1. Record Nr. UNINA9910427734503321

Autore	Henkel Jörg
Titolo	Dependable embedded systems / / editors, Jörg Henkel, Nikil Dutt
Pubbl/distr/stampa	Springer Nature, 2021 Cham : , : Springer International Publishing : , : Imprint : Springer, , 2021
ISBN	3-030-52017-X
Edizione	[1st edition 2021.]
Descrizione fisica	1 online resource (XIII, 608 p. 293 illus., 250 illus. in color.)
Collana	Embedded systems (Springer (Firm)) , 2193-0155
Disciplina	621.3815
Soggetti	Electronic circuits Computer engineering Internet of things Embedded computer systems Microprocessors
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction -- Design of efficient, dependable SoCs based on cross-layer-reliability approach with emphasis on wireless communication as application and DRAM memories -- CRAU: Compositional System-Level Reliability Analysis in the Presence of Uncertainties -- Semantics-aware Soft Error Handling for Embedded Systems using Compiler-OS Interaction -- ARES: Self-Adaptive Coarse-Grained Reconfigurable Architectures as Reliability Enhancers in Embedded Systems -- Cross-Layer Techniques for Dependable Software Execution on Embedded Systems -- Ambrosia: Cross-layer Modeling and Mitigation of Aging Effects in Embedded Systems -- Cross-Layer Dependability for Embedded Hardware/Software Systems -- Fault-Tolerant Computing with Heterogeneous Hardware/Software Hardening Modes -- Robust Computing for Machine Learning-Based Systems -- Hardening embedded system software -- LIFT: Lifting Device-Level Characteristics for Error Resilient System Level Design: A Crosslayer Approach -- VirTherm-3D: Communication Virtualization Enabling System Management for Dependable 3D MPSoCs -- OTERA: Online Test Strategies for Reliable Reconfigurable Architectures -- Variability-

Aware Software: Recent Results and Contributions -- EM Lifetime Constrained Optimization for Multi-Segment Power Grid Networks -- Lightweight Software-Assisted Memory Error Correction -- Reliability-Driven Resource Management for Multi-Core Systems-on-Chip -- Monitor Circuits for Device-Circuit Interaction -- PERCIES: Providing Efficient Reliability in Critical Embedded Systems.

Sommario/riassunto

This Open Access book introduces readers to many new techniques for enhancing and optimizing reliability in embedded systems, which have emerged particularly within the last five years. This book introduces the most prominent reliability concerns from today’s points of view and roughly recapitulates the progress in the community so far. Unlike other books that focus on a single abstraction level such circuit level or system level alone, the focus of this book is to deal with the different reliability challenges across different levels starting from the physical level all the way to the system level (cross-layer approaches). The book aims at demonstrating how new hardware/software co-design solution can be proposed to ef-fectively mitigate reliability degradation such as transistor aging, processor variation, temperature effects, soft errors, etc. Provides readers with latest insights into novel, cross-layer methods and models with respect to dependability of embedded systems; Describes cross-layer approaches that can leverage reliability through techniques that are pro-actively designed with respect to techniques at other layers; Explains run-time adaptation and concepts/means of self-organization, in order to achieve error resiliency in complex, future many core systems.