1. Power supply signal calibration techniques for improving detection resolution to hardware trojans

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Abstract: Chip design and fabrication is becoming increasingly vulnerable to malicious activities and alternations with globalization. An adversary can introduce a Trojan designed to disable and/or destroy a system at some future time (Time Bomb) or the Trojan may serve to leak confidential information covertly to the adversary. This paper proposes a taxonomy for Trojan classification and then describes a statistical approach for detecting hardware Trojans that is based on the analysis of an ICs power supply transient signals. A key component to improving the resolution of power analysis techniques to Trojans is calibrating for process and test environment (PE) variations. The main focus of this research is on the evaluation of four signal calibration techniques, each designed to reduce the adverse impact of PE variations on our statistical Trojan detection method.
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