Special Section: IEEE Access Journal

Announcing a Special Section in **IEEE *Access***:
Security and Reliability Aware System Design for Mobile Computing Devices

Associate Editor:

Anirban Sengupta, Asst. Professor, Computer Science & Engineering, Indian Institute of Technology (IIT), Indore, India

He has more than 84 publications which includes more than 35 Patents/Journals//Book Chapters. He currently serves in Editorial Board of 4 IEEE/IET Journals. He is currently serving as Associate Editor of IET Journal on Computer & Digital Techniques, IEEE Consumer Electronics (M-CE), Associate Editor of IEEE VLSI Circuits & Systems Letter (VCAL) and Associate Editor of IEEE Access Journal. He is a regular reviewer of Elsevier Journal on Swarm and Evolutionary Computation, Elsevier Journal on Applied Soft Computing and Elsevier Journal on Expert Systems. He regularly serves as a member of the Technical Program Committee of IEEE-CS ISVLSI, ACM GLVLSI, IEEE CCECE and IEEE ICIT.

Guest Editors:

1. **Fabrizio Lombardi**, Professor, Electrical & Computer Engineering, Northeastern University, Boston, USA

Dr. Lombardi is Editor-in-Chief of IEEE Transactions on Emerging Topics in Computing. He was an Associate Editor (1996-2000) of IEEE Transactions on Computers and a Distinguished Visitor of the IEEE-CS (1990-1993). Since 2000, he has been the Associate Editor-In-Chief of IEEE Transactions on Computers. Currently, he is also an Associate Editor of the IEEE Design and Test Magazine and a Distinguished Visitor of the IEEE-CS. He is also guest editor of Special Issues in archival journals and magazines such as the IEEE Transactions on Computers, IEEE Transactions on Instrumentation and Measurement, the IEEE Micro Magazine and the IEEE Design & Test Magazine

2. **Saraju Mohanty**, Professor, Computer Science & Engineering, University of North Texas, USA

He serves on the editorial board of several international journals. He has served as a guest editor for many prestigious journals including ACM Journal on Emerging Technologies in Computing Systems (JETC) for an issue titled "New Circuit and Architecture Level Solutions for Multidiscipline Systems", August 2012, and IET Circuits, Devices & Systems (CDS) for an issue titled "Design Methodologies for Nanoelectronic Digital and Analog Circuits", September 2013. He serves on the organizing and program committees of several international conferences. He was a general chair for the IEEE-CS Symposium on VLSI (ISVLSI) 2012 and 2014. Prof. Mohanty is a senior member of IEEE and ACM.

3. **Mark Zwolinski**, Professor, Electronics and Computer Science, University of Southampton, United Kingdom

Mark Zwolinski is a full professor in Electronics and Computer Science at the University of Southampton, UK. The has published about 180 refereed conference and journal papers, as well as three books. He has supervised over 20 PhD students to completion. He was deputy head of department with responsibility for education for four and a half years until July 2015. His research interests include simulation, testing and reliability, particularly in the context of computer architecture. He is a fellow of the IET and BCS and a senior member of IEEE and ACM.

IEEE *Access* Editor in Chief: **Michael Pecht**, Professor and Director, CALCE, University of Maryland

IEEE *Access* invites manuscript submissions in the area of **Security and Reliability Aware System Design for Mobile Computing Devices.**

It is a well-known fact that due to the big increase in the demands of applications and advanced silicon technology, design productivity is failing to keep pace, especially in the domain of portable electronics. Moreover, owing to the massive complexity of modern systems-on-chip (SoC) complete in-house development is impossible, and so globalization of the design process has established itself as an inevitable solution for faster and efficient design. In this global design supply chain, the design of mobile computing devices relies heavily on reusable Intellectual Property (IP) cores as a practical solution. However, such IP cores are becoming increasingly vulnerable to malicious activities, attacks and threats due to this globalization. Any form of third party intervention in the design/process can raise grave security concerns about the system. Security issues in IP's can be either in the form of IP piracy/IP counterfeit or embedded malicious logic. The first form of security countermeasure requires anti-piracy methodologies that can nullify false claims of ownership or detect unauthorized pirated designs. The second form of threat, which is often called a 'hardware Trojan', is the act of deliberate insertion of illicit hardware into the IP design by a rogue designer or vendor, also requires detection/correction strategies as a security countermeasure.

Another important design aspect of mobile computing devices is the reliability of hardware accelerators/custom IP cores. Due to multiple factors, the reliability of digital circuits used as core computation engines in these mobile computing devices poses the risk of malfunction. For example, transient faults, permanent faults occurring due to radiation strike, IC packaging, aging of components etc. all lead to adverse effects on the reliability of the system. Moreover, in the present era, scaling of very large scale integration (VLSI) devices is aggressively performed in order to enhance the speed of operation and to lower power consumption. There are multiple mechanisms in achieving this goal such as: (i) reducing device dimensions; (ii) scaling the supply voltage; (iii) reducing the frequency of operation etc. However, such actions result in negative consequences for reliability by making the system vulnerable to various faults. The current challenge is to incorporate reliability as a design metric during multi-objective optimization of hardware accelerators/IP cores/application specific processors.
Besides the above, another design aspect for portable electronic devices is performance. Due to the never-ending demands of the consumer electronics market, more and more applications are required to execute simultaneously. This performance is achieved by a combination of hardware accelerators and general purpose processors working in tandem. However, reduction of delay/latency is the key in such a scenario. Therefore, performance enhancement is mandatory besides security and reliability in the consumer electronics market.

This Special Section in IEEE *Access* solicits submissions that deal with possible directions in security and reliability in mobile computing devices. Within this theme, we are soliciting technical papers that address these objectives in conjunction with performance aware system design methods.

We highly recommend the submission of multimedia with each article as it significantly increases the visibility and usage of articles.

Paper submission: Contact Associate Editor and submit manuscript to:
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