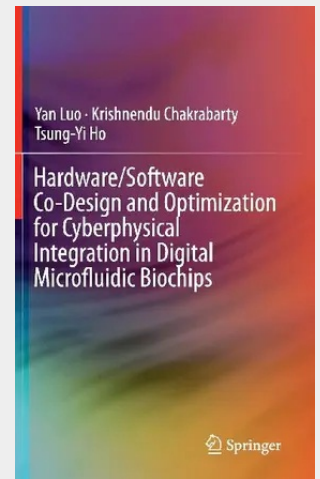


Hardware/Software Co-Design and Optimization for Cyberphysical Integration in Digital Microfluidic Biochips

This book describes a comprehensive framework for hardware/software co-design, optimization, and use of robust, low-cost, and cyberphysical digital microfluidic systems. Readers with a background in electronic design automation will find this book to be a valuable reference for leveraging conventional VLSI CAD techniques for emerging technologies, e.g., biochips or bioMEMS. Readers from the circuit/system design community will benefit from methods presented to extend design and testing techniques from microelectronics to mixed-technology microsystems. For readers from the microfluidics domain, this book presents a new design and development strategy for cyberphysical microfluidics-based biochips suitable for large-scale bioassay applications.

- Takes a transformative, "cyberphysical" approach towards achieving closed-loop and sensor feedback-driven biochip operation under program control;
- Presents a "physically-aware" system reconfiguration technique that uses sensor data at intermediate checkpoints to dynamically reconfigure biochips;
- Enables readers to simplify the structure of biochips, while facilitating the "general-purpose" use of digital microfluidic biochips for a wider range of applications.

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