novel Complete Hardware Implementation for FPGAs. Lecture Notes in Computer Science, 2005, , 46-55.	1.0	11
71	Evolutionary approximation and neural architecture search. Genetic Programming and Evolvable Machines, 2022, 23, 351-374.	2.6	11
72	Recognizing Speed Limit Sign Numbers by Evolvable Hardware. Lecture Notes in Computer Science, 2004, , 682-691.	1.0	10

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73	On Evolutionary Synthesis of Linear Transforms in FPGA. Lecture Notes in Computer Science, 2008, , 141-152.	1.0	10
74	Evolutionary Approach to Improve Wavelet Transforms for Image Compression in Embedded Systems. Eurasip Journal on Advances in Signal Processing, 2011, 2011, .	1.9	10
75	Discrimination between Asian populations of the parasitoid wasp <i>Ganaspis cf. brasiliensis</i> using a simple MALDI-TOF MS-based method for use with insects. Biology Methods and Protocols, 2019, 4, bpz002.	2.1	10
76	On the Practical Limits of the Evolutionary Digital Filter Design at the Gate Level. Lecture Notes in Computer Science, 2006, , 344-355.	1.0	10
77	Evolutionary Design Space Exploration for Median Circuits. Lecture Notes in Computer Science, 2004, , 240-249.	1.0	10
78	An Efficient Selection Strategy for Digital Circuit Evolution. Lecture Notes in Computer Science, 2010, , 13-24.	1.0	10
79	On area minimization of complex combinational circuits using cartesian genetic programming. , 2012, , .		9
80	Two-step evolution of polymorphic circuits for image multi-filtering. , 2012, , .		9
81	Implementation techniques for evolvable HW systems: virtual VS. dynamic reconfiguration. , 2012, , .		9
82	Evolutionary Design of Fast High-quality Hash Functions for Network Applications. , 2016, , .		9
83	Search-based synthesis of approximate circuits implemented into FPGAs. , 2016, , .		9
84	Circuit Approximation Using Single- and Multi-objective Cartesian GP. Lecture Notes in Computer Science, 2015, , 217-229.	1.0	9
85	Implementing A Unique Chip Id On A Reconfigurable Polymorphic Circuit. Information Technology and Control, 2013, 42, .	2.1	9
86	Evolution of Polymorphic Self-checking Circuits. Lecture Notes in Computer Science, 2007, , 186-197.	1.0	8
87	On Some Directions in Security-Oriented Research. , 2007, , .		8
88	Evolution of Impulse Bursts Noise Filters. , 2009, , .		8
89	Evolutionary functional approximation of circuits implemented into FPGAs. , 2016, , .		8
90	TypeCNN: CNN Development Framework With Flexible Data Types. , 2019, , .		8

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91	Evolutionary Neural Architecture Search Supporting Approximate Multipliers. Lecture Notes in Computer Science, 2021, , 82-97.	1.0	8
92	Evolvable Hardware System at Extreme Low Temperatures. Lecture Notes in Computer Science, 2005, , 37-45.	1.0	8
93	GPU Accelerators for Evolvable Cellular Automata. , 2009, , .		7
94	Cartesian genetic programming as local optimizer of logic networks. , 2014, , .		7
95	Evolutionary design of hash function pairs for network filters. Applied Soft Computing Journal, 2017, 56, 173-181.	7.4	7
96	Coevolution in Cartesian Genetic Programming. Lecture Notes in Computer Science, 2012, , 182-193.	1.0	7
97	Reduction of Test Vectors Volume by Means of Gate-Level Reconfiguration. , 2008, , .		6
98	Evolutionary hardware design. Proceedings of SPIE, 2011, , .	1.0	6
99	Multiobjective Selection of Input Sensors for SVR Applied to Road Traffic Prediction. Lecture Notes in Computer Science, 2014, , 802-811.	1.0	6
100	On dependability of FPGA-based evolvable hardware systems that utilize virtual reconfigurable circuits. , 2006, , .		5
101	Evolutionary design and optimization of Wavelet Transforms for image compression in embedded systems. , 2010, , .		5
102	A scalable cellular automata based microscopic traffic simulation. , 2011, , .		5
103	A SAT-based fitness function for evolutionary optimization of polymorphic circuits. , 2012, , .		5
104	Multiobjective evolution of approximate multiple constant multipliers. , 2013, , .		5
105	Towards compositional coevolution in evolutionary circuit design. , 2014, , .		5
106	Fast Reconfigurable Hash Functions for Network Flow Hashing in FPGAs. , 2018, , .		5
107	ADAC: Automated Design of Approximate Circuits. Lecture Notes in Computer Science, 2018, , 612-620.	1.0	5
108	Acceleration of Evolutionary Image Filter Design Using Coevolution in Cartesian GP. Lecture Notes in Computer Science, 2012, , 163-172.	1.0	5

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109	Evolutionary Design of Message Efficient Secrecy Amplification Protocols. Lecture Notes in Computer Science, 2012, , 194-205.	1.0	5
110	Evolved Computing Devices and the Implementation Problem. Minds and Machines, 2007, 17, 311-329.	4.7	4
111	Evolution of Iterative Formulas Using Cartesian Genetic Programming. Lecture Notes in Computer Science, 2011, , 11-20.	1.0	4
112	Accelerating FPGA-based evolution of wavelet transform filters by optimized task scheduling. Microprocessors and Microsystems, 2012, 36, 427-438.	3.3	4
113	Data Stream Processing in Networks-on-Chip. , 2017, , .		4
114	Multi-objective evolution of hash functions for high speed networks. , 2017, , .		4
115	Adaptive Fitness Predictors in Coevolutionary Cartesian Genetic Programming. Evolutionary Computation, 2019, 27, 497-523.	3.1	4
116	Acceleration Techniques for Automated Design of Approximate Convolutional Neural Networks. IEEE Journal on Emerging and Selected Topics in Circuits and Systems, 2023, 13, 212-224.	4.2	4
117	Evolvable computing by means of evolvable components. Natural Computing, 2004, 3, 253-292.	2.8	3
118	Evolvable hardware. , 2007, , .		3
119	Analysis of Reconfiguration Options for a Reconfigurable Polymorphic Circuit. , 2008, , .		3
120	On analysis of fabricated polymorphic circuits. , 2010, , .		3
121	Behavior of CMOS polymorphic circuits in high temperature environment. , 2011, , .		3
122	Evolutionary approach to calibration of cellular automaton based traffic simulation models. , 2012, , .		3
123	Adaptive development of hash functions in FPGA-based network routers. , 2016, , .		3
124	Visualisation and Analysis of Genetic Records Produced by Cartesian Genetic Programming. , 2016, , .		3
125	Evolutionary approximation of gradient orientation module in HOG-based human detection system. , 2017, , .		3
126	Cartesian Genetic Programming as an Optimizer of Programs Evolved with Geometric Semantic Genetic Programming. Lecture Notes in Computer Science, 2019, , 98-113.	1.0	3

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127	Evolving Cryptographic Boolean Functions with Minimal Multiplicative Complexity. , 2020, , .		3
128	Adaptive verifiability-driven strategy for evolutionary approximation of arithmetic circuits. Applied Soft Computing Journal, 2020, 95, 106466.	7.4	3
129	Increasing Fault-Tolerance in Cellular Automata-Based Systems. Lecture Notes in Computer Science, 2011, , 234-245.	1.0	3
130	Approximate Computing: An Old Job for Cartesian Genetic Programming?. Emergence, Complexity and Computation, 2018, , 195-212.	0.0	3
131	Adaptive and Evolvable Hardware and Systems: The State of the Art and the Prospectus for Future Development. Lecture Notes in Computer Science, 2008, , 310-318.	1.0	3
132	High Level Validation of an Optimization Algorithm for the Implementation of Adaptive Wavelet Transforms in FPGAs. , 2010, , .		2
133	Cellular automata-based systems with fault-tolerance. Natural Computing, 2012, 11, 673-685.	2.8	2
134	Concurrent evolution of hardware and software for application-specific microprogrammed systems. , 2013, , .		2
135	Evolutionary digital circuit design with fast candidate solution establishment in field programmable gate arrays. , 2014, , .		2
136	Towards Robust and Accurate Traffic Prediction Using Parallel Multiobjective Genetic Algorithms and Support Vector Regression. , 2015, , .		2
137	Evolutionary Approximation of Complex Digital Circuits. , 2015, , .		2
138	Cooperative Coevolutionary Approximation in HOG-based Human Detection Embedded System. , 2018, , .		2
139	Evolving boolean functions for fast and efficient randomness testing. , 2018, , .		2
140	Evolutionary Design of Hash Functions for IPv6 Network Flow Hashing. , 2020, , .		2
141	Optimizing Convolutional Neural Networks for Embedded Systems by Means of Neuroevolution. Lecture Notes in Computer Science, 2019, , 109-121.	1.0	2
142	Indirectly Encoded Fitness Predictors Coevolved with Cartesian Programs. Lecture Notes in Computer Science, 2015, , 113-125.	1.0	2
143	Evolving Constructors for Infinitely Growing Sorting Networks and Medians. Lecture Notes in Computer Science, 2004, , 314-323.	1.0	2
144	Evolvable Hardware: From Applications to Implications for the Theory of Computation. Lecture Notes in Computer Science, 2009, , 24-36.	1.0	2

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145	Principles and Applications of Polymorphic Circuits. Natural Computing Series, 2015, , 209-224.	0.0	2
146	The Concept of Pseudo Evolvable Hardware. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2000, 33, 117-122.	0.4	1
147	Towards Evolvable Components. Natural Computing Series, 2004, , 67-78.	0.0	1
148	When does Cartesian genetic programming minimize the phenotype size implicitly?. , 2010, , .		1
149	CGP Acceleration Using Field-Programmable Gate Arrays. Natural Computing Series, 2011, , 217-230.	0.0	1
150	Bio-inspired FPGA architecture for self-calibration of an image compression core based on wavelet transforms in embedded systems. Proceedings of SPIE, 2011, , .	1.0	1
151	Towards new applications of multi-function logic: Image multi-filtering. , 2012, , .		1
152	Calibration of Traffic Simulation Models Using Vehicle Travel Times. Lecture Notes in Computer Science, 2012, , 807-816.	1.0	1
153	Multiobjective selection of input sensors for travel times forecasting using support vector regression. , 2014, , .		1
154	Comparison of Parallel Linear Genetic Programming Implementations. Advances in Intelligent Systems and Computing, 2017, , 64-76.	0.0	1
155	Modular framework for detection of inter-ictal spikes in iEEG. , 2017, 2017, 418-421.		1
156	Efficient On-Chip Randomness Testing Utilizing Machine Learning Techniques. IEEE Transactions on Very Large Scale Integration (VLSI) Systems, 2019, 27, 2734-2744.	3.2	1
157	Characterization and Synthesis of Circuits at Extreme Low Temperatures. , 2006, , 161-172.		1
158	From Implementations to a General Concept of Evolvable Machines. Lecture Notes in Computer Science, 2003, , 424-433.	1.0	1
159	SagTree: Towards efficient mutation in evolutionary circuit approximation. Swarm and Evolutionary Computation, 2022, 69, 100986.	8.3	1
160	Ubiquity symposium: Evolutionary computation and the processes of life. Ubiquity, 2013, 2013, 1-7.	0.6	1
161	Exploring the Search Space of Hardware / Software Embedded Systems by Means of GP. Lecture Notes in Computer Science, 2014, , 112-123.	1.0	1
162	Functional Equivalence Checking for Evolution of Complex Digital Circuits. Natural Computing Series, 2015, , 175-189.	0.0	1

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163	Multi-objective Evolution of Ultra-Fast General-Purpose Hash Functions. Lecture Notes in Computer Science, 2018, , 187-202.	1.0	1
164	Evolutionary Design of Reduced Precision Levodopa-Induced Dyskinesia Classifiers. Lecture Notes in Computer Science, 2022, , 85-101.	1.0	1
165	Inexact Arithmetic Operators. , 2022, , 81-107.		1
166	GPAM: Genetic Programming with Associative Memory. Lecture Notes in Computer Science, 2023, , 68-83.	1.0	1
167	The Present-day Value of Maps Illustrating the Archaeological Surveys of Sir Aurel Stein in Xinjiang and Gansu. Journal of the Royal Asiatic Society, 1993, 3, 233-243.	0.2	0
168	Evolutionary circuit design: Tutorial. , 2010, , .		0
169	Evolution of digital circuits. , 2011, , .		0
170	Estimation of missing values in traffic density maps. , 2012, , .		0
171	Foreword to the 16th IEEE DDECS Symposium. , 2013, , .		0
172	Evolutionary Approximation of Edge Detection Circuits. Lecture Notes in Computer Science, 2016, , 19-34.	1.0	0
173	Chronic constrictive pericarditis with right ventricular outflow tract obstruction. IHJ Cardiovascular Case Reports (CVCR), 2017, 1, 48-50.	0.1	0
174	Design Space Exploration for Approximate Implementations of Arithmetic Data Path Primitives. , 2018, , .		0
175	International Symposium on Design and Diagnostics of Electronic Circuits and Systems. , 2019, , .		0
176	Special issue on highlights of genetic programming 2019 events. Genetic Programming and Evolvable Machines, 2020, 21, 283-285.	2.6	0
177	Analysis of Reconfigurable Logic Blocks for Evolvable Digital Architectures. Lecture Notes in Computer Science, 2008, , 144-153.	1.0	0
178	Evolutionary Design of Reconfiguration Strategies to Reduce the Test Application Time. Lecture Notes in Computer Science, 2010, , 214-225.	1.0	0
179	On Evolutionary Approximation of Logic Circuits. Lecture Notes in Computer Science, 2014, , 367-378.	1.0	0
180	A Fast FPGA-Based Classification of Application Protocols Optimized Using Cartesian GP. Lecture Notes in Computer Science, 2015, , 67-78.	1.0	0

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181	On Evolutionary Approximation of Sigmoid Function for HW/SW Embedded Systems. Lecture Notes in Computer Science, 2017, , 343-358.	1.0	0
182	Design, Verification, Test, and In-Field Implications of Approximate Digital Integrated Circuits. , 2022, , 349-385.		0
183	Interpreting Plato's Geometrical Elements in Renaissance Aristotle Commentaries. , 2022, , 149-171.		0
184	Evolution of Editing Scripts From Examples. , 2023, , .		0
185	Semantic mutation operator for a fast and efficient design of bent Boolean functions. Genetic Programming and Evolvable Machines, 2024, 25, .	2.6	0