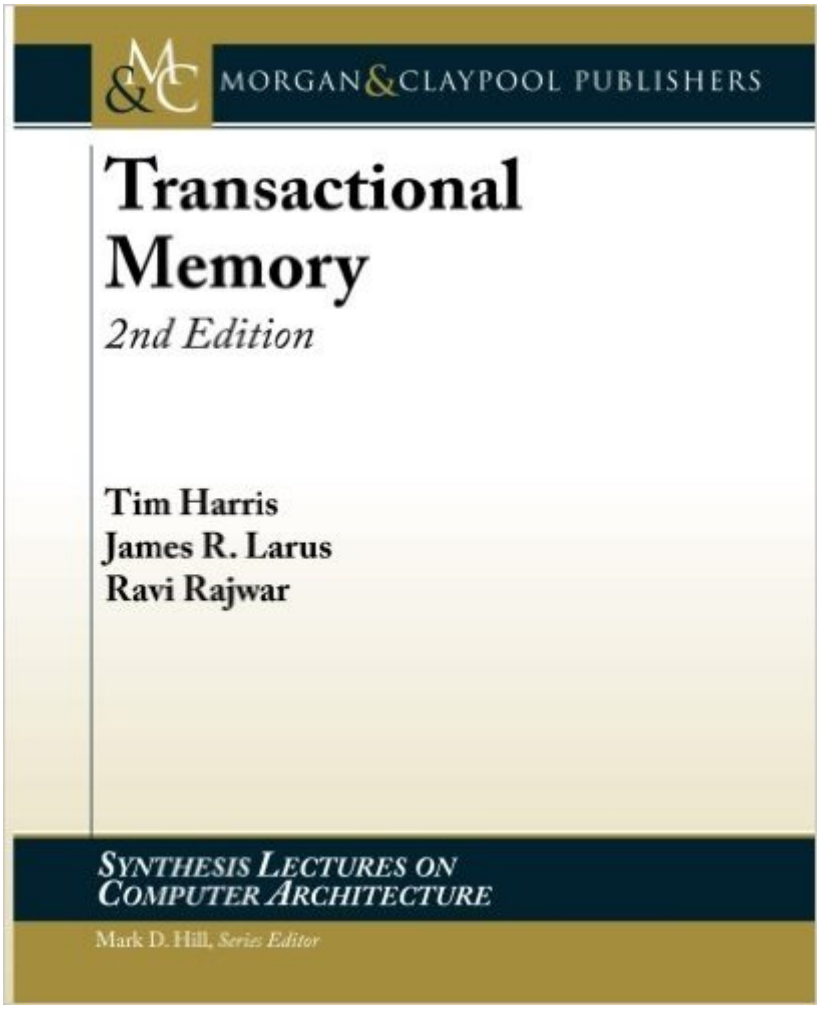
Transactional Memory, 2nd Edition (Synthesis Lectures On Computer Architecture)



Synopsis

The advent of multicore processors has renewed interest in the idea of incorporating transactions into the programming model used to write parallel programs. This approach, known as transactional memory, offers an alternative, and hopefully better, way to coordinate concurrent threads. The ACI (atomicity, consistency, isolation) properties of transactions provide a foundation to ensure that concurrent reads and writes of shared data do not produce inconsistent or incorrect results. At a higher level, a computation wrapped in a transaction executes atomically - either it completes successfully and commits its result in its entirety or it aborts. In addition, isolation ensures the transaction produces the same result as if no other transactions were executing concurrently. Although transactions are not a parallel programming panacea, they shift much of the burden of synchronizing and coordinating parallel computations from a programmer to a compiler, to a language runtime system, or to hardware. The challenge for the system implementers is to build an efficient transactional memory infrastructure. This book presents an overview of the state of the art in the design and implementation of transactional memory systems, as of early spring 2010. Table of Contents: Introduction / Basic Transactions / Building on Basic Transactions / Software Transactional Memory / Hardware-Supported Transactional Memory / Conclusions

Book Information

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Customer Reviews

This book is an overview of current state of art with transactional memory. It is essentially a

compilation from a few dozen research papers on the topic.There are two big parts:1. Memory transactions.2. Software and hardware implementations.The first part shows a world of trouble if you decide to treat your memory as transactional. This chapter probably is there to introduce the reader to the matter, and have him admire the complexity, but the effect is the opposite - my only wish was to stay clear off. The other part covers existing systems, but does so only by presenting information rather assorted.The biggest problem with this book is that is presents no real-life information whatsoever. There are no numbers, no benchmarks, no graphs. The area of research is said to be very active, but it'd be great if it produced something. Not a single practical example here, push to a linked list excluded. The benefits of all the trouble are unclear. Feels like research for its own sake. Mentions "key findings" of "performance is better with hardware support".It is not a textbook either. You cannot learn from it, no principles are explained, no definitions given. It briefly mentions this or that system and goes on. There is no uniform way of discussion. Each time around the authors focus on something of interest to them at the moment and describe it at best in very technical terms. The diagrams also vary in the look and appear to be borrowed from each respective paper.It really helps if you have designed a transactional memory system yourself. Or two. Then it'd be easier for you to follow.

Computer Organization and Design: The Hardware/Software Interface (The Morgan Kaufmann Series in Computer Architecture and Design) Structure and Interpretation of Computer Programs - 2nd Edition (MIT Electrical Engineering and Computer Science) The Project Management Memory Jogger (Second Edition) (Memory Jogger Series) Testing Computer Software, 2nd Edition by Kaner, Cem, Falk, Jack, Nguyen, Hung Q. 2nd (second) edition [Paperback(1999)] Generalized Quantifiers and Computation: 9th European Summer School in Logic, Language, and Information, ESSLLI'97 Workshop, Aix-en-Provence, France, ... Lectures (Lecture Notes in Computer Science) Performance Evaluation of Complex Systems: Techniques and Tools: Performance 2002. Tutorial Lectures (Lecture Notes in Computer Science)