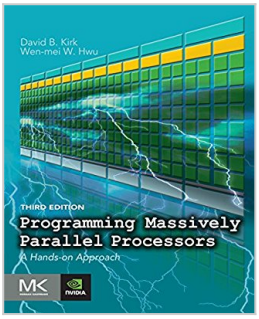

Programming Massively Parallel Processors, Third Edition: A Hands-on Approach

By David B. Kirk, Wen-mei W. Hwu

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Programming Massively Parallel Processors: A Hands-on Approach, Third Edition shows both student and professional alike the basic concepts of parallel programming and GPU architecture, exploring, in detail, various techniques for constructing parallel programs.

Case studies demonstrate the development process, detailing computational thinking and ending with effective and efficient parallel programs. Topics of performance, floating-point format, parallel patterns, and dynamic parallelism are covered in-depth.

For this new edition, the authors have updated their coverage of CUDA, including coverage of newer libraries, such as CuDNN, moved content that has become less important to appendices, added two new chapters on parallel patterns, and updated case studies to reflect current industry practices.

- Teaches computational thinking and problem-solving techniques that facilitate high-performance parallel computing
- Utilizes CUDA version 7.5, NVIDIA's software development tool created specifically for massively parallel environments
- Contains new and updated case studies
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Editorial Review

About the Author
David B. Kirk is well recognized for his contributions to graphics hardware and algorithm research. By the time he began his studies at Caltech, he had already earned B.S. and M.S. degrees in mechanical engineering from MIT and worked as an engineer for Raster Technologies and Hewlett-Packard's Apollo Systems Division, and after receiving his doctorate, he joined Crystal Dynamics, a video-game manufacturing company, as chief scientist and head of technology. In 1997, he took the position of Chief Scientist at NVIDIA, a leader in visual computing technologies, and he is currently an NVIDIA Fellow.

At NVIDIA, Kirk led graphics-technology development for some of today's most popular consumer-entertainment platforms, playing a key role in providing mass-market graphics capabilities previously available only on workstations costing hundreds of thousands of dollars. For his role in bringing high-performance graphics to personal computers, Kirk received the 2002 Computer Graphics Achievement Award from the Association for Computing Machinery and the Special Interest Group on Graphics and Interactive Technology (ACM SIGGRAPH) and, in 2006, was elected to the National Academy of Engineering, one of the highest professional distinctions for engineers.

Kirk holds 50 patents and patent applications relating to graphics design and has published more than 50 articles on graphics technology, won several best-paper awards, and edited the book Graphics Gems III. A technological "evangelist" who cares deeply about education, he has supported new curriculum initiatives at Caltech and has been a frequent university lecturer and conference keynote speaker worldwide.

Wen-mei W. Hwu is a Professor and holds the Sanders-AMD Endowed Chair in the Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign. His research interests are in the area of architecture, implementation, compilation, and algorithms for parallel computing. He is the chief scientist of Parallel Computing Institute and director of the IMPACT research group (www.impact.crhc.illinois.edu). He is a co-founder and CTO of MulticoreWare. For his contributions in research and teaching, he received the ACM SigArch Maurice Wilkes Award, the ACM Grace Murray Hopper Award, the Tau Beta Pi Daniel C. Drucker Eminent Faculty Award, the ISCA Influential Paper Award, the IEEE Computer Society B. R. Rau Award and the Distinguished Alumni Award in Computer Science of the University of California, Berkeley. He is a fellow of IEEE and ACM. He directs the UIUC CUDA Center of Excellence and serves as one of the principal investigators of the NSF Blue Waters Petascale computer project. Dr. Hwu received his Ph.D. degree in Computer Science from the University of California, Berkeley.

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