

Editorial

Selected Papers from SPL 2008: Programmable Logic and Applications

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Field programmable logic devices have traditionally been used as vehicles for prototyping and implementing digital circuits; but beyond this use, continued improvements in device density and functionality have made the technology a mainstream one for implementing large systems and accelerators for specific applications.

Field-programmable gate array (FPGA) is one of the most well-known commercial names of programmable logic. The FPGA technology, marketed in 1984 by a startup company called Xilinx, allowed designers to build complex circuits with virtually zero setup costs, enabling the development of the small-scale products common to most Latin American technological companies.

Nowadays, after more than two decades of progress, programmable logic has become the key technology in digital systems design. Not only FPGAs are now capable of implementing multimillion gate systems working at hundreds of megahertz but also the design costs of custom ASICs have soared to levels where only million-unit projects are profitable, keeping them out of the reach of most companies.

Applications of FPGAs include almost every application that needs a fast electronic system including digital signal processing (DSP) applications, ASIC prototyping, medical imaging, computer vision, speech recognition, cryptography, bioinformatics, aerospace and defence systems, computer hardware emulation, as well as a growing range of other areas.

FPGAs market and applications growing are reflected also in the variety of programmable logic conferences around the world and the number of papers published by the research community.

The Southern Conference on Programmable Logic (SPL, www.splconf.org) is the austral meeting point for research interested in FPGA technology. It started in 2005 as a cooperation project between Spain and Latin America called SURLABS. The project “SURLABS: Joint Latin American FPGA Laboratories” was financed by the Banco Santander Central Hispano. The interest and rapid growth of the conference, since SPL 2007, has been giving the IEEE Circuit and Systems Society (CAS) a technical cosponsorship.

More than 95 papers were submitted to the last IV SPL conference. The 29 selected papers and the 23 short papers presented at the IV SPL were authored by researchers from Argentina, Australia, Belgium, Brazil, Canada, Colombia, France, Germany, Hong Kong, Iran, Italy, México, Peru, Romania, Spain, Taiwan, UK, Uruguay, and USA. These high technical quality works cover aspects of FPGA-based system design like custom DSPs, computer arithmetic, cryptography, control systems, instrumentation, video processing, embedded processors, test, fault tolerance, low-power design, high-level languages, and education. More than 100 researches and student attend this conference.

The selection of articles presented in this special issue is from the SPL2008 (IV Southern Conference on Programmable Logic) held in Bariloche, Argentina, during March 26–28, 2008. Thirty relevant researches help us in the review process to select the final 6 contributions covering topics of high-level languages, wireless sensor network, configurable architectures, signal processing, and arithmetic units.

The editors of this special issue on programmable logic and applications hope that this edition constitutes

a contribution of FPGA design, being valuable for electronic engineers and designers.

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