



OpenCL Programming by Example

By Ravishekhar Banger, Koushik Bhattacharyya

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In Detail

Research in parallel programming has been a mainstream topic for a decade, and will continue to be so for many decades to come. Many parallel programming standards and frameworks exist, but only take into account one type of hardware architecture. Today computing platforms come with many heterogeneous devices. OpenCL provides royalty free standard to program heterogeneous hardware.

This guide offers you a compact coverage of all the major topics of OpenCL programming. It explains optimization techniques and strategies in-depth, using illustrative examples and also provides case studies from diverse fields. Beginners and advanced application developers will find this book very useful.

Beginning with the discussion of the OpenCL models, this book explores their architectural view, programming interfaces and primitives. It slowly demystifies the process of identifying the data and task parallelism in diverse algorithms.

It presents examples from different domains to show how the problems within different domains can be solved more efficiently using OpenCL. You will learn about parallel sorting, histogram generation, JPEG compression, linear and parabolic regression and k-nearest neighborhood, a clustering algorithm in pattern recognition. Following on from this, optimization strategies are explained with matrix multiplication examples. You will also learn how to do an interoperation of OpenGL and OpenCL.

"OpenCL Programming by Example" explains OpenCL in the simplest possible language, which beginners will find it easy to understand. Developers and programmers from different domains who want to achieve acceleration for their applications will find this book very useful.

Approach

This book follows an example-driven, simplified, and practical approach to using

OpenCL for general purpose GPU programming.

Who this book is for

If you are a beginner in parallel programming and would like to quickly accelerate your algorithms using OpenCL, this book is perfect for you! You will find the diverse topics and case studies in this book interesting and informative. You will only require a good knowledge of C programming for this book, and an understanding of parallel implementations will be useful, but not necessary.

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Editorial Review

About the Author

Ravishekhar Banger

Ravishekhar Banger calls himself a "Parallel Programming Dogsbody". Currently he is a specialist in OpenCL programming and works for library optimization using OpenCL. After graduation from SDMCET, Dharwad, in Electrical Engineering, he completed his Masters in Computer Technology from Indian Institute of Technology, Delhi. With more than eight years of industry experience, his present interest lies in General Purpose GPU programming models, parallel programming, and performance optimization for the GPU. Having worked for Samsung and Motorola, he is now a Member of Technical Staff at Advanced Micro Devices, Inc. One of his dreams is to cover most of the Himalayas by foot in various expeditions. You can reach him at [**ravibanger@gmail.com**](mailto:ravibanger@gmail.com).

Koushik Bhattacharyya

Koushik Bhattacharyya is working with Advanced Micro Devices, Inc. as Member Technical Staff and also worked as a software developer in NVIDIA®. He did his M.Tech in Computer Science (Gold Medalist) from Indian Statistical Institute, Kolkata, and M.Sc in pure mathematics from Burdwan University. With more than ten years of experience in software development using a number of languages and platforms, Koushik's present area of interest includes parallel programming and machine learning.

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