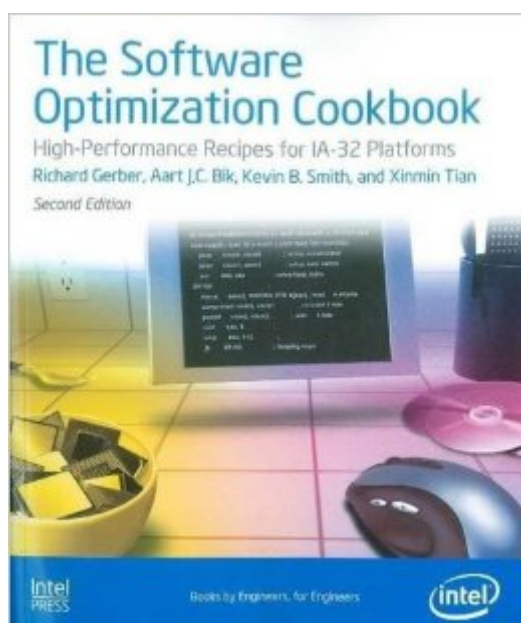# The Software Optimization Cookbook: High Performance Recipes For IA-32 Platforms, 2nd Edition

Synopsis

Talks about computers/software.

Book Information

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Customer Reviews

This is a well-written, easy to read and inspiring book that gives insight into a fascinating new technology - this is the most useful software optimization book ever written. As modern processors include many advanced features such as branch prediction, cashes with hardware prefetch, out of order execution cores, instruction level paralellism and intraregister vectorization, writing high performance software for such arcitectures is not so easy. In addition, most programming languages available today have not been delibetarly designed to take advantage of these newly introduced architecture features.It is therfore fortunate that the second edition of the software optimization cookbook gives such a useful and easy to read introduction to software optimization on modern architecures. This is most important for the engineers that develop performance critical software applications but want to ensure high readability and easily maintainable source code.For example, advanced compiler techniques such as profile guided optimization and inter procedural optimization, pedagogically described in this book, may boost the performance of your application. This is not surprising; cache misses may seriously obstruct memory intensive applications as memory is ridiculously slow compared to cache on most modern processors.The Intel processors, together with the Intel compilers and the books from Intel press, significantly simplify the job for the software

developers that struggle to increase the efficiency of their applications. My experience is that the Intel compilers, tailormade to the Intel processors, take better and better advantage of the advanced features in modern processors. Thus, the development of efficient software becomes easier and easier even though the processor architecture becomes more and more complicated.Switching to the Intel compiler may significantly improve the performance of your application, thus there is no such thing as "change the compiler only"; the compiler alone may actually be responsible for most of the increased speedup seen in many applications. However, you may need to rewrite some parts of your code, as recommended in this book, to obtain a clear and readable compiler-friendly programming style - a too complicated source code tends to hamper the usefulness of the advanced optimizations available in the Intel compiler and reduces the source code readability for your co-workers.

Without a doubt, this book is a must for software engineers aiming at producing high performance software on Intel IA-32 platforms. It contains many valuable programming experiences and tricks which you wouldn't find in technical papers or books. It also enumerates many well-known topics in the fields of computer organization, computer architectures, compilers, and parallel computing. More importantly, it clarifies many hypothetical ideas even further and provides the corresponding guidelines and suggestions.A software programmer can learn from the very basic optimization concepts to advanced techniques in this 400-page book. It teaches you all the way from choosing right benchmarks and tools, how to locate the hot spots, till the last ten percent of the optimization process. Several famous topics on the present parallel computing are discussed as well, including instruction-level parallelism (ILP), thread-level parallelism (TLP), OpenMP, task queuing, etc.

Learning the art of cooking is hard, but a good cookbook is a big help. This is such a cookbook for fast software, with some food recipes as well. It covers the whole range: tools/compilers, processor architecture, threading and tuning. There are excellent explanations of these potentially 'scary' topics; I particularly liked the fast-food restaurant analogy, which has surprising parallels with CPUs. Of course a ~400 page book cannot go into detail on all of these topics, but it serves as a useful introduction.The book is now 6 years old, but the core issues have not changed: vectorization, parallelization, and cache. It would be nice to have an update, but reading introductions on TBB and Cilk should cover the gaps, and agner.org/optimize as well as the hugely useful Intel Intrinsic Guide (available from the AVX website) list the current instruction latencies. Where there is discussion of microarchitecture, just ignore the dead-end Pentium IV and pay more attention to the Pentium M

advice, which is still broadly applicable today.Conclusion: I believe we would have better software if all C and C++ programmers read and heeded this book. Should we optimize everything? Of course not - the book explains when and how. An awareness of these issues would be valuable even if optimization is not the day-to-day focus, and this book provides the most convenient and accessible summary I have seen yet.Disclosure: I was sent a free copy of this book as part of a survey drawing.

This book contains a lot of insightful information.It focuses mainly on the pentium 4 and pentium M architectures which make it a little out dated even though most techniques describe in the book are still relevant.Developer using the intel compilers (c++ or Fortran) will benefit even more from this book which describes in detail some of the compiler specific flags as well as some compiler specific support (intrinsic, data types, etc).

The Software Optimization Cookbook: High Performance Recipes for IA-32 Platforms, 2nd Edition Software Optimization Cookbook: High-Performance Recipes for the Intel Architecture Hybrid Particle Swarm Algorithm for Multiobjective Optimization: Integrating Particle Swarm Optimization with Genetic Algorithms for Multiobjective Optimization Software Optimization for High Performance Computing: Creating Faster Applications The Rise of the Platform Marketer: Performance Marketing with Google, Facebook, and Twitter, Plus the Latest High-Growth Digital Advertising Platforms Write Portable Code: An Introduction to Developing Software for Multiple Platforms Power and Performance: Software Analysis and Optimization Network Performance and Optimization Guide: The Essential Network Performance Guide For CCNA, CCNP and CCIE Engineers (Design Series) High Performance MySQL: Optimization, Backups, and Replication High Performance Computing (RISC Architectures, Optimization & Benchmarks) High Performance MySQL: Optimization, Backups, Replication, and More Canning And Preserving Cookbook: 100+ Mouth-Watering Recipes of Canned Food: (Canning and Preserving Cookbook, Best Canning Recipes) (Home Canning Recipes, Pressure Canning Recipes) Seo 2017: Search Engine Optimization for 2017. On Page SEO, Off Page SEO, Keywords (SEO Books, Search Engine Optimization 2016) SEO 2017: Search Engine Optimization for 2017. On Page SEO, Off Page SEO, Keywords (SEO Books, Search Engine Optimization 2017) WordPress: A Beginner to Intermediate Guide on Successful Blogging and Search Engine Optimization. (Blogging, SEO, Search Engine Optimization, Free Website, WordPress, WordPress for Dummies) SEO+Clickbank (Search Engine Optimization 2016): Use The Power of Search Engine Optimization 2016+ Clickbank Software Engineering Classics: Software

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