



# FPGA-based Implementation of Signal Processing Systems

Roger Woods, John McAllister, Gaye Lightbody, Ying Yi

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An important working resource for engineers and researchers involved in the design, development, and implementation of signal processing systems

The last decade has seen a rapid expansion of the use of field programmable gate arrays (FPGAs) for a wide range of applications beyond traditional digital signal processing (DSP) systems. Written by a team of experts working at the leading edge of FPGA research and development, this second edition of *FPGA-based Implementation of Signal Processing Systems* has been extensively updated and revised to reflect the latest iterations of FPGA theory, applications, and technology. Written from a system-level perspective, it features expert discussions of contemporary methods and tools used in the design, optimization and implementation of DSP systems using programmable FPGA hardware. And it provides a wealth of practical insights—along with illustrative case studies and timely real-world examples—of critical concern to engineers working in the design and development of DSP systems for radio, telecommunications, audio-visual, and security applications, as well as bioinformatics, Big Data applications, and more. Inside you will find up-to-date coverage of:

- FPGA solutions for Big Data Applications, especially as they apply to huge data sets
- The use of ARM processors in FPGAs and the transfer of FPGAs towards heterogeneous computing platforms
- The evolution of High Level Synthesis tools—including new sections on Xilinx's HLS Vivado tool flow and Altera's OpenCL approach
- Developments in Graphical Processing Units (GPUs), which are rapidly replacing more traditional DSP systems

FPGA-based Implementation of Signal Processing Systems, 2nd Edition is an indispensable guide for engineers and researchers involved in the design and development of both traditional and cutting-edge data and signal processing systems. Senior-level electrical and computer engineering graduates studying signal processing or digital signal processing also will find this volume of great interest.



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