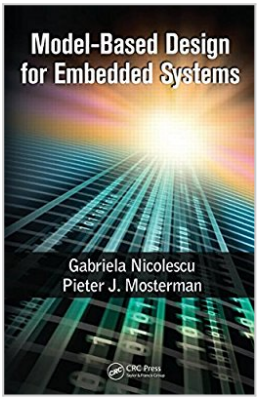

Model-Based Design for Embedded Systems (Computational Analysis, Synthesis, and Design of Dynamic Systems)

By Gabriela Nicolescu, Pieter J. Mosterman

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The demands of increasingly complex embedded systems and associated performance computations have resulted in the development of heterogeneous computing architectures that often integrate several types of processors, analog and digital electronic components, and mechanical and optical components?all on a single chip. As a result, now the most prominent challenge for the design automation community is to efficiently plan for such heterogeneity and to fully exploit its capabilities.

A compilation of work from internationally renowned authors, **Model-Based Design for Embedded Systems** elaborates on related practices and addresses the main facets of heterogeneous model-based design for embedded systems, including the current state of the art, important challenges, and the latest trends. Focusing on computational models as the core design artifact, this book presents the cutting-edge results that have helped establish model-based design and continue to expand its parameters.

The book is organized into three sections: *Real-Time and Performance Analysis in Heterogeneous Embedded Systems, Design Tools and Methodology for Multiprocessor System-on-Chip,* and *Design Tools and Methodology for Multidomain Embedded Systems*. The respective contributors share their considerable expertise on the automation of design refinement and how to relate properties throughout this refinement while enabling analytic and synthetic qualities. They focus on multi-core methodological issues, real-time analysis, and modeling and validation, taking into account how optical, electronic, and mechanical components often interface.

Model-based design is emerging as a solution to bridge the gap between the availability of computational capabilities and our inability to make full use of them yet. This approach enables teams to start the design process using a high-level model that is gradually refined through abstraction levels to ultimately yield

a prototype. When executed well, model-based design encourages enhanced performance and quicker time to market for a product. Illustrating a broad and diverse spectrum of applications such as in the automotive aerospace, health care, consumer electronics, this volume provides designers with practical, readily adaptable modeling solutions for their own practice.

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