

Foreword

This volume commemorates the twentieth anniversary of the IEEE International Symposium on Field-Programmable Custom Computing Machines by highlighting the twenty-five most significant papers that have appeared in the conference as viewed from a 2012 perspective. These twenty-five papers represent about five percent of the total papers that have appeared in the conference. The papers capture pioneering work that has clarified the landscape, provided key tools, opened areas of research, resolved serious problems, illuminated difficult issues, and illustrated innovative ways to use FPGAs and other reconfigurable computing devices. The papers span all areas of concern to the conference including architecture, programming, tools, and applications of reconfigurable computing. These papers capture the birth and growth of reconfigurable computing, representing a "must read" background for research in the field.

Along with each original paper, this volume includes 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. These endorsements were commissioned exclusively for this volume.

To identify the papers included in this volume, we ran a rigorous nomination and review process over the course of a full year. Over a twelve month period, we collected nominations through the web. Anyone could submit nominations with self-nominations prohibited. This resulted in nominations for fifty-three papers out of over five hundred papers that have appeared in the symposium proceedings. We assembled a panel of twenty-four experts (see p. iv) to make the final selection of twenty-five papers from the fifty-three nominations. As part of the expert review, at least five area experts reread all the papers nominated in an area and shared their view of the relative significance of the papers in the area with the entire panel. This was followed by a blind ranking process in which all experts offered their own rank ordering of the papers, independent of area. These rankings were combined using a variety of preferential ranking schemes to best capture the composite expert consensus.

Computing with FPGAs has come a long way since 1993. FPGAs were small, the tools were primitive, the benefits of FPGA computing were poorly understood, and the notion of using FPGAs for computations was radical. Today, programmable accelerators are mainstream, FPGAs get serious consideration for many tasks, their performance and energy benefits are well established in many domains, and, while the tools still have a long way to go, there are functional tool chains from high-level languages down to FPGA configurations. Nonetheless, ease-of-use, the slow edit-compile-debug cycle, and seamless integration into mainstream platforms remain potential impediments to wholesale exploitation. This volume will help you understand the evolution of reconfigurable computing and the areas of challenge and opportunity for tomorrow. We anticipate the FCCM Symposium will continue to present research at the forefront of developments in this increasingly important area.

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