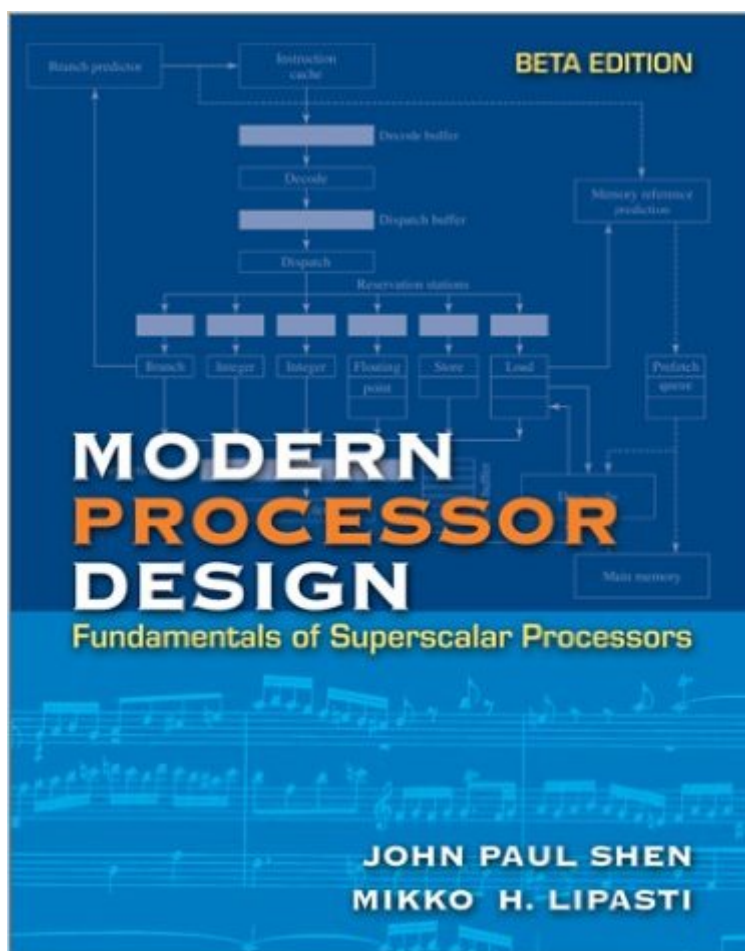# MODERN PROCESSOR DESIGN: Fundamentals Of Superscalar Processors, Beta Edition

Synopsis

Modern Processor Design: Fundamentals of Superscalar Processors is an exciting new first edition from John Shen of Carnegie Mellon University & Intel and Mikko Lipasti of the University of Wisconsin-Madison. This book brings together the numerous microarchitectural techniques for harvesting more instruction-level parallelism (ILP) to achieve better processor performance that have been proposed and implemented in real machines. These techniques, as well as the foundational principles behind them, are organized and presented within a clear framework that allows for ease of comprehension. This text is intended for an advanced computer architecture course or a course in superscalar processor design. It is written at a level appropriate for senior or first year graduate level students.

Book Information

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Customer Reviews

This is a well written book on the concepts of high-end microprocessor architecture, from OOO-issue, Register-renaming, Branches, Load/Store processing, and much more. Not very much on the Memory Consistency models. I think this would be great book for those who already know the basics of computer architecture, but want something more concise than say, the Hennesy & Patterson, as a second/reference read.

As with most Computer Architecture books, this book covers a wide range of topics in superscalar out-of-order processor design. But what made this book stand out is a chapter dedicated to

discussing advanced instruction flow techniques. The book had a very thorough review of many branch prediction algorithm, various types of target predictors as well as high bandwidth fetching mechanism. The book also has a very thorough coverage on the P6 micro-architecture.

I would recommend this book to anyone eager to learn modern processor design to an experience processor designer who wants to understand the trade off in superscalar design techniques. I like the way this book is organized; starting with simple single issue to building complex multi-issue processors. Finally comparisons of state of the art superscalar processors are excellent.

I'm reading this one for a course in computer architecture, and at the same time I'm reading Computer Architecture: A quantitative approach by Hennesy and Patterson. I personally recommend the other one over this book, it's better explained and has more developed exercises.

It is a really good book to understand the modern processor design. I strongly recommend that to any computer engineering students.

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