

2022 IEEE International Symposium on Hardware Oriented Security and Trust (HOST 2022)

**Washington, DC, USA
27 – 30 June 2022**



**IEEE Catalog Number: CFP22HOA-POD
ISBN: 978-1-6654-8533-3**

**Copyright © 2022 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP22HOA-POD
ISBN (Print-On-Demand):	978-1-6654-8533-3
ISBN (Online):	978-1-6654-8532-6

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

EnclaveSim: A Micro-Architectural Simulator with Enclave Support.....	1
<i>Yashika Verma, Dixit Kumar, Biswabandan Panda</i>	
Towards Attack Resilient Delay-Based Strong PUFs	5
<i>Nils Wisiol</i>	
Security Properties Driven Pre-Silicon Laser Fault Injection Assessment	9
<i>Nitin Pundir, Henian Li, Lang Lin, Norman Chang, Farimah Farahmandi, Mark Tehranipoor</i>	
Warm Up Before Circuit De-Obfuscation? An Exploration Through Bounded-Model-Checkers	13
<i>Kimia Zamiri Azar, Hadi Mardani Kamali, Farimah Farahmandi, Mark Tehranipoor</i>	
Layout-Level Vulnerability Ranking from Electromagnetic Fault Injection.....	17
<i>Lang Lin, Jimin Wen, Harsh Shrivastav, Weike Li, Hua Chen, Gang Ni, Sreeja Chowdhury, Calvin Chow, Norman Chang</i>	
Structural Analysis Attack on Sequential Circuit Logic Locking.....	21
<i>Gourav Takhar, Subhajit Roy</i>	
A Novel Attack on Machine-Learning Resistant Physical Unclonable Functions	25
<i>Daniel Canaday, Wendson A. S. Barbosa, Andrew Pomerance</i>	
System on Chip (SoC) Security Architecture Framework for Isolated Domains Against Threats	29
<i>Siam Haque, Shahnam Mirzaei</i>	
Security Threats and Countermeasure Deployment Using Partial Reconfiguration in FPGA CAD Tools.....	33
<i>Sandeep Sunkavilli, Qiaoyan Yu</i>	
Towards an Antivirus for Quantum Computers	37
<i>Sanjay Deshpande, Chuanqi Xu, Theodoros Trochatos, Yongshan Ding, Jakub Szefer</i>	
SecSoC: A Secure System on Chip Architecture for IoT Devices	41
<i>Ayman Hroub, Muhammad E. S. Elrabaa</i>	
Characterizing Side-Channel Leakage of DNN Classifiers Through Performance Counters	45
<i>Saikat Majumdar, Mohammad Hossein Samavatian, Radu Teodorescu</i>	
Detecting Continuous Jamming Attack Using Ultra-Low Power RSSI Circuit	49
<i>Ankit Mittal, Aatmesh Shrivastava</i>	
Security Metrics for Logic Circuits	53
<i>Ruben Purdy, Danielle Duvalsaint, R. D. Shawn Blanton</i>	
SpecPref: High Performing Speculative Attacks Resilient Hardware Prefetchers	57
<i>Tarun Solanki, Biswabandan Panda</i>	
pHGen: A pH-Based Key Generation Mechanism Using ISFETs	61
<i>Elmira Moussavi, Dominik Sisejkovic, Fabian Brings, Daniyar Kizatov, Animesh Singh, Xuan Thang Vu, Rainer Leupers, Sven Ingebrandt, Vivek Pachauri, Farhad Merchant</i>	

Safeguarding Unmanned Aerial Vehicles Against Side Channel Analysis Via Motor Noise Injection.....	65
<i>Timothy Radtke, Cristinel Ababei</i>	
WiP: Applicability of ISO Standard Side-Channel Leakage Tests to NIST Post-Quantum Cryptography.....	69
<i>Markku-Juhani O. Saarinen</i>	
Chosen-Plaintext Attack on Energy-Efficient Hardware Implementation of GIFT-COFB.....	73
<i>Yadi Zhong, Ujjwal Guin</i>	
Error Correction Attacks on BACnet MS/TP.....	77
<i>Tsion Yimer, Edmund Smith, Paige Harvey, Marcial Tienteu, Kevin Kornegay</i>	
Insertion of Random Delay with Context-Aware Dummy Instructions Generator in a RISC-V Processor	81
<i>Gaëtan Leplus, Olivier Savry, Lilian Bossuet</i>	
Contact PUF: Highly Stable Physical Unclonable Functions Based on Contact Failure Probability in 180 nm, 130 nm, and 28 nm CMOS Processes	85
<i>Duhyun Jeon, Dongmin Lee, Dong Kyue Kim, Byong-Deok Choi</i>	
Efficient Targeted Bit-Flip Attack Against the Local Binary Pattern Network.....	89
<i>Arman Roohi, Shaahin Angizi</i>	
Efficient and Side-Channel Resistant Design of High-Security Ed448 on ARM Cortex-M4	93
<i>Mila Anastasova, Mojtaba Bisheh-Niasar, Hwajeong Seo, Reza Azarderakhsh, Mehran Mozaffari Kermani</i>	
Detecting Laser Fault Injection Attacks Via Time-to-Digital Converter Sensors	97
<i>Mohammad Ebrahimabadi, Suhee Sanjana Mehjabin, Raphael Viera, Sylvain Guilley, Jean-Luc Danger, Jean-Max Dutertre, Naghmeh Karimi</i>	
True Random Number Generation with the Shift-Register Reconvergent-Fanout (SiRF) PUF.....	101
<i>Nafis Irtija, Eirini Eleni Tsiropoulou, Cyrus Minwalla, Jim Plusquellic</i>	
Dynamic Key Updates for LUT Locked Design	105
<i>Jakub Slowik, Gregory Williams, Rummah Albashir, Anthony Samagio, Geraldine Shirley Nicholas, Fareena Saqib</i>	
PCB Component Detection for Hardware Assurance: A Feature Selection-Based Approach	109
<i>Shajib Ghosh, Mohammad Tahsin Mostafiz, Suprith Reddy Gurudu, Shayan Taheri, Navid Asadizanjani</i>	
Metrics for Assessing Security of System-on-Chip.....	113
<i>Sujan Kumar Saha, Joel Mandebi Mbongue, Christophe Bobda</i>	
FTC: A Universal Sensor for Fault Injection Attack Detection.....	117
<i>M. Rafid Muttaki, Tao Zhang, Mark Tehranipoor, Farimah Farahmandi</i>	
Hardware Trojan Detection at LUT: Where Structural Features Meet Behavioral Characteristics.....	121
<i>Lingjuan Wu, Xuelin Zhang, Siyi Wang, Wei Hu</i>	
Security Analysis of Delay-Based Strong PUFs with Multiple Delay Lines.....	125
<i>Anita Aghaie, Amir Moradi, Johannes Tobisch, Nils Wisiol</i>	

Mathematical Model of Strong Physically Unclonable Functions Based on Hybrid Boolean Networks	129
<i>Noeloikeau Charlot, Daniel J. Gauthier, Daniel Canaday, Andrew Pomerance</i>	
On the Feasibility of Training-Time Trojan Attacks Through Hardware-Based Faults in Memory	133
<i>Kunbei Cai, Zhenkai Zhang, Fan Yao</i>	
Identification and Classification of Corrupted PUF Responses Via Machine Learning.....	137
<i>Reshmi Suragani, Emiliia Nazarenko, Nikolaos Athanasios Anagnostopoulos, Nico Mexis, Elif Bilge Kavun</i>	
Hardening Hardware Accelerator Based CNN Inference Phase Against Adversarial Noises.....	141
<i>Tolulope A. Odetola, Adewale Adeyemo, Syed Rafay Hasan</i>	
Global Attack and Remedy on IC-Specific Logic Encryption	145
<i>Amin Rezaei, Ava Hedayatipour, Hossein Sayadi, Mehrdad Aliasgari, Hai Zhou</i>	
Evaluating the Impact of Hardware Faults on Program Execution in a Microkernel Environment	149
<i>Yohannes B. Bekele, Daniel B. Limbrick</i>	
Practical Performance of Analog Attack Techniques.....	153
<i>Vaibhav Venugopal Rao, Kyle Juretus, Ioannis Savidis</i>	
Systolic Acceleration of Polynomial Multiplication for KEM Saber and Binary Ring-LWE Post-Quantum Cryptography	157
<i>Tianyou Bao, Pengzhou He, Jiafeng Xie</i>	
A Lightweight Mutual Authentication Protocol Based on Physical Unclonable Functions	161
<i>Saeed Abdolnizhad, Axel Sikora</i>	
Oblivious Intrusion Detection System.....	165
<i>Mahmoud Abdelhafeez Sayed, Mostafa Taha</i>	
A Modeling Attack on the Sub-Threshold Current Array PUF.....	169
<i>Yun Liu, Yongliang Chen, Xiaole Cui</i>	
Partial Reconfiguration for Run-Time Memory Faults and Hardware Trojan Attacks Detection.....	173
<i>Ying Li, Lan Chen, Jian Wang, Guanfei Gong</i>	
Securing Hardware Accelerator During High-Level Synthesis.....	177
<i>Dipanjan Roy, Sabiya Jani Shaik, Sonam Sharma</i>	
PUF-Based Secure Test Wrapper Design for Network-On-Chip	181
<i>Ying Zhang, Yuanxiang Li, Xin Chen, Jizhong Yang, Yifeng Hua, Jiaoyan Yao</i>	

Author Index