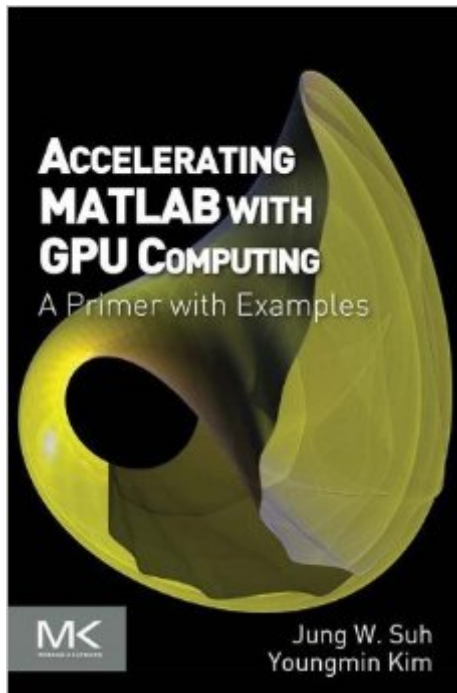


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# Accelerating MATLAB With GPU Computing: A Primer With Examples



## Synopsis

Beyond simulation and algorithm development, many developers increasingly use MATLAB even for product deployment in computationally heavy fields. This often demands that MATLAB codes run faster by leveraging the distributed parallelism of Graphics Processing Units (GPUs). While MATLAB successfully provides high-level functions as a simulation tool for rapid prototyping, the underlying details and knowledge needed for utilizing GPUs make MATLAB users hesitate to step into it. Accelerating MATLAB with GPUs offers a primer on bridging this gap. Starting with the basics, setting up MATLAB for CUDA (in Windows, Linux and Mac OS X) and profiling, it then guides users through advanced topics such as CUDA libraries. The authors share their experience developing algorithms using MATLAB, C++ and GPUs for huge datasets, modifying MATLAB codes to better utilize the computational power of GPUs, and integrating them into commercial software products. Throughout the book, they demonstrate many example codes that can be used as templates of C-MEX and CUDA codes for readers' projects. Download example codes from the publisher's website: <http://booksite.elsevier.com/9780124080805/Shows how to accelerate MATLAB codes through the GPU for parallel processing, with minimal hardware knowledge> Explains the related background on hardware, architecture and programming for ease of use Provides simple worked examples of MATLAB and CUDA C codes as well as templates that can be reused in real-world projects

## Book Information

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## Customer Reviews

This book is well written for Matlab users who seeks a way of boosting up the speed of Matlab codes through parallel computing. The book is well organized to learn basic principles of accelerating computing speed as well as advanced programming techniques utilizing GPU-based parallel computing processing. The objectives of each chapter are clearly stated at the beginning of each chapter followed by series of examples so that one can clearly understand and practice the GPU programming techniques. This book also provides detailed instructions for installation and compiling steps for both PC and Mac users, and many screenshots of each step for quick follow-up. The power of the parallel computing is demonstrated by applying the GPU processing to computers graphics and medical imaging processing in the book that I think this book would be useful to the people in these fields. Personally, I have been struggling with slow processing speed of Matlab codes for modeling my complex systems biology data. I have been aware of the availability of Parallel Computing Toolbox which can be purchased from Mathworks to speed up Matlab codes using GPU processing. However, the usage of the commercial toolbox has been limited due to high cost of the commercial toolbox as well as limited access to the underlying structures. Now I am very happy to get to know this book I highly recommend this book.

The book is just what it says - a primer with Matlab-mex-examples. If you are a Matlab programmer with some experience in C/C++, then this book takes you past the practical hurdles of downloading, setting up the system, linking your first few mex-files to CUDA (+ some open GPU-libs) and profiling the results. It helped me do this in a limited time and with very little effort. It also gets you started on the mindset and the tricks of GPU-data-crunching but for this, I'm sure there are much better books. There are some language issues (in parts of the book) and even a couple of bugs in the example code (suggesting the need for an editor?). But for the time it saves, and the information-gap it fills (Mathworks excellent documentation is focused on the Parallell Toolbox) the book is so worth the money.

It will undoubtedly pay for itself in time savings. Although this book covers both the Parallel Computing Toolbox and the direct use of CUDA via c-mex, this book is uniquely useful because I

couldn't find any book or online materials so far like this book which has a lot of details especially on the direct use of CUDA via c-mex of Matlab. The book has lots of detail and screenshots to guide you from basics such as environment setting with example codes, so it helps to even novice of both Matlab and CUDA. Since this book is not thick and easily read, we can go through the book quickly and can go to the next level. This book is good not only for the specific GPU usage for Matlab but also for general start of GPU coding.

Good book

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