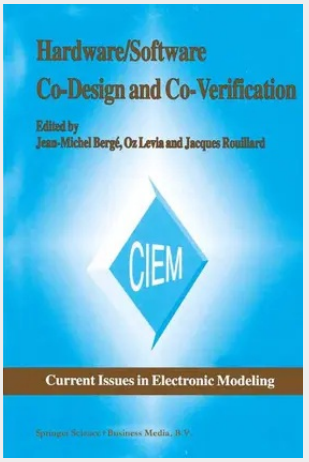
Bergé / Levia / Rouillard

Hardware/Software Co-Design and Co-Verification



Co-Design is the set of emerging techniques which allows for the simultaneous design of Hardware and Software. In many cases where the application is very demanding in terms of various performances (time, surface, power consumption), trade-offs between dedicated hardware and dedicated software are becoming increasingly difficult to decide upon in the early stages of a design. Verification techniques - such as simulation or proof techniques - that have proven necessary in the hardware design must be dramatically adapted to the simultaneous verification of Software and Hardware.
Describing the latest tools available for both Co-Design and Co-Verification of systems, offers a complete look at this evolving set of procedures for CAD environments. The book considers all trade-offs that have to be made when co-designing a system. Several models are presented for determining the optimum solution to any co-design problem, including partitioning, architecture synthesis and code generation.
When deciding on trade-offs, one of the main factors to be considered is the flow of communication, especially to and from the outside world. This involves the modeling of communication protocols. An approach to the synthesis of interface circuits in the context of co-design is presented.
Other chapters present a co-design oriented flexible component data-base and retrieval methods; a case study of an ethernet bridge, designed using LOTOS and co-design methodologies and finally a programmable user interface based on monitors.
will help designers and researchers to understand these latest techniques in system design and as such will be of interest to all involved in embedded system design.

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