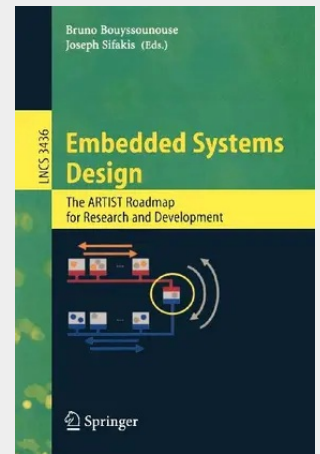


Embedded Systems Design

The ARTIST Roadmap for Research and Development

Embedded systems now include a very large proportion of the advanced products designed in the world, spanning transport (avionics, space, automotive, trains), electrical and electronic appliances (cameras, toys, televisions, home appliances, audio systems, and cellular phones), process control (energy production and distribution, factory automation and optimization), telecommunications (satellites, mobile phones and telecom networks), and security (e-commerce, smart cards), etc. The extensive and increasing use of embedded systems and their integration in everyday products marks a significant evolution in information science and technology. We expect that within a short timeframe embedded systems will be a part of nearly all equipment designed or manufactured in Europe, the USA, and Asia. There is now a strategic shift in emphasis for embedded systems designers: from simply achieving feasibility, to achieving optimality. Optimal design of embedded systems means targeting a given market segment at the lowest cost and delivery time possible. Optimality implies seamless integration with the physical and electronic environment while respecting real-world constraints such as hard deadlines, reliability, availability, robustness, power consumption, and cost. In our view, optimality can only be achieved through the emergence of embedded systems as a discipline in its own right.

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106,99 €

99,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9783540251071

Medium: Buch

ISBN: 978-3-540-25107-1

Verlag: Springer

Erscheinungstermin: 30.03.2005

Sprache(n): Englisch

Auflage: 1. Auflage 2005

Serie: Lecture Notes in Computer Science

Produktform: Kartoniert

Gewicht: 1580 g

Seiten: 496

Format (B x H): 155 x 235 mm

