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Research Interests

Embedded systems, security and trust, machine learning, hardware, customizable computing, design automation

Education

Ph.D. in Electrical Engineering and Computer Science	12/2005
<i>University of California, Berkeley</i>	
M.A. in Statistics	5/2005
<i>University of California, Berkeley</i>	
M.S. in Electrical Engineering (thesis jointly done in Computer Science)	12/2000
<i>University of California, Los Angeles</i>	
B.S. in Electrical Engineering	12/1998
<i>Sharif University of Technology, Tehran, Iran</i>	

Professional Experience

Professor and Henry Booker Faculty Scholar	11/2015-Present
<i>University of California San Diego (UCSD), Electrical & Computer Engineering</i>	
Professor	09/2015-12/2015
<i>Rice University, Electrical & Computer Engineering</i>	
Associate Partner	07/2014-Present
<i>Intel Collaborative Research Institute for Secure Computing</i>	
Principal Director, Texas Instruments (TI) DSP Leadership	09/2008-12/2015
<i>Rice University</i>	
Assistant Professor and (Tenured) Associate Professor	07/2006-09/2015
<i>Rice University, Electrical & Computer Engineering</i>	
Visiting Assistant Professor	01/2010-07/2010
<i>MIT Computer Science and Artificial Intelligence Laboratory (CSAIL)</i>	
Visiting Assistant Professor/ CSL Fellow	10/2005-07/2006
<i>Coordinated Science Lab (CSL), University of Illinois at Urbana-Champaign</i>	
Intel Open Collaborative Research Fellow	08/2003-08/2004
<i>Intel Research, Berkeley Lab</i>	

Awards and Honors

Henry Booker Faculty Scholarship, UCSD	2016
Cisco IoT Security Grand Challenge Award	2014
National Academy of Science (NAS) Kavli Foundation Fellowship	2012
Army Research Office (ARO) Young Investigator Program (YIP) Award	2012
ACM SIGDA Outstanding New Faculty Award (ONFA)	2011
Presidential Early Career Award for Scientists and Engineers (PECASE)	2010
Office of Naval Research (ONR) Young Investigator Program (YIP) Award	2009-2012
National Science Foundation (NSF) CAREER Award	2007-2011
Young Faculty Award, Defense Advanced Research Projects Agency (DARPA)	2007-2009
MIT Technology Review TR-35 Award (World's Top Innovators Under 35)	2008
Cyber Security Awareness (CSAW) Best Applied Security Paper Award, 2nd place	2013
National Academy of Engineering (NAE) "Frontiers of Engineering"	2009
INTEL Open Collaborative Research (OCR) Fellowship Award	2003-2004
Best Student Paper Award, ACM SIGMOBILE (Mobicom)	2001
National Science Foundation (NSF) Graduate Student Research Fellowship	2000-2003

Peer-Reviewed Journal Articles

31. M. S. Riazi, E. Songhori, A. - R. Sadeghi, T. Schneider, and F. Koushanfar, "Toward Practical Secure Stable Matching," *Proceedings on Privacy Enhancing Technologies (PoPETs)*, vol. 2017, issue 1, Jan 2017.
30. B. D. Rouhani, A. Mirhoseini, E. Songhori, and F. Koushanfar. "Automated Real-Time Analysis of Streaming Big and Dense Data on Reconfigurable Platforms." *ACM Transactions on Reconfigurable Technology and Systems (TRETs)*, under minor revision for publication, 2016.
29. A. Mirhoseini, B. D. Rouhani, E. M. Songhori, and F. Koushanfar, "Chime: Checkpointing long computations on intermittently energized IoT devices," *IEEE Transactions on Multi-Scale Computing Systems (TMSCS)*, vol. 2, issue 99, Jan 2016.
28. S. U. Hussain, M. Majzoobi, and F. Koushanfar, "A Built-In-Self-Test Scheme for Online Evaluation of Physical Unclonable Functions and True Random Number Generators," *IEEE Transactions on Multi-Scale Computing Systems (TMSCS)*, vol. 2, no. 99, Jan 2016.
27. S. Chung, J. Kong, and F. Koushanfar, "An Energy-efficient Last-level Cache Architecture for Process Variation-tolerant 3D Microprocessors," *IEEE Trans. on Computers*, vol. 64, no. 9, pp. 2460–2475, Sept 2015.
26. A. Mirhoseini, M. Potkonjak, and F. Koushanfar, "Phase Change Memory Write Cost Minimization by Data Encoding," *IEEE Journal on Emerging and Selected Topics in Circuits and Systems (JETCAS), Special Issue on Computing in Emerging Technologies*, vol. 5, no. 1, pp. 51–63, Mar 2015.
25. A. N. Nowroz, K. Hu, F. Koushanfar, and S. Reda, "Novel Techniques for High-sensitivity Hardware Trojan Detection using Thermal and Power Maps," *IEEE Trans. on Computer-Aided Design of Integrated Circuits and Systems (TCAD)*, vol. 33, no. 12, pp. 1792 – 1805, Dec 2014.
24. M. Rostami, F. Koushanfar, and R. Karri, "A Primer on Hardware Security: Models, Methods, and Metrics," *Proceedings of the IEEE*, vol. 102, no. 8, pp. 1283 – 1295, Aug 2014.
23. C. Herder, M.-D. Yu, F. Koushanfar, and S. Devadas, "Physical Unclonable Functions and Applications: A Tutorial," *Proceedings of the IEEE*, vol. 102, no. 8, pp. 1126–1141, Aug 2014.
22. J. Kong and F. Koushanfar, "Processor-based Strong Physical Unclonable Functions with Aging-based Response Tuning," *IEEE Transactions on Emerging Topics in Computing (JETC)*, vol. 2, pp. 16–29, Mar 2014.
21. M. Rostami, M. Majzoobi, F. Koushanfar, D. Wallach, and S. Devadas, "Robust and Reverse-Engineering Resilient PUF Authentication and Key-Exchange by Substring Matching," *IEEE Transactions on Emerging Topics in Computing (JETC)*, vol. 2, no. 1, pp. 37–49, Mar 2014.
20. A. Munir, A. Gordon-Ross, S. Ranka, and F. Koushanfar, "A Queueing Theoretic Approach for Performance Evaluation of Low-Power Multi-core Embedded Systems," *Elsevier Journal of Parallel and Distributed Computing (JPDC)*, vol. 74, no. 1, pp. 1872 – 1890, Jan 2014.
19. A. Munir, F. Koushanfar, A. Gordon-Ross, and S. Ranka, "High-performance Optimizations on Tiled many-core Embedded Systems: A Matrix Multiplication Case Study," *The Journal of Supercomputing*, vol. 66, no. 1, pp. 431–487, Apr 2013.
18. Y.-K. Chen, A.-Y. Wu, M. A. Bayoumi, and F. Koushanfar, "Editorial: Low-power, Intelligent, and Secure Solutions for Realization of Internet of Things," *IEEE Journal on Emerging and Selected Topics in Circuits and Systems (JETCAS)*, vol. 3, no. 1, pp. 1–4, Mar 2013.
17. N. Kiyavash, F. Koushanfar, T. P. Coleman, and M. Rodrigues, "A Timing Channel Spyware for the CSMA/CA Protocol," *IEEE Transactions on Information Forensics and Security (TIFS)*, vol. 8, no. 3, pp. 477 – 487, Mar 2013.
16. M. Majzoobi, J. Kong, and F. Koushanfar, "Low-power Resource Binding by Postsilicon Customization," *ACM Transactions on Design Automation of Electronic Systems (TODAES)*, vol. 18, no. 2, p. 26:1–26:22, Mar 2013.
15. S. Wei, A. Nahapetian, M. Nelson, F. Koushanfar, and M. Potkonjak, "Gate Characterization using Singular Value Decomposition: Foundations and Applications," *IEEE Transactions on Information Forensics and Security (TIFS)*, vol. 7, no. 2, pp. 765 – 773, Apr 2012.

14. F. Koushanfar, "Provably Secure Active IC Metering Techniques for Piracy Avoidance and Digital Rights Management," *IEEE Transactions on Information Forensics and Security (TIFS)*, vol. 7, no. 1, pp. 51 – 63, Feb 2012.
13. F. Koushanfar and A. Mirhoseini, "A Unified Framework for Multimodal Submodular Integrated Circuits Trojan Detection," *IEEE Transactions on Information Forensics and Security (TIFS)*, vol. 6, no. 1, pp. 162 –174, Mar 2011.
12. M. Majzooobi and F. Koushanfar, "Time-bounded Authentication of FPGAs," *IEEE Transactions on Information Forensics and Security (TIFS)*, vol. 6, no. 3, pp. 1123–1135, Aug 2011.
11. J. A. Roy, F. Koushanfar, and I. L. Markov, "Ending Piracy of Integrated Circuits," *IEEE Computer*, vol. 43, no. 10, pp. 30 – 38, Oct 2010.
10. F. Koushanfar, M. Majzooobi, and M. Potkonjak, "Nonparametric Combinatorial Regression for Shape Constrained Modeling," *IEEE Trans. On Signal Processing*, vol. 58, no. 2, pp. 626 – 637, Aug 2010.
9. M. Tehranipoor and F. Koushanfar, "Guest editors' introduction: Confronting the Hardware Trustworthiness Problem," *IEEE Design & Test of Computers*, vol. 27, no. 1, pp. 8 – 9, Jan 2010.
8. M. Tehranipoor and F. Koushanfar, "A Survey of Hardware Trojan Taxonomy and Detection," in *IEEE Design & Test of Computers*, vol. 27, no. 1, Jan 2010, pp. 10–25.
7. M. Majzooobi, F. Koushanfar, and M. Potkonjak, "Techniques for Design and Implementation of Secure Reconfigurable PUFs," *ACM Trans. on Reconfigurable Technology and Systems (TRETs)*, vol. 2, no. 1, p. 5:1–5:33, Mar 2009.
6. F. Koushanfar, A. Davare, D.T. Nguyen, A.L. Sangiovanni-Vincentelli, and M. Potkonjak, "Techniques for Maintaining Connectivity in Wireless Ad-hoc Networks Under Energy Constraints," *ACM Trans. on Embedded Computing Systems (TECS)*, vol. 6, no. 3, 2007.
5. S. Megerian, F. Koushanfar, M. Potkonjak, and M. Srivastava, "Worst and Best-case Coverage in Sensor Networks," *IEEE Trans. on Mobile Computing*, vol. 4, pp. 84 – 92, Jan 2005.
4. F. Koushanfar, I. Hong, and M. Potkonjak, "Behavioral Synthesis Techniques for Intellectual Property Protection," *ACM Trans. Design Automation of Electronic Systems (TODAES)*, vol. 10, no. 3, pp. 523 – 545, Jul 2005.
3. J. Wong, F. Koushanfar, S. Megerian, and M. Potkonjak, "Probabilistic Constructive Optimization Techniques," *IEEE Trans. of Computer Aided Designs (TCAD)*, vol. 23, pp. 859–868, 2004.
2. S. Megerian, F. Koushanfar, G. Qu, G. Veltri, and M. Potkonjak, "Exposure in Wireless Sensor Networks: Theory and Practical Solutions," *ACM Journal of Wireless Networks*, vol. 8, pp. 443 – 454, Sep 2002.
1. F. Koushanfar, D. Kirovski, I. Hong, M. Potkonjak, and M. Papaefthymiou, "Symbolic Debugging of Embedded Hardware and Software," *IEEE Transactions on Computer-Aided Design*, vol. 20, pp. 392–401, Mar 2001.

Conference Proceedings

102. A. Mirhoseini, B. D. Rouhani, E. M. Songhori, and F. Koushanfar, "ExtDict: Extensible Dictionaries for Data- and Platform-Aware Large-Scale Learning," *IEEE International Parallel & Distributed Processing Symposium (IPDPS)*, in press, 2017.
101. B. D. Rouhani, A. Mirhoseini, and F. Koushanfar, "TinyDL: Just-In-Time Deep Learning Solution For Constrained Embedded Systems," *IEEE International Symposium on Circuits and Systems (ISCAS)*, in press, 2017.
100. M. Samragh, M. Imani, F. Koushanfar, and T. Rosing, "LookNN: Neural Network with No Multiplication," *Design, Automation & Test in Europe (DATE)*, in press, 2017.
99. M. S. Riazi, B. Chen, A. Shrivastava, D. Wallach, and F. Koushanfar, "Sub-linear Privacy-preserving Search with Untrusted Server and Semi-honest Parties," *arXiv*, in press, 2016.
98. B. D. Rouhani, A. Mirhoseini, and F. Koushanfar, "DeLight: Adding Energy Dimension To Deep Neural Networks," in *International Symposium on Low Power Electronics and Design (ISLPED)*, 2016, pp. 112–117.

97. B. D. Rouhani, A. Mirhoseini, and F. Koushanfar, "Going deeper than deep learning for massive data analytics under physical constraints," Eleventh IEEE/ACM/IFIP International Conference on Hardware/Software Codesign and System Synthesis, in press, 2016.
96. A. Mirhoseini, B. D. Rouhani, E. M. Songhori, and F. Koushanfar, "Perform-ML: Performance Optimized Machine Learning by Platform and Content Aware Customization," Design Automation Conference (DAC), in press, 2016.
95. S. U. Hussain, and F. Koushanfar, "Privacy Preserving Localization for Smart Automotive Systems," Design Automation Conference (DAC), in press, 2016.
94. E. M. Songhori, S. Zeitouni, G. Dessouky, T. Schneider, A. - R. Sadeghi, and F. Koushanfar, "GarbledCPU: A MIPS Processor for Secure Computation in Hardware," Design Automation Conference (DAC), in press, 2016.
93. T. Abera, N. Asokan, L. Davi, F. Koushanfar, A. Paverd, A. - R. Sadeghi, and G. Tsudik, "INVITED: Things, Trouble, Trust: On Building Trust in IoT Systems", Design Automation Conference (DAC), in press, 2016.
92. Y. Zhang, and F. Koushanfar, "Robust Privacy-Preserving Fingerprint Authentication," IEEE International Symposium on Hardware Oriented Security and Trust (HOST), in press, 2016.
91. M. S. Riazi, N. K. R. Dantu, V. L. N. Gattu, and F. Koushanfar, "GenMatch: Secure DNA Compatibility Testing", IEEE International Symposium on Hardware Oriented Security and Trust (HOST), in press, 2016.
90. A. Mirhoseini, A. - R. Sadeghi, and F. Koushanfar, "CryptoML: Secure Outsourcing of Big Data Machine Learning Applications," IEEE International Symposium on Hardware Oriented Security and Trust (HOST), in press, 2016.
89. F. Koushanfar, A. Mirhoseini, G. Qu, and Z. Zhang, "DA Systemization of Knowledge: A Catalog of Prior Forward-Looking Initiatives," (invited) IEEE/ACM International Conference on Computer-Aided Design (ICCAD), pp.. 255–262 , 2015.
88. A. B. Kahng, and F. Koushanfar, "Evolving EDA Beyond its E-Roots: An Overview," (invited) IEEE/ACM International Conference on Computer-Aided Design (ICCAD), pp. 247-254, 2015.
87. E. Songhori, S.U. Hussain, A-R. Sadeghi, T. Schneider, and F. Koushanfar, "TinyGarble: Highly Compressed and Scalable Sequential Garbled Circuits," in *IEEE Symposium on Security and Privacy (S&P)*, pp. 411–428, 2015.
86. B. Rouhani, E. Songhori, A. Mirhoseini, and F. Koushanfar, "SSketch: An Automated Framework for Streaming Sketch-based Analysis of Big Data on FPGA", in *International Symposium on Field-Programmable Custom Computing Machines (FCCM)*, in press, 2015.
85. M. Miettinen, M. Sobhani, T.D. Nguyen, J. Rios, S. Yellapantula, N. Asokan, A-R. Sadeghi, and F. Koushanfar, "I Know Where You are: Proofs of Presence Resilient to Malicious Provers," in *ACM Symposium on Information, Computer and Communications Security (ASIACCS)*, pp. 567–577, 2015.
84. E. Songhori, S.U. Hussain, A-R. Sadeghi, and F. Koushanfar, "Compacting privacy-preserving k-nearest neighbor search using logic synthesis," in *Design Automation Conference (DAC)*, no. 36, 2015.
83. E. Songhori, A. Mirhoseini, F. Koushanfar, "AHEAD: Automated Framework for Hardware Accelerated Iterative Data Analysis," in *Design, Automation & Test in Europe (DATE)*, pp. 942–947, 2015.
82. S. U. Hussain, S. Yellapantula, M. Majzoobi, and F. Koushanfar, "BIST-PUF: Online, Hardware-based Evaluation of Physically Unclonable Circuit Identifiers," in *International Conference on Computer-Aided Design (ICCAD)*, Nov 2014, pp. 162–169.
81. D. Shahrjerdi, J. Rajendran, S. Garg, F. Koushanfar, and R. Karri, "Shielding and Securing Integrated Circuits with Sensors," in *International Conference on Computer-Aided Design (ICCAD)*, Nov 2014, pp. 170–174.
80. J. Kong, F. Koushanfar, P. K. Pendyala, A.-R. Sadeghi, and C. Wachsmann, "PUFatt: Embedded Platform Attestation based on Novel Processor-based PUFs," in *Design Automation Conference (DAC) 2014, Best paper candidate*, Jun 2014, pp. 1–6.
79. M. Rostami, J. B. Wendt, M. Potkonjak, and F. Koushanfar, "Quo Vadis, PUF? Trends and Challenges of Emerging Physical-Disorder based Security," in *Design, Automation & Test in Europe (DATE)*, Mar 2014, pp. 1–6.

78. A. Munir and F. Koushanfar, "D2Cyber: A Design Automation Tool for Dependable Cybercars," in *Design, Automation & Test in Europe (DATE)*, Mar 2014, pp. 1–4.
77. J. B. Wendt, F. Koushanfar, and M. Potkonjak, "Techniques for Foundry Identification," in *Design Automation Conference (DAC)*, Jun 2014, pp. 1–6.
76. A. Munir, F. Koushanfar, H. Seudié, and A.-R. Sadeghi, "Cycar'2013: First international academic workshop on security, privacy and dependability for cybervehicles," in *ACM Conference on Computer & Communications Security (CCS)*, Nov 2013, pp. 1481–1482.
75. M. Rostami, F. Koushanfar, J. Rajendran, and R. Karri, "Hardware Security: Threat Models and Metrics," in *International Conference on Computer-Aided Design (ICCAD)*, Nov 2013, pp. 819–823.
74. M. Rostami, A. Juels, and F. Koushanfar, "Heart-to-Heart (H2H): Authentication for Implanted Medical Devices," in *ACM Conference on Computer & Communications Security (CCS)*, Nov 2013, pp. 1099–1112.
73. Y. Yao, M.-B. Kim, J. Li, I. L. Markov, and F. Koushanfar, "ClockPUF: Physical Unclonable Functions based on Clock Networks," in *Design, Automation & Test in Europe (DATE)*, Mar 2013, pp. 422–427.
72. K. Hu, A. N. Nowroz, S. Reda, and F. Koushanfar, "High-sensitivity Hardware Trojan Detection using Multi-modal Characterization," in *Design, Automation & Test in Europe (DATE)*, Mar 2013, pp. 1271 – 1276.
71. A. Mirhoseini, E. M. Songhori, and F. Koushanfar, "Idetic: A High-level Synthesis Approach for enabling Long Computations on Transiently-powered ASICs," in *Pervasive Computing and Communication conference (PerCom)*, Mar 2013, pp. 216–224.
70. A. Mirhoseini, E. M. Songhori, and F. Koushanfar, "Automated Checkpointing for Enabling Intensive Applications on Energy Harvesting Devices," in *International Symposium on Low Power Electronics and Design (ISLPED)*, Sep 2013, pp. 27–32.
69. M. Rostami, W. Bursleson, A. Juels, and F. Koushanfar, "Balancing Security and Utility in Medical Devices?" in *Design Automation Conference (DAC)*, Jun 2013, pp. 1–6.
68. S. Wei, K. Li, F. Koushanfar, and M. Potkonjak, "Provably Complete Hardware Trojan Detection using Test Point Insertion," in *International Conference on Computer-Aided Design (ICCAD)*, Nov 2012, pp. 51–63.
67. F. Koushanfar, S. Fazzari, C. McCants, W. Bryson, M. Sale, P. Song, and M. Potkonjak, "Can EDA Combat the rise of Electronic Counterfeiting?" in *Design Automation Conference (DAC)*, Jun 2012, pp. 133–138.
66. A. Mirhoseini, M. Potkonjak, and F. Koushanfar, "Coding-based Energy Minimization for Phase Change Memory," in *Design Automation Conference (DAC)*, Jun 2012, pp. 68–76.
65. F. Koushanfar, A.-R. Sadeghi, and H. Seudie, "EDA for Secure and Dependable Cybercars: Challenges and Opportunities," in *Design Automation Conference (DAC)*, Jun 2012, pp. 220–228.
64. S. Wei, K. Li, F. Koushanfar, and M. Potkonjak, "Hardware Trojan Horse Benchmark via Optimal Creation and Placement of Malicious Circuitry," in *Design Automation Conference (DAC)*, Jun 2012, pp. 90–95.
63. M. Majzoobi, M. Rostami, F. Koushanfar, D. S. Wallach, and S. Devadas, "Slender PUF Protocol: A Lightweight, Robust, and Secure Authentication by Substring Matching," in *International Workshop on Trustworthy Embedded Devices*, May 2012, pp. 33–44.
62. F. Koushanfar and A. Mirhoseini, "Hybrid Heterogeneous Energy Supply Networks," in *IEEE International Symposium on Circuits and Systems (ISCAS)*, May 2011, pp. 2489–2492.
61. E. Dyer, M. Majzoobi, and F. Koushanfar, "Hybrid Modeling of Non-stationary Process Variations," in *Design Automation Conference (DAC)*, Jun 2011, pp. 194–199.
60. A. Mirhoseini and F. Koushanfar, "Hypoenergy: Hybrid Supercapacitor-battery Power-supply Optimization for Energy Efficiency," in *Design, Automation & Test in Europe (DATE)*, Mar 2011, pp. 887–890.
59. S. Wei, F. Koushanfar, and M. Potkonjak, "Integrated Circuit Digital Rights Management Techniques using Physical Level Characterization," in *ACM workshop on Digital rights management (DRM)*, Oct 2011, pp. 3–14.
58. F. Koushanfar, "Integrated Circuits Metering for Piracy Protection and Digital Rights Management: An Overview," in *GLSVLSI*, May 2011, Invited Paper, pp. 449–454.

57. A. Mirhoseini and F. Koushanfar, "Learning to Manage Combined Energy Supply Systems," in *International Symposium on Low Power Electronics and Design (ISLPED)*, Aug 2011, pp. 229–234.
56. M. Majzoobi, G. Ghiaasi-Hafezi, F. Koushanfar, and S. Nassif, "Ultra-low Power Current-based PUF," in *IEEE International Symposium on Circuits and Systems (ISCAS)*, May 2011, pp. 2071–2074.
55. M. Majzoobi, F. Koushanfar, and S. Devadas, "FPGA PUF using Programmable Delay Lines," in *IEEE Workshop on Information Forensics and Security*, Dec 2010, pp. 1–6.
54. F. Koushanfar, "Hierarchical Hybrid Power Supply Networks," in *Design Automation Conference (DAC)*, Jun 2010, pp. 629–630.
53. F. Koushanfar and Y. Alkabani, "Provably Secure Obfuscation of Diverse Watermarks for Sequential Circuits," in *International Symposium on Hardware-Oriented Security and Trust (HOST)*, Jun 2010, pp. 42–47.
52. M. Majzoobi, E. Dyer, A. Elnably, and F. Koushanfar, "Rapid FPGA Characterization using Clock Synthesis and Signal Sparsity," in *International Test Conference (ITC)*, Nov 2010, pp. 457–466.
51. A. Mirhoseini, Y. Alkabani, and F. Koushanfar, "Real Time Emulations: Foundation and Applications," in *Design Automation Conference (DAC)*, Jun 2010, p. 623–624.
50. Y. Alkabani and F. Koushanfar, "Consistency-based Characterization for IC Trojan Detection," in *International Conference on Computer Aided Design (ICCAD)*, Nov 2009, pp. 123–127.
49. F. Koushanfar and D. Shamsi, "The Challenges of Model Objective Selection and Estimation for Ad-hoc Network Data Sets," *Institute of Mathematical Statistics (IMS) Lecture Notes-Monograph Series (LNMS)*, vol. 57, pp. 332–345, 2009.
48. Y. Alkabani, F. Koushanfar, and M. Potkonjak, "N-version Temperature-aware Scheduling and Binding," in *International Symposium on Low Power Electronics and Designs (ISLPED)*, 2009, pp. 331–334.
47. A. Candore, O. Kocabas, and F. Koushanfar, "Robust Stable Radiometric Fingerprinting for Wireless Devices," in *IEEE International Workshop on Hardware-Oriented Security and Trust*, 2009, pp. 43–49.
46. Y. Alkabani, F. Koushanfar, N. Kiyavash, and M. Potkonjak, "Trusted Integrated Circuits: A Nondestructive Hidden Characteristics Extraction Approach," in *Information Hiding (IH)*, 2008, pp. 102–117.
45. M. Potkonjak and F. Koushanfar, "(Bio)-behavioral CAD," in *Design Automation Conference (DAC)*, 2008, pp. 351–352.
44. Y. Alkabani and F. Koushanfar, "Active Control and Digital Rights Management of Integrated Circuit IP Cores," in *Compilers, Architectures, and Synthesis for Embedded Systems (CASES)*, 2008.
43. J. Roy, F. Koushanfar, and I. Markov, "Epic: Ending Piracy of Integrated Circuits," in *Design Automation & Test in Europe (DATE)*, 2008.
42. Y. Alkabani, T. Massey, F. Koushanfar, and M. Potkonjak, "Input Vector Control for Post-Silicon Leakage Current Minimization in the Presence of Manufacturing Variability," in *Design Automation Conference (DAC)*, Jun 2008, pp. 606–609.
41. M. Majzoobi, F. Koushanfar, and M. Potkonjak, "Lightweight Secure PUFs," in *International Conference on Computer-Aided Design (ICCAD)*, 2008, pp. 670–673.
40. Y. Alkabani and F. Koushanfar, "N-variant IC Design: Methodology and Applications," in *Design Automation Conference (DAC)*, 2008, pp. 546–551.
39. D. Shamsi, P. Boufounos, and F. Koushanfar, "Noninvasive Leakage Power Tomography of Integrated Circuits by Compressive Sensing," in *International symposium on Low power electronics and design (ISLPED)*, 2008, pp. 341–346.
38. F. Koushanfar, P. Boufounos, and D. Shamsi, "Post-silicon Timing Characterization by Compressed Sensing," in *International Conference on Computer Aided Design (ICCAD)*, 2008, pp. 185–189.
37. J. Roy, F. Koushanfar, and I. Markov, "Protecting Bus-based Hardware IP by Secret Sharing," in *Design Automation Conference (DAC)*, 2008, pp. 846–851.

36. M. Majzoobi, F. Koushanfar, and M. Potkonjak, "Testing Techniques for Hardware Security," in *International Test Conference (ITC)*, 2008, pp. 1–10.
35. D. Shamsi, F. Koushanfar, and M. Potkonjak, "Challenging Benchmark for Location Discovery in Ad-hoc Networks," in *ACM international symposium on Mobile ad hoc networking and computing (MobiHoc)*, 2008, p. 361.
34. J. A. Roy, F. Koushanfar, and I. L. Markov, "Extended Abstract: Circuit CAD Tools as a Security Threat," in *IEEE International Workshop on Hardware-Oriented Security and Trust (HOST)*, 2008, pp. 65–66.
33. Y. Alkabani and F. Koushanfar, "Extended Abstract: Designer's Hardware Trojan Horse," in *IEEE International Workshop on Hardware-Oriented Security and Trust (HOST)*, 2008, pp. 82–83.
32. N. Kiyavash and F. Koushanfar, "Anti-collusion Position Estimation in Wireless Sensor Networks," in *IEEE Mobile Ad-hoc and Sensor Systems (MASS)*, 2007.
31. F. Koushanfar and M. Potkonjak, "CAD-based Security, Cryptography, and Digital Rights Management," in *Design Automation Conference (DAC)*, 2007.
30. F. Koushanfar and M. Potkonjak, "A General Framework for Spatial Correlation Modeling in VLSI Design," in *Design Automation Conference (DAC)*, 2007, pp. 268–269.
29. F. Koushanfar and M. Potkonjak, "Hardware Security: Preparing Students for the Next Design Frontiers," in *IEEE International Conference on Microelectronic Systems Education*, 2007.
28. F. Koushanfar, M. Potkonjak, "Integration of Statistical Techniques in the Design Curriculum," in *IEEE International Conference on Microelectronic Systems Education*, 2007, pp. 153–154.
27. S. So, F. Koushanfar, A. Kosterev, and F. Tittel, "Laserspecks: Laser Spectroscopic Trace-gas Sensor Networks - Sensor Integration and Applications," in *Information Processing in Sensor Networks (IPSN)*, 2007, pp. 226–235.
26. Y. Alkabani, F. Koushanfar, and M. Potkonjak, "Remote Activation of ICs for Piracy Prevention and Digital Right Management," in *International Conference on Computer Aided Design (ICCAD)*, 2007, pp. 674–677.
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Book Chapters

10. U. Rührmair, X. Xu, J. Sölter, A. Mahmoud, M. Majzoobi, F. Koushanfar, and W. Burleson, *Efficient Power and Timing Side Channels for Physical Unclonable Functions*, ser. Lecture Notes in Computer Science/Cryptographic Hardware and Embedded Systems – CHES 2014, 2014, vol. 8731.
9. M. Majzoobi, F. Koushanfar, and S. Devadas, "FPGA-based True Random Number Generation using Circuit Metastability with Adaptive Feedback Control," 2011, pp. 17–32.
8. M. Majzoobi, F. Koushanfar, and M. Potkonjak, *FPGA-oriented Security*, 2011.
7. F. Koushanfar, *Hardware Metering: A Survey*, 2011.
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1. F. Koushanfar, S. Slijepcevic, M. Potkonjak, and A. Sangiovanni-Vincentelli, *Location Discovery in Ad-hoc Wireless Sensor Networks*, 2003.

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11. J. Roy, F. Koushanfar, I. Markov, "Methods for Protecting Against Piracy of Integrated Circuits.", US Patent application 20100284539, Filed Mar 9, 2010.
10. F. Koushanfar, M. Potkonjak, "Methods and systems of digital rights management for integrated circuits," US Patent application 20100122353 A1, Filed Aug 7, 2009.
9. J. Roy, F. Koushanfar, I. Markov, "Protecting Bus-based Hardware IP by Secret Sharing.", US Patent 8732468 B2, Issued May 20, 2014.
8. M. Potkonjak, F. Koushanfar, "Controlling integrated circuits including remote activation or deactivation", US Patent 8387071 B2, Issued Feb 26, 2013.
7. M. Potkonjak, F. Koushanfar, "Identification of integrated circuits", US Patent 8620982 B2, Issued Dec 31, 2013.
6. F. Koushanfar, M. Potkonjak, "Hardware synthesis using thermally aware scheduling and binding", US Patent 8656338 B2, Issued Feb 14, 2014.
5. M. Potkonjak, F. Koushanfar, "Identification of integrated circuits", US Patent 8788559 B2, Issued Jul 22, 2014.
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2. F. Koushanfar, M. Potkonjak, "Testing security of mapping functions", US Patent 8370787 B2, Issued Feb 5, 2013.
1. F. Koushanfar, M. Potkonjak, "Input vector selection for reducing current leakage in integrated circuits", US Patent 8443034 B2, Issued May 14, 2013.

Thesis

3. F. Koushanfar. "Ensuring Data Integrity in Sensor-based Networked Systems." Ph.D. dissertation, Electrical Engineering and Computer Science (EECS) Department, University of California, Berkeley, Dec 2005. Advisor: Prof. Alberto Sangiovanni-Vincentelli, Prof. Miodrag Potkonjak.
2. F. Koushanfar. "Statistical Modeling and Recovery of Intermittent Sensor Data Streams." M.A. thesis, Statistics Department, University of California, Berkeley, May 2005. Advisor: Prof. David Brillinger.
1. F. Koushanfar. "Iterative Error-tolerant Location Discovery in Ad-hoc Wireless Sensor Networks." M.S. thesis, Electrical Engineering (thesis joint in Computer Science), University of California, Los Angeles, 2001. Advisors: Prof. Miodrag Potkonjak, Prof. Mani Srivastava.

Professional Activities

- **Keynote Speaker (Invited)**

- ACM Workshop on Scalable Trusted Computing (ACM STC), co-located with ACM Conference on Computer and Communications Security (CCS), 2011
- **Associate Editor**
 - IEEE Transactions on Information Forensics and Security, 2012-present
 - IEEE Transactions on Very Large Scale Integration Systems (VLSI), 2009-2011
 - Ad-Hoc Networks Journal (Elsevier), 2010-2014
- **Guest Editor**
 - IEEE Transactions on Computer-Aided Design (TCAD), Hardware Security and Trust, 2015
 - Proceedings of IEEE, Special Issue on Hardware Security, 2014
 - IEEE Journal on Emerging and Selected Topics in Circuits and Systems (JETCAS), Special Issue on Low-Power, Reliable, and Secure Solutions for Realization of Internet of Things, 2012
 - IEEE Design and Test, Special Issue on Verifying Physical Trustworthiness of Integrated Circuits and Systems, January 2010
- **General Chair**
 - IEEE CANDE (Computer-Aided Network Design) Committee, 2012-present
 - IEEE International Symposium on Hardware-Oriented Security and Trust (HOST), 2014
 - ACM CCS CyCar (Workshop on Security, Privacy and Dependability for Cyber Vehicles), 2013
- **Program Chair, Treasurer, Secretary**
 - IEEE CANDE (Computer-Aided Network Design) Committee, 2009-2011
 - IEEE International Symposium on Hardware-Oriented Security and Trust (HOST), 2012-13
- **Steering Committee Member, Industrial Liaison, and publicity chair**
 - IEEE International Symposium on Hardware-Oriented Security and Trust (HOST), 2009-2011
- **IEEE Society Activities**
 - IEEE Signal Processing Society (SP) member of the Information Forensics and Security Technical Committee, 2015-Present
 - IEEE Circuits and Systems Society (CASS) representative for IEEE SYSC Technical Committee on Security and Privacy in Complex Information Systems, 2011-2013
- **Technical Program Committee (TPC) Memberships**
 - USENIX Security Symposium, 2014-2016
 - ACM/IEEE Design Automation Conference (DAC), security track chair, 2014-2016
 - Internet Society Network and Distributed System Security Symposium (NDSS), 2016
 - IEEE Symposium on Security and Privacy (Oakland, S&P), 2009, 2014-2015
 - Workshop on Cryptographic Hardware and Embedded Systems (CHES), 2014
 - ACM Conference on Computer and Communications Security (CCS), 2013
 - ACM/IEEE Design Automation Conference (DAC), 2009-2011
 - IEEE Conference on Computer Communications (INFOCOM), 2007, 2009-2012
 - Workshop on Special Aspects of Cyber Physical Systems: Trustworthy Embedded Devices (TRUSTED), 2011
 - IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS), 2010
 - IEEE Workshop on Hardware-Oriented Security and Trust (HOST), 2008-2010
 - IEEE/ACM International Conference on Computer Aided Design (ICCAD), 2007
 - IEEE International Conference on Mobile Ad-hoc and Sensor Systems (MASS), 2008

- Great Lakes Symposium on VLSI (GLVLSI), 2007-2009, 2016
- IEEE Communications Society Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON), 2007
- IEEE Statistical Signal Processing Workshop (SSP), 2007
- IEEE/ACM International Conference on Compilers, Architecture, and Synthesis for Embedded Systems (CASES), 2007

• **Reviewer for:**

- ACM Transactions on Reconfigurable Technology and Systems (TRETs)
- ACM Transactions on Embedded Computing Systems (TECS)
- ACM Transactions on Information and System Security (TISSEC)
- ACM Transactions on Design Automation of Electronic Systems (TODAES)
- IEEE Transactions on Computer Aided Design (TCAD)
- IEEE Transactions on Emerging Topics in Computing (TETC)
- IEEE Journal on Emerging and Selected Topics in Circuits and Systems (JETCAS)
- IEEE Transactions on Dependable and Secure Computing (TDSC)
- IEEE Transactions on Mobile Computing (TMC)
- ACM Transactions on Sensor Networks (TOSN)
- IEEE Transactions on Wireless Communications
- IEEE/ACM Transactions on Networking (TON)

• **Technical Advising**

- Expert Technical Advisor to Judge Ron Clark, United States District Court, 2009-2010

• **Invited talks:**

- Invited colloquium/seminar speaker at many academic institutions, including Boston U, Caltech, CMU, MIT, Purdue, Stanford, TU Darmstadt, UC Berkeley, UC Los Angeles, UC San Diego, U of Illinois Urbana-Champaign, U of Minnesota, U of Washington Seattle, and USC
- Invited speaker at major semiconductor design, research and development companies including IBM, TI and Intel, at several army workshops organized by DARPA, ARO, DoD, and Homeland Security, and at the National Security Agency (NSA)

• **Other:**

- Academic advisor, ARO Strategy Advisory Meeting, 2014
- Founder and faculty advisor, Women ExCEL (Electrical & Computer Engineering Leaders), 2008-Present
- Co-Founder and Co-PI, NSF Trust-Hub Community Research Initiative for Hardware Security and Trust, 2011-Present
- Panel member, NSF Directorate for Computer & Information Science (CISE), multiple times 2007, 2008, 2009, 2011, 2015
- Panel member, NSF Advance workshop for women in science and engineering, Rice University, 2006-2009