Hussam Amrouch

List of Publications by Year
in descending order

164 papers	1,996 citations	471371 17 h-index	526166 27 g-index
164 all docs	164 docs citations	164 times ranked	823 citing authors

#	Article	IF	Citations
1	Massively Parallel Circuit Setup in GPU-SPICE. IEEE Transactions on Computers, 2023, 72, 2127-2138.	2.4	5
2	Machine Learning-Based Microarchitecture- Level Power Modeling of CPUs. IEEE Transactions on Computers, 2023, 72, 941-956.	2.4	2
3	Towards a New Thermal Monitoring Based Framework for Embedded CPS Device Security. IEEE Transactions on Dependable and Secure Computing, 2022, 19, 524-536.	3.7	15
4	Bridging the Gap Between Voltage Over-Scaling and Joint Hardware Accelerator-Algorithm Closed-Loop. IEEE Transactions on Circuits and Systems for Video Technology, 2022, 32, 398-410.	5.6	6
5	On the Reliability of FeFET On-Chip Memory. IEEE Transactions on Computers, 2022, 71, 947-958.	2.4	15
6	A Framework for Crossing Temperature-Induced Timing Errors Underlying Hardware Accelerators to the Algorithm and Application Layers. IEEE Transactions on Computers, 2022, 71, 349-363.	2.4	5
7	Impact of NCFET Technology on Eliminating the Cooling Cost and Boosting the Efficiency of Google TPU. IEEE Transactions on Computers, 2022, 71, 906-918.	2.4	4
8	Full-Chip Power Density and Thermal Map Characterization for Commercial Microprocessors Under Heat Sink Cooling. IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, 2022, 41, 1453-1466.	1.9	5
9	FeFET-Based Binarized Neural Networks Under Temperature-Dependent Bit Errors. IEEE Transactions on Computers, 2022, 71, 1681-1695.	2.4	10
10	Energy Efficient Edge Computing Enabled by Satisfaction Games and Approximate Computing. IEEE Transactions on Green Communications and Networking, 2022, 6, 281-294.	3.5	17
11	Electrothermal Simulation and Optimal Design of Thermoelectric Cooler Using Analytical Approach. IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, 2022, 41, 3066-3077.	1.9	1
12	MLCAD: A Survey of Research in Machine Learning for CAD Keynote Paper. IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, 2022, 41, 3162-3181.	1.9	22
13	FN-CACTI: Advanced CACTI for FinFET and NC-FinFET Technologies. IEEE Transactions on Very Large Scale Integration (VLSI) Systems, 2022, 30, 339-352.	2.1	8
14	Trojan Detection in Embedded Systems With FinFET Technology. IEEE Transactions on Computers, 2022, 71, 3061-3071.	2.4	4
15	Thermal-Aware Design for Approximate DNN Accelerators. IEEE Transactions on Computers, 2022, 71, 2687-2697.	2.4	5
16	Software-Managed Read and Write Wear-Leveling for Non-Volatile Main Memory. Transactions on Embedded Computing Systems, 2022, 21, 1-24.	2.1	8
17	Scalable Machine Learning to Estimate the Impact of Aging on Circuits Under Workload Dependency. IEEE Transactions on Circuits and Systems I: Regular Papers, 2022, 69, 2142-2155.	3.5	13
18	Brain-Inspired Computing for Circuit Reliability Characterization. IEEE Transactions on Computers, 2022, , 1-1.	2.4	13

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19	Modeling TPU Thermal Maps Under Superlattice Thermoelectric Cooling. IEEE Access, 2022, 10, 21970-21978.	2.6	4
20	Reliable Binarized Neural Networks on Unreliable Beyond Von-Neumann Architecture. IEEE Transactions on Circuits and Systems I: Regular Papers, 2022, 69, 2516-2528.	3.5	8
21	Design Close to the Edge for Advanced Technology using Machine Learning and Brain-Inspired Algorithms. , 2022, , .		2
22	All-in-Memory Brain-Inspired Computing Using FeFET Synapses. Frontiers in Electronics, 2022, 3, .	2.0	12
23	Design-time exploration of voltage switching against power analysis attacks in 14Ânm FinFET technology. The Integration VLSI Journal, 2022, 85, 27-34.	1.3	1
24	Cleaved-Gate Ferroelectric FET for Reliable Multi-Level Cell Storage. , 2022, , .		6
25	Ferroelectric FET Threshold Voltage Optimization for Reliable In-Memory Computing. , 2022, , .		2
26	Variability-Aware Approximate Circuit Synthesis via Genetic Optimization. IEEE Transactions on Circuits and Systems I: Regular Papers, 2022, 69, 4141-4153.	3.5	1
27	HW/SW Codesign for Approximate In-Memory Computing. , 2022, , .		2
28	On Extracting Reliability Information from Speed Binning. , 2022, , .		3
29	Power-Efficient Heterogeneous Many-Core Design With NCFET Technology. IEEE Transactions on Computers, 2021, 70, 1484-1497.	2.4	7
30	Post-Silicon Heat-Source Identification and Machine-Learning-Based Thermal Modeling Using Infrared Thermal Imaging. IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, 2021, 40, 694-707.	1.9	10
31	Minimizing Excess Timing Guard Banding Under Transistor Self-Heating Through Biasing at Zero-Temperature Coefficient. IEEE Access, 2021, 9, 30687-30697.	2.6	7
32	Longevity of Commodity DRAMs in Harsh Environments Through Thermoelectric Cooling. IEEE Access, 2021, 9, 83950-83962.	2.6	9
33	On the Critical Role of Ferroelectric Thickness for Negative Capacitance Device-Circuit Interaction. IEEE Journal of the Electron Devices Society, 2021, 9, 1262-1268.	1.2	6
34	Characterizing the Thermal Feasibility of Monolithic 3D Microprocessors. IEEE Access, 2021, 9, 120715-120729.	2.6	2
35	The Vital Role of Machine Learning in Developing Emerging Technologies. , 2021, , 29-57.		1
36	FeFET and NCFET for Future Neural Networks: Visions and Opportunities. , 2021, , .		0

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37	Reliability-Aware Quantization for Anti-Aging NPUs. , 2021, , .		8
38	Robust Brain-Inspired Computing: On the Reliability of Spiking Neural Network Using Emerging Non-Volatile Synapses. , 2021, , .		5
39	Traps Based Reliability Barrier on Performance and Revealing Early Ageing in Negative Capacitance FET. , 2021, , .		11
40	Self-Heating Effects from Transistors to Gates. , 2021, , .		1
41	On the Critical Role of Ferroelectric Thickness for Negative Capacitance Transistor Optimization. , 2021, , .		2
42	Impact of Self-Heating on Negative-Capacitance FinFET: Device-Circuit Interaction. IEEE Transactions on Electron Devices, 2021, 68, 1420-1424.	1.6	15
43	Reliability-Driven Voltage Optimization for NCFET-based SRAM Memory Banks. , 2021, , .		2
44	Transistor Self-Heating: The Rising Challenge for Semiconductor Testing. , 2021, , .		12
45	Special Session: Machine Learning for Semiconductor Test and Reliability. , 2021, , .		6
46	On the Reliability of In-Memory Computing: Impact of Temperature on Ferroelectric TCAM. , 2021, , .		15
47	On the Resiliency of NCFET Circuits Against Voltage Over-Scaling. IEEE Transactions on Circuits and Systems I: Regular Papers, 2021, 68, 1481-1492.	3.5	16
48	Soft Errors in Negative Capacitance FDSOI SRAMs. , 2021, , .		2
49	Machine Learning for On-the-Fly Reliability-Aware Cell Library Characterization. IEEE Transactions on Circuits and Systems I: Regular Papers, 2021, 68, 2569-2579.	3.5	18
50	Session details: Session 6B: Testing, Reliability, Fault-Tolerance. , 2021, , .		0
51	On-Demand Mobile CPU Cooling With Thin-Film Thermoelectric Array. IEEE Micro, 2021, 41, 67-73.	1.8	12
52	On the Effectiveness of Quantization and Pruning on the Performance of FPGAs-based NN Temperature Estimation. , 2021, , .		0
53	Performance Optimization of Analog Circuits in Negative Capacitance Transistor Technology. Microelectronics Journal, 2021, 115, 105193.	1.1	13
54	PROTON: Post-Synthesis Ferroelectric Thickness Optimization for NCFET Circuits. IEEE Transactions on Circuits and Systems I: Regular Papers, 2021, 68, 4299-4309.	3.5	2

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55	Cross-layer Design for Computing-in-Memory. , 2021, , .		2
56	Impact of NCFET on Neural Network Accelerators. IEEE Access, 2021, 9, 43748-43758.	2.6	1
57	Real-Time Full-Chip Thermal Tracking: A Post-Silicon, Machine Learning Perspective. IEEE Transactions on Computers, 2021, , 1-1.	2.4	10
58	Approximate Computing for ML. , 2021, , .		22
59	Automated Design Approximation to Overcome Circuit Aging. IEEE Transactions on Circuits and Systems I: Regular Papers, 2021, 68, 4710-4721.	3.5	3
60	Impact of Negative Capacitance Field-Effect Transistor (NCFET) on Many-Core Systems. , 2021, , 107-123.		3
61	Thermal Management and Communication Virtualization for Reliability Optimization in MPSoCs. Embedded Systems, 2021, , 181-205.	0.6	0
62	On the Resiliency of NC-FinFET SRAMs against Variation: MFIS Structure. , 2021, , .		2
63	Control Variate Approximation for DNN Accelerators. , 2021, , .		16
64	Variability Effects in FinFET Transistors and Emerging NC-FinFET. , 2021, , .		5
65	Machine Learning for Circuit Aging Estimation under Workload Dependency. , 2021, , .		6
66	Brain-Inspired Computing for Wafer Map Defect Pattern Classification. , 2021, , .		21
67	Towards Reliable In-Memory Computing:From Emerging Devices to Post-von-Neumann Architectures. , 2021, , .		3
68	Security Closure of Physical Layouts ICCAD Special Session Paper. , 2021, , .		3
69	Binarized SNNs: Efficient and Error-Resilient Spiking Neural Networks through Binarization. , 2021, , .		6
70	Toward Security Closure in the Face of Reliability Effects ICCAD Special Session Paper. , 2021, , .		3
71	Positive/Negative Approximate Multipliers for DNN Accelerators. , 2021, , .		11
72	ICCAD Tutorial Session Paper Ferroelectric FET Technology and Applications: From Devices to Systems. , 2021, , .		8

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73	Brain-Inspired Computing: Adventure from Beyond CMOS Technologies to Beyond von Neumann Architectures ICCAD Special Session Paper. , 2021, , .		1
74	On the Channel Percolation in Ferroelectric FET Towards Proper Analog States Engineering. , 2021, , .		26
75	A Cross-Layer Gate-Level-to-Application Co-Simulation for Design Space Exploration of Approximate Circuits in HEVC Video Encoders. IEEE Transactions on Circuits and Systems for Video Technology, 2020, 30, 3814-3828.	5.6	29
76	On the Workload Dependence of Self-Heating in FinFET Circuits. IEEE Transactions on Circuits and Systems II: Express Briefs, 2020, 67, 1949-1953.	2.2	9
77	Energy Optimization in NCFET-based Processors. , 2020, , .		2
78	Power Side-Channel Attacks in Negative Capacitance Transistor. IEEE Micro, 2020, 40, 74-84.	1.8	6
79	Exposing Hardware Trojans in Embedded Platforms via Short-Term Aging. IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, 2020, 39, 3519-3530.	1.9	9
80	Impact of Extrinsic Variation Sources on the Device-to-Device Variation in Ferroelectric FET. , 2020, , .		35
81	Impact of Interface Traps Induced Degradation on Negative Capacitance FinFET. , 2020, , .		6
82	Weight-Oriented Approximation for Energy-Efficient Neural Network Inference Accelerators. IEEE Transactions on Circuits and Systems I: Regular Papers, 2020, 67, 4670-4683.	3.5	54
83	Impact of Interface Traps on Negative Capacitance Transistor: Device and Circuit Reliability. IEEE Journal of the Electron Devices Society, 2020, 8, 1193-1201.	1.2	33
84	Dynamic Power and Energy Management for NCFET-Based Processors. IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, 2020, 39, 3361-3372.	1.9	6
85	NPU Thermal Management. IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, 2020, 39, 3842-3855.	1.9	31
86	Impact of Variability on Processor Performance in Negative Capacitance FinFET Technology. IEEE Transactions on Circuits and Systems I: Regular Papers, 2020, 67, 3127-3137.	3.5	44
87	Aging Compensation With Dynamic Computation Approximation. IEEE Transactions on Circuits and Systems I: Regular Papers, 2020, 67, 1319-1332.	3.5	10
88	Design Automation of Approximate Circuits With Runtime Reconfigurable Accuracy. IEEE Access, 2020, 8, 53522-53538.	2.6	36
89	Impact of Self-Heating on Performance, Power and Reliability in FinFET Technology. , 2020, , .		4
90	BTI and HCD Degradation in a Complete 32 Ã— 64 bit SRAM Array â€" including Sense Amplifiers and Write Drivers â€" under Processor Activity. , 2020, , .		12

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91	Impact of Radiation on Negative Capacitance FinFET. , 2020, , .		7
92	Impact of NBTI Aging on Self-Heating in Nanowire FET. , 2020, , .		6
93	Temperature Dependence and Temperature-Aware Sensing in Ferroelectric FET. , 2020, , .		31
94	Hardware Trojan Detection Using Controlled Circuit Aging. IEEE Access, 2020, 8, 77415-77434.	2.6	19
95	Machine Learning Based Online Full-Chip Heatmap Estimation. , 2020, , .		15
96	NCFET to Rescue Technology Scaling: Opportunities and Challenges. , 2020, , .		9
97	Towards NN-based Online Estimation of the Full-Chip Temperature and the Rate of Temperature Change. , 2020, , .		5
98	Cell library characterization using machine learning for design technology co-optimization. , 2020, , .		9
99	Modeling emerging technologies using machine learning. , 2020, , .		13
100	Run-Time Accuracy Reconfigurable Stochastic Computing for Dynamic Reliability and Power Management: Work-in-Progress. , 2020, , .		1
101	Session details: Session 5: ML for Systems. , 2020, , .		0
102	Session details: Session 1: DNN for CAD. , 2020, , .		0
103	Dynamic Guardband Selection: Thermal-Aware Optimization for Unreliable Multi-Core Systems. IEEE Transactions on Computers, 2019, 68, 53-66.	2.4	5
104	Impact of NBTI on Increasing the Susceptibility of FinFET to Radiation. , 2019, , .		0
105	Aging Gracefully with Approximation. , 2019, , .		4
106	Reliability Challenges with Self-Heating and Aging in FinFET Technology. , 2019, , .		12
107	Rebirth-FTL: Lifetime optimization via Approximate Storage for NAND Flash. , 2019, , .		8
108	NCFET-Aware Voltage Scaling. , 2019, , .		14

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109	New Worst-Case Timing for Standard Cells Under Aging Effects. IEEE Transactions on Device and Materials Reliability, 2019, 19, 149-158.	1.5	14
110	On the Efficiency of Voltage Overscaling under Temperature and Aging Effects. IEEE Transactions on Computers, 2019, 68, 1647-1662.	2.4	19
111	Unveiling the Impact of IR-Drop on Performance Gain in NCFET-Based Processors. IEEE Transactions on Electron Devices, 2019, 66, 3215-3223.	1.6	30
112	Performance, Power and Cooling Trade-Offs with NCFET-based Many-Cores. , 2019, , .		23
113	Hot Spot Identification and System Parameterized Thermal Modeling for Multi-Core Processors Through Infrared Thermal Imaging. , 2019, , .		10
114	Modeling the Interdependences Between Voltage Fluctuation and BTI Aging. IEEE Transactions on Very Large Scale Integration (VLSI) Systems, 2019, 27, 1652-1665.	2.1	12
115	Modeling and Mitigating Time-Dependent Variability From the Physical Level to the Circuit Level. IEEE Transactions on Circuits and Systems I: Regular Papers, 2019, 66, 2671-2684.	3.5	15
116	Machine Learning Techniques to Support Many-Core Resource Management: Challenges and Opportunities. , 2019, , .		3
117	Stack Usage Analysis for Efficient Wear Leveling in Non-Volatile Main Memory Systems. , 2019, , .		0
118	Selecting the Optimal Energy Point in Near-Threshold Computing. , 2019, , .		4
119	The Impact of Emerging Technologies on Architectures and System-level Management: Invited Paper. , 2019, , .		0
120	Aging Effects: From Physics to CAD. , 2019, , 43-69.		2
121	Estimating and Mitigating Aging Effects in Routing Network of FPGAs. IEEE Transactions on Very Large Scale Integration (VLSI) Systems, 2019, 27, 651-664.	2.1	13
122	A Simulation Study of NBTI Impact on 14-nm Node FinFET Technology for Logic Applications: Device Degradation to Circuit-Level Interaction. IEEE Transactions on Electron Devices, 2019, 66, 271-278.	1.6	46
123	Modeling and Evaluating the Gate Length Dependence of BTI. IEEE Transactions on Circuits and Systems II: Express Briefs, 2019, 66, 1527-1531.	2.2	0
124	Device to Circuit Framework for Activity-Dependent NBTI Aging in Digital Circuits. IEEE Transactions on Electron Devices, 2019, 66, 316-323.	1.6	25
125	Aging-Aware Boosting. IEEE Transactions on Computers, 2018, 67, 1217-1230.	2.4	18
126	Reliability in Super- and Near-Threshold Computing: A Unified Model of RTN, BTI, and PV. IEEE Transactions on Circuits and Systems I: Regular Papers, 2018, 65, 293-306.	3.5	33

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127	Recent advances in EM and BTI induced reliability modeling, analysis and optimization (invited). The Integration VLSI Journal, 2018, 60, 132-152.	1.3	36
128	Voltage Adaptation Under Temperature Variation. , 2018, , .		7
129	Estimating and optimizing BTI aging effects. , 2018, , .		6
130	Trading Off Temperature Guardbands via Adaptive Approximations. , 2018, , .		14
131	Dynamic resource management for heterogeneous many-cores. , 2018, , .		4
132	Reliability Estimations of Large Circuits in Massively-Parallel GPU-SPICE. , 2018, , .		5
133	Negative Capacitance Transistor to Address the Fundamental Limitations in Technology Scaling: Processor Performance. IEEE Access, 2018, 6, 52754-52765.	2.6	70
134	Aging-constrained performance optimization for multi cores. , 2018, , .		2
135	Weighted time lag plot defect parameter extraction and GPU-based BTI modeling for BTI variability. , 2018, , .		6
136	Containing guardbands. , 2017, , .		3
137	Ultra-low power and dependability for IoT devices (Invited paper for IoT technologies). , 2017, , .		44
138	Towards Aging-Induced Approximations. , 2017, , .		35
139	Optimizing temperature guardbands. , 2017, , .		13
140	Impact of BTI on dynamic and static power: From the physical to circuit level. , 2017, , .		26
141	Interdependencies of Degradation Effects and Their Impact on Computing. IEEE Design and Test, 2017, 34, 59-67.	1.1	13
142	Emerging (un-)reliability based security threats and mitigations for embedded systems. , 2017, , .		17
143	Hardware and software innovations in energy-efficient system-reliability monitoring. , 2017, , .		0
144	Evaluating and mitigating degradation effects in multimedia circuits. , 2017, , .		1

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145	Designing reliable, yet energy-efficient guardbands. , 2016, , .		1
146	Stress-aware routing to mitigate aging effects in SRAM-based FPGAs. , 2016, , .		3
147	Improving mobile gaming performance through cooperative CPU-GPU thermal management. , 2016, , .		54
148	Power and thermal management in massive multicore chips. , 2016, , .		5
149	Reliability-aware design to suppress aging. , 2016, , .		84
150	Designing guardbands for instantaneous aging effects. , 2016, , .		24
151	Aging-Aware Voltage Scaling. , 2016, , .		31
152	Reliability degradation in the scope of aging â€" From physical to system level. , 2015, , .		3
153	Lucid infrared thermography of thermally-constrained processors. , 2015, , .		22
154	Connecting the physical and application level towards grasping aging effects. , 2015, , .		18
155	hevcDTM: Application-driven Dynamic Thermal Management for High Efficiency Video Coding. , 2014, , .		4
156	Towards interdependencies of aging mechanisms. , 2014, , .		60
157	RESI: Register-Embedded Self-Immunity for Reliability Enhancement. IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, 2014, 33, 677-690.	1.9	4
158	mDTM: Multi-objective dynamic thermal management for on-chip systems. , 2014, , .		4
159	Accurate Thermal-Profile Estimation and Validation for FPGA-Mapped Circuits. , 2013, , .		7
160	Stress balancing to mitigate NBTI effects in register files. , 2013, , .		27
161	Thermal management for dependable on-chip systems. , 2013, , .		17
162	Analyzing the thermal hotspots in FPGA-based embedded systems. , 2013, , .		12

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163	COOL. , 2012, , .		12
164	Self-Immunity Technique to Improve Register File Integrity Against Soft Errors. , 2011, , .		18