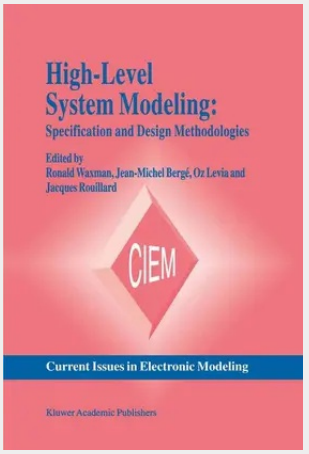
Waxman / Bergé / Levia

High-Level System Modeling

Specification and Design Methodologies



In system design, generation of high-level abstract models that can be closely associated with evolving lower-level models provides designers with the ability to incrementally `test' an evolving design against a model of a specification. Such high-level models may deal with areas such as performance, reliability, availability, maintainability, and system safety. Abstract models also allow exploration of the hardware versus software design space in an incremental fashion as a fuller, detailed design unfolds, leaving behind the old practice of hardware-software binding too early in the design process. Such models may also allow the inclusion of non-functional aspects of design (e.g. space, power, heat) in a simulatable information model dealing with the system's operation. This book addresses Model Generation and Application specifically in the following domains:

- Specification modeling (linking object/data modeling, behavior modeling, and activity modeling).
- Operational specification modeling (modeling the way the system is supposed to operate - from a user's viewpoint).
- Linking non-functional parameters with specification models.
- Hybrid modeling (linking performance and functional elements).
- Application of high-level modeling to hardware/software approaches.
- Mathematical analysis techniques related to the modeling approaches.
- Reliability modeling.
- Applications of High Level Modeling.
- Reducing High Level Modeling to Practice.

describes the latest research and practice in the modeling of electronic systems and as such is an important update for all researchers, design engineers and technical managers working in design automation and circuit design.

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