

Hardware Verification for Designing Trustworthy Systems



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Abstract

Modern electronic systems consist of hundreds of diverse components with billions of transistors. In order to design reliable and trustworthy systems, it is critical to verify functional behaviors as well as non-functional requirements, such as security vulnerabilities, thermal/energy constraints, and real-time guarantees. In this talk, I will discuss system-on-chip verification using an effective combination of formal methods, pre-silicon validation, post-silicon debug, and side-channel analysis. I will conclude with a discussion on how to extend these ideas for verifying bioinformatics applications, AI platforms as well as quantum systems.

Bio

Prabhat Mishra is a Professor in the Department of Computer and Information Science and Engineering at the University of Florida. He received his Ph.D. in Computer Science from the University of California at Irvine. His research interests include design and verification of embedded systems, hardware security and trust, formal verification, system-on-chip validation, machine learning, and quantum computing. He has published 9 books, 35 book chapters, 26 patents, and more than 250 research articles in premier international journals and conferences. His research has been recognized by several awards including the NSF CAREER Award, IBM Faculty Award, three best paper awards, eleven best paper nominations, and EDAA Outstanding Dissertation Award. He currently serves as an Associate Editor of ACM Transactions on Embedded Computing Systems and ACM Transactions on Design Automation of Electronic Systems. He is an IEEE Fellow, a Fellow of the American Association for the Advancement of Science (AAAS), and an ACM Distinguished Scientist.

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