

**SPECIAL ISSUE**

## TRUSTWORTHY HARDWARE

*Edited by R. Karri and F. Koushanfar*

- 1126 Physical Unclonable Functions and Applications: A Tutorial**  
*By C. Herder, M.-D. Yu, F. Koushanfar, and S. Devadas*  
**|INVITED PAPER|** This paper is a tutorial on ongoing work in physical-disorder-based security, security analysis, and implementation choices.
- 1142 Public Physical Unclonable Functions**  
*By M. Potkonjak and V. Goudar*  
**|INVITED PAPER|** This paper surveys the time-bounded or public PUFs, including their design and security evaluation and the new protocols that they can support.
- 1157 Microcontrollers as (In)Security Devices for Pervasive Computing Applications**  
*By D. Strobel, D. Oswald, B. Richter, F. Schellenberg, and C. Paar*  
**|INVITED PAPER|** This paper discusses possible threats to embedded systems using two microcontroller case studies.
- 1174 Trustworthiness of Medical Devices and Body Area Networks**  
*By M. Zhang, A. Raghunathan, and N. K. Jha*  
**|CONTRIBUTED PAPER|** This paper surveys the threat landscape of medical embedded devices and the merits and shortcomings of existing defenses.
- 1189 Mobile Trusted Computing**  
*By N. Asokan, J.-E. Ekeberg, K. Kostianen, A. Rajan, C. Rozas, A.-R. Sadeghi, S. Schulz, and C. Wachsmann*  
**|INVITED PAPER|** This paper surveys the trusted computing features in mobile computing platforms.
- 1207 Counterfeit Integrated Circuits: A Rising Threat in the Global Semiconductor Supply Chain**  
*By U. Guin, K. Huang, D. DiMase, J. M. Carulli, Jr., M. Tehranipoor, and Y. Makris*  
**|INVITED PAPER|** This paper surveys the state of the art in counterfeiting and detection technologies.
- 1229 Hardware Trojan Attacks: Threat Analysis and Countermeasures**  
*By S. Bhunia, M. S. Hsiao, M. Banga, and S. Narasimhan*  
**|INVITED PAPER|** This paper is a survey of the state-of-the-art Trojan attacks, modeling, and countermeasures.
- 1248 FPGA Security: Motivations, Features, and Applications**  
*By S. M. Trimberger and J. J. Moore*  
**|INVITED PAPER|** This paper discusses all aspects of FPGA security and trust.
- 1266 Regaining Trust in VLSI Design: Design-for-Trust Techniques**  
*By J. Rajendran, O. Sinanoglu, and R. Karri*  
**|INVITED PAPER|** This paper surveys how concepts in VLSI test can be adopted in the context of hardware security and trust and design-for-trust techniques.
- 1283 A Primer on Hardware Security: Models, Methods, and Metrics**  
*By M. Rostami, F. Koushanfar, and R. Karri*  
**|INVITED PAPER|** The paper is a primer on hardware security threat models, metrics, and remedies.

**DEPARTMENTS**

- 1118 POINT OF VIEW**  
 Energy Return On Energy Invested (EROI): A Quintessential but Possibly Inadequate Metric for Sustainability in a Solar-Powered World?  
*By W. F. Pickard*
- 1123 SCANNING THE ISSUE**  
 Trustworthy Hardware  
*By R. Karri and F. Koushanfar*
- 1296 SCANNING OUR PAST**  
 STARS: Software Industry  
*By B. Grad*
- 1304 FUTURE SPECIAL ISSUES/SPECIAL SECTIONS**



**On the Cover:** On this month's cover, security issues are highlighted in general by the illustration of the Trojan horse which the Greeks used successfully to breach the city of Troy.