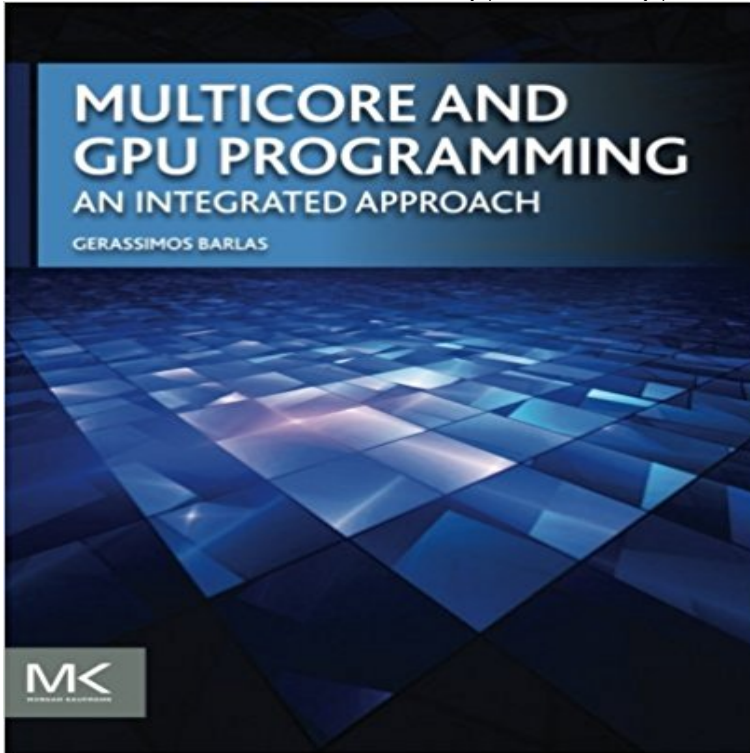


# Multicore and GPU Programming: An Integrated Approach



Multicore and GPU Programming offers broad coverage of the key parallel computing skillsets: multicore CPU programming and manycore massively parallel computing. Using threads, OpenMP, MPI, and CUDA, it teaches the design and development of software capable of taking advantage of today's computing platforms incorporating CPU and GPU hardware and explains how to transition from sequential programming to a parallel computing paradigm. Presenting material refined over more than a decade of teaching parallel computing, author Gerassimos Barlas minimizes the challenge with multiple examples, extensive case studies, and full source code. Using this book, you can develop programs that run over distributed memory machines using MPI, create multi-threaded applications with either libraries or directives, write optimized applications that balance the workload between available computing resources, and profile and debug programs targeting multicore machines. Comprehensive coverage of all major multicore programming tools, including threads, OpenMP, MPI, and CUDA demonstrates parallel programming design patterns and examples of how different tools and paradigms can be integrated for superior performance. Particular focus on the emerging area of divisible load theory and its impact on load balancing and distributed systems. Download source code, examples, and instructor support materials on the book's companion website.

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