



# CUDA by Example: An Introduction to General-Purpose GPU Programming

*By Jason Sanders, Edward Kandrot*

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“This book is required reading for anyone working with accelerator-based computing systems.”

–From the Foreword by Jack Dongarra, University of Tennessee and Oak Ridge National Laboratory

CUDA is a computing architecture designed to facilitate the development of parallel programs. In conjunction with a comprehensive software platform, the CUDA Architecture enables programmers to draw on the immense power of graphics processing units (GPUs) when building high-performance applications. GPUs, of course, have long been available for demanding graphics and game applications. CUDA now brings this valuable resource to programmers working on applications in other domains, including science, engineering, and finance. No knowledge of graphics programming is required—just the ability to program in a modestly extended version of C.

***CUDA by Example*, written by two senior members of the CUDA software platform team, shows programmers how to employ this new technology. The authors introduce each area of CUDA development through working examples. After a concise introduction to the CUDA platform and architecture, as well as a quick-start guide to CUDA C, the book details the techniques and trade-offs associated with each key CUDA feature. You’ll discover when to use each CUDA C extension and how to write CUDA software that delivers truly outstanding performance.**

Major topics covered include

- Parallel programming
- Thread cooperation
- Constant memory and events
- Texture memory
- Graphics interoperability
- Atomics
- Streams

- CUDA C on multiple GPUs
- Advanced atomics
- Additional CUDA resources

All the CUDA software tools you'll need are freely available for download from NVIDIA.

<http://developer.nvidia.com/object/cuda-by-example.html>

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## Edward Kandrot Bibliography

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### About the Author

**Jason Sanders** is a senior software engineer in the CUDA Platform group at NVIDIA. While at NVIDIA, he helped develop early releases of CUDA system software and contributed to the OpenCL 1.0 Specification, an industry standard for heterogeneous computing. Jason received his master's degree in computer science from the University of California Berkeley where he published research in GPU computing, and he holds a bachelor's degree in electrical engineering from Princeton University. Prior to joining NVIDIA, he previously held positions at ATI Technologies, Apple, and Novell. When he's not writing books, Jason is typically working out, playing soccer, or shooting photos.

**Edward Kandrot** is a senior software engineer on the CUDA Algorithms team at NVIDIA. He has more than twenty years of industry experience focused on optimizing code and improving performance, including for Photoshop and Mozilla. Kandrot has worked for Adobe, Microsoft, and Google, and he has been a consultant at many companies, including Apple and Autodesk. When not coding, he can be found playing

World of Warcraft or visiting Las Vegas for the amazing food.

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