

FPGA 20 Reading List

Highlighting Significant Contributions from 20 Years of the International Symposium on Field-Programmable Gate Arrays (1992–2011)

For the 20th anniversary of the International Symposium on Field-Programmable Gate Arrays in 2012, we have assembled a special volume to highlight the most significant papers from the conferences. We highlight 25 papers across all years and major FPGA topics that best exemplify the contributions from the conference. Compared to the 400–500 papers that have appeared in the conference, 25 papers will represent roughly 5% of all the papers published in the conference to date.

Listed below are the 25 papers. Linked for each paper is a one-page endorsement written by an expert in the field that captures the historical context in which the paper was written and offers a retrospective view on its significance. A URL link to the original paper is provided at the bottom of each endorsement.

1994

Unifying FPGAs and SIMD Arrays

Michael Bolotski, André DeHon, Thomas F. Knight, Jr.
Architecture

[Endorsement by: Jonathan Rose](#)

1995

PathFinder: A Negotiation-Based Performance-Driven Router for FPGAs

Larry McMurchie and Carl Ebeling
Computer-Aided Design

[Endorsement by Sinan Kaptanoglu](#)

Simultaneous Depth and Area Minimization in LUT-based FPGA Mapping

Jason Cong and Yean-Yow Hwang

Computer-Aided Design

[Endorsement by Eugene Ding](#)

1996

DPGA Utilization and Application

André DeHon

Applications

[Endorsement by John Wawrzynek](#)

1997

Signal Processing at 250 MHz using High-Performance FPGA's

Brian Von Herzen

Applications

[Endorsement by André DeHon and Steve Trimberger](#)

1998

A survey of CORDIC algorithms for FPGA based computers

Ray Andraka

Applications

[Endorsement by Paul Chow](#)

Managing Pipeline-Reconfigurable FPGAs

Srihari Cadambi, Jeffery Weener, Seth Copen Goldstein, Herman Schmit, Donald E. Thomas
Reconfigurable Computing

[Endorsement by Katherine Compton and André DeHon](#)

1999

Balancing Interconnect and Computation in a Reconfigurable Computing Array (or, why you don't really want 100% LUT utilization)

André DeHon

Architecture

[Endorsement by Mike Hutton](#)

Cut Ranking and Pruning: Enabling a General and Efficient FPGA Mapping Solution

Jason Cong, Chang Wu, Yuzheng Ding

Computer-Aided Design

[Endorsement by Steve Wilton](#)

FPGA Routing Architecture: Segmentation and Buffering to Optimize Speed and Density

Vaughn Betz, Jonathan Rose

Architecture

[Endorsement by Carl Ebeling](#)

HSRA: High-Speed, Hierarchical Synchronous Reconfigurable Array

William Tsu, Kip Macy, Atul Joshi, Randy Huang, Norman Walker, Tony Tung, Omid Rowhani,
Varghese George, John Wawrzynek, André DeHon

Architecture

[Endorsement by Carl Ebeling](#)

Using Cluster-Based Logic Blocks and Timing-Driven Packing to Improve FPGA Speed and Density

Alexander (Sandy) Marquardt, Vaughn Betz, Jonathan Rose
Computer-Aided Design

[Endorsement by Steve Wilton](#)

2000

Automatic Generation of FPGA Routing Architectures from High-Level Descriptions

Vaughn Betz, Jonathan Rose
Computer-Aided Design

[Endorsement by Scott Hauck](#)

The Effect of LUT and Cluster Size on Deep-Submicron FPGA Performance and Density

Elias Ahmed, Jonathan Rose
Architecture

[Endorsement by Mike Hutton](#)

Timing-Driven Placement for FPGAs

Alexander (Sandy) Marquardt, Vaughn Betz, Jonathan Rose
Computer-Aided Design

[Endorsement by Jason Cong](#)

2001

Using Sparse Crossbars within LUT Clusters

Guy Lemieux, David Lewis
Architecture

[Endorsement by Sinan Kaptanoglu](#)

2002

Dynamic Power Consumption in Virtex™-II FPGA Family

Li Shang, Alireza Kaviani, Kusuma Bathala
Circuits

[Endorsement by Russ Tessier](#)

On the Sensitivity of FPGA Architectural Conclusions to Experimental Assumptions, Tools, and Techniques

Andy Yan, Rebecca Cheng, Steven J.E. Wilton
Architecture

[Endorsement by Katherine Compton](#)

2003

The Stratix™ Routing and Logic Architecture

David Lewis, Vaughn Betz, David Jefferson, Andy Lee, Chris Lane, Paul Leventis, Sandy Marquardt, Cameron McClintock, Bruce Pedersen, Giles Powell, Srinivas Reddy, Chris Wysocki, Richard Cliff, Jonathan Rose
Architecture

[Endorsement by Herman Schmit](#)

2004

Active Leakage Power Optimization for FPGAs

Jason H. Anderson, Farid N. Najm, Tim Tuan
Circuits

[Endorsement by Russ Tessier](#)

FPGAs vs. CPUs: Trends in Peak Floating-Point Performance

Keith Underwood
Reconfigurable Computing

[Endorsement by Paul Chow](#)

Nanowire-Based Sublithographic Programmable Logic Arrays

André DeHon, Michael J. Wilson
Architecture

[Endorsement by Deming Chen](#)

2006

Measuring the Gap Between FPGAs and ASICs

Ian Kuon, Jonathan Rose
Architecture

[Endorsement by Herman Schmit](#)

2008

High-Quality, Deterministic Parallel Placement for FPGAs on Commodity Hardware

Adrian Ludwin, Vaughn Betz, Ketan Padalia

Computer-Aided Design

[Endorsement by Jonathan Rose](#)

2010

Efficient Multi-Ported Memories for FPGAs

Charles Eric LaForest, J. Gregory Steffan

Applications

[Endorsement by Scott Hauck](#)

[Foreword and all endorsements as a single PDF](#)

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