

FCCM 20 Reading List

Highlighting Significant Contributions from 20 Years of the IEEE International Symposium on Field-Programmable Custom Computing Machines (1993–2013)

For the 20th anniversary of the International IEEE Symposium on Field-Programmable Custom Computing Machines in 2013, we assembled a special volume to highlight the most significant papers from the conferences. We highlight 25 papers across all years and major FCCM topics that best exemplify the contributions from the conference. Compared to 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.

1993

Searching Genetic Databases on Splash 2

Dzung T. Hoang

Applications

[Endorsement by Nicholas Weaver](#)

Virtual Wires: Overcoming Pin Limitations in FPGA-based Logic Emulators

Jonathan Babb, Russell Tessier, Anant Agarwal

Architecture and Technology

[Endorsement by Steve Trimberger](#)

1995

A Dynamic Instruction Set Computer

Michael J. Wirthlin, Brad L. Hutchings

Run-Time Systems and Run-Time Configuration

[Endorsement by Katherine Morrow](#)

1996

Configurable Computing Solutions for Automatic Target Recognition

John Villasenor, Brian Schoner, Kang-Ngee Chia, Charles Zapata, Hea Joung Kim, Chris Jones, Shane Lansing, Bill Mangione-Smith
Applications

[Endorsement by Mark Shand](#)

MATRIX: A Reconfigurable Computing Architecture with Configurable Instruction Distribution and Deployable Resources

Ethan Mirsky, André DeHon
Architecture and Technology

[Endorsement by Paul Chow](#)

OneChip: An FPGA Processor with Reconfigurable Logic

Ralph D. Wittig, Paul Chow
Architecture and Technology

[Endorsement by Jonathan Babb](#)

1997

A Time-Multiplexed FPGA

Steve Trimberger, Dean Carberry, Anders Johnson, Jennifer Wong
Architecture and Technology

[Endorsement by Viktor K. Prasanna](#)

Defect Tolerance on the Teramac Custom Computer

Bruce Culbertson, Rick Amerson, Richard J. Carter, Philip Kuekes, Greg Snider
Architecture and Technology

[Endorsement by André DeHon](#)

Garp: A MIPS Processor with a Reconfigurable Coprocessor

John Hauser, John Wawrzynek
Architecture and Technology

[Endorsement by Mike Wirthlin](#)

Incremental Reconfiguration for Pipelined Applications

Herman Schmit
Run-Time Systems and Run-Time Configuration

[Endorsement by André DeHon](#)

The Chimaera Reconfigurable Functional Unit

Scott Hauck, Thomas Fry, Matthew Hosler, Jeffrey Kao
Architecture and Technology

[Endorsement by Russell Tessier](#)

1998

Configuration Compression for the XC6200 FPGA

Scott Hauck, Zhiyuan Li, Eric Schwabe

Tools

[Endorsement by André DeHon](#)

Accelerating Boolean satisfiability with configurable hardware

Peixin Zhong, Margaret Martonosi, Pranav Ashar, Sharad Malik

Architecture and Technology

[Endorsement by Miriam Leeser](#)

1999

A CAD Suite for High-Performance FPGA Design

Brad Hutchings, Peter Bellows, Joseph Hawkins, Scott Hemmert, Brent Nelson, Mike Rytting

Languages and Compute Models

[Endorsement by Mike Butts](#)

Parallelizing Applications into Silicon

Jonathan Babb, Martin Rinard, Csaba Andras Moritz, Walter Lee, Matthew Frank, Rajeev Barua,

Saman Amarasinghe

Tools

[Endorsement by Satnam Singh](#)

2000

Stream-Oriented FPGA Computing in the Stream-C High-Level Language

Maya Gokhale, Jan Stone, Jeff Arnold, Mirek Kalinowski

Languages and Compute Models

[Endorsement by Wayne Luk](#)

Configuration Caching Management Techniques for Reconfigurable Computing

Zhiyuan Li, Katherine Compton, Scott Hauck

Run-Time Systems and Run-Time Configuration

[Endorsement by Herman Schmit](#)

A MATLAB Compiler for Distributed, Heterogeneous, Reconfigurable Computing Systems

Prithviraj Banerjee, U. Nagaraj Shenoy, Alok Choudhary, Scott Hauck, Christopher Bachmann, Malay

Haldar, Pramod Joisha, Alex Jones, Abhay Kanhare, Anshuman Nayak, Suresh Periyacheri, Michael

Walkden, David Zaretsky

Languages and Compute Models

[Endorsement by Russell Tessier](#)

2001

Fast Regular Expression Matching Using FPGAs

Reetinder Sidhu, Viktor K. Prasanna

Applications

[Endorsement by Brad Hutchings](#)

Pilchard—A Reconfigurable Computing Platform with Memory Slot Interface

Philip H. W. Leong, Monk-Ping Leong, Ocean Y. H. Cheung, Tung Tung, Chung-Man Kwok, Ming-Yee Wong, Kin-Hong Lee

Architecture and Technology

[Endorsement by Peter Cheung](#)

2002

Assisting Network Intrusion Detection with Reconfigurable Hardware

Brad Hutchings, Rob Franklin, Daniel Carver

Applications

[Endorsement by Gordon Brebner](#)

2004

Closing the gap: CPU and FPGA Trends in sustainable floating-Point BLAS performance

Keith Underwood, K. Scott Hemmert

Applications

[Endorsement by Kenneth Pocek](#)

Reconfigurable Molecular Dynamics Simulator

Navid Azizi, Ian Kuon, Aaron Egier, Ahmad Darabiha, Paul Chow

Applications

[Endorsement by Philip H. W. Leong](#)

2006

Packet Switched vs. Time Multiplexed FPGA Overlay Networks

Nachiket Kapre, Nikil Mehta, Michael deLorimier, Raphael Rubin, Henry Barnor, Michael J. Wilson, Michael Wrighton, André DeHon

Architecture and Technology

[Endorsement by Russell Tessier](#)

2007

A Structure Object Programming Model, Architecture, Chip, and Tools for Reconfigurable Computing

Mike Butts, Anthony Mark Jones, Paul Wasson

Languages and Compute Models

[Endorsement by Maya B. Gokhale](#)

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

FCCM20 Survey Article: [Birth and Adolescence of Reconfigurable Computing: A Survey of the First 20 Years of Field-Programmable Custom Computing Machines](#)

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