A Survey of Hardware Trojan with Case Studies on FPGAs

Hongyuan Ding and Miaoqing Huang, University of Arkansas

Due to the globalization of the Integrated Circuit (IC) manufacturing industry where outsourced alternatives have gradually replaced in-house processes, hardware Trojans increasingly become a threat to both commercial and military applications and systems. A hardware Trojan is a malicious modification of the circuitry of an IC. A hardware Trojan can either leak confidential information, or disable or destroy the entire chip or its constituent components. In this survey, a hardware Trojan taxonomy is provided for a better understanding of the existing and potential threats. In addition, Trojan detection methodologies are introduced at both the chip level and the architectural level. A recent progress of our research is presented as a case study to demonstrate how hardware Trojan is designed and affects the performance of multiprocessor system-on-chip (MPSoC) on FPGAs.