

Performance Analysis of Real-Time Embedded Software

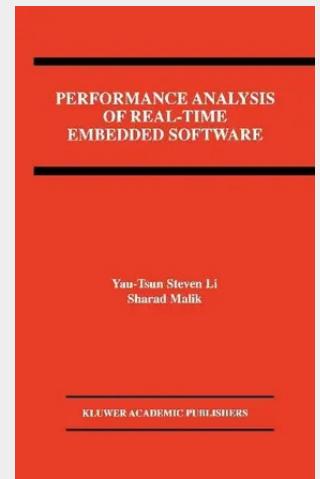
Embedded systems are characterized by the presence of processors running application-specific software. Recent years have seen a large growth of such systems, and this trend is projected to continue with the growth of systems on a chip. Many of these systems have strict performance and cost requirements. To design these systems, sophisticated timing analysis tools are needed to accurately determine the extreme case (best case and worst case) performance of the software components.

Existing techniques for this analysis have one or more of the following limitations:

- they cannot model complicated programs
- they cannot model advanced micro-architectural features of the processor, such as cache memories and pipelines
- they cannot be easily retargeted for new hardware platforms.

In , a new timing analysis technique is presented to overcome the above limitations. The technique determines the bounds on the extreme case (best case and worst case) execution time of a program when running on a given hardware system. It partitions the problem into two sub-problems: program path analysis and microarchitecture modeling. will be of interest to Design Automation professionals as well as designers of circuits and systems.

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106,99 €

99,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9780792383826

Medium: Buch

ISBN: 978-0-7923-8382-6

Verlag: Springer US

Erscheinungstermin: 30.11.1998

Sprache(n): Englisch

Auflage: 1999

Produktform: Gebunden

Gewicht: 424 g

Seiten: 146

Format (B x H): 160 x 241 mm

