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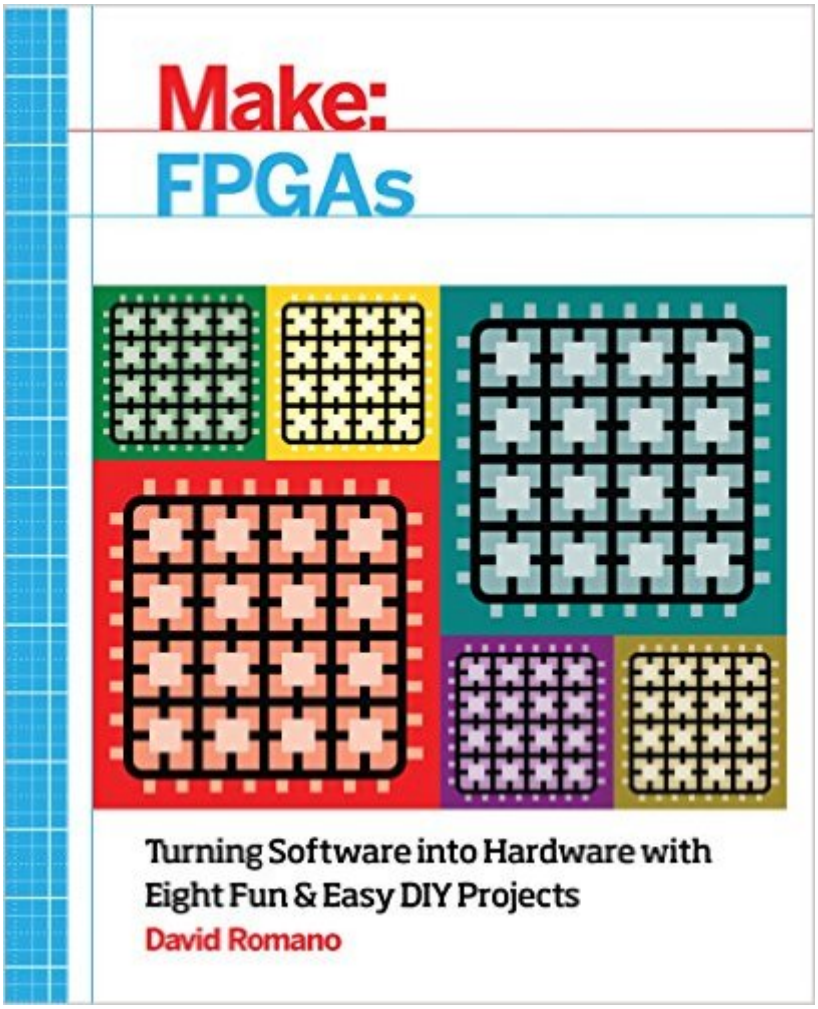
Make: FPGAs: Turning Software Into Hardware With Eight Fun And Easy DIY Projects



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Synopsis

What if you could use software to design hardware? Not just any hardware--imagine specifying the behavior of a complex parallel computer, sending it to a chip, and having it run on that chip--all without any manufacturing? With Field-Programmable Gate Arrays (FPGAs), you can design such a machine with your mouse and keyboard. When you deploy it to the FPGA, it immediately takes on the behavior that you defined. Want to create something that behaves like a display driver integrated circuit? How about a CPU with an instruction set you dreamed up? Or your very own Bitcoin miner You can do all this with FPGAs. Because you’re not writing programs--rather, you’re designing a chip whose sole purpose is to do what you tell it--it’s faster than anything you can do in code. With Make: FPGAs, you’ll learn how to break down problems into something that can be solved on an FPGA, design the logic that will run on your FPGA, and hook up electronic components to create finished projects.

Book Information

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Customer Reviews

This book has a very straightforward goal, and it meets that goal well. "Make: FPGAs" does not attempt to turn you into an expert in using software and Field Programmable Gate Arrays (FPGAs) to create special-function hardware. Instead, it presents "eight interesting FPGA projects that will help you develop some of the skills you will need to really begin exploring this exciting world of

turning software into hardware through FPGA technology." David Romano, the author, shows several consumer-affordable ($29.95 to $200) FPGA development boards and then explains the design flow necessary to work with them effectively. The projects range from a simple frequency divider, to a Bitcoin miner, and a software-defined radio (SDR). The software for the projects, meanwhile, can be downloaded from GitHub. The book takes a clear, step-by-step approach to each project and offers many illustrations, screenshots and photographs.(My thanks to O'Reilly Media for providing a review copy.)

This book uses multiple boards for illustration, and does not go beyond the examples which come with the boards. I promptly return the book. If you want to learn Verilog, I would recommend "Advanced Chip Design, Practical Examples in Verilog" instead. Or even free articles like this one: [...]. For FPGA boards, this Xilinx board comes with necessary (English) docs: XC6SLX9 Starter Board,Xilinx Spartan 6 FPGA (find it on flea bay).

Don't expect to learn how to write RTL hardware descriptions from this book. Do expect to have a complete guide to using the Xilinx ISE development environment and several different Xilinx FPGA based boards. All firmware that you build and load into hardware is already written. The book is simply a guide to compiling and loading this firmware into FPGA devices. As such it is complete and accurate. Easy to read and understand.

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