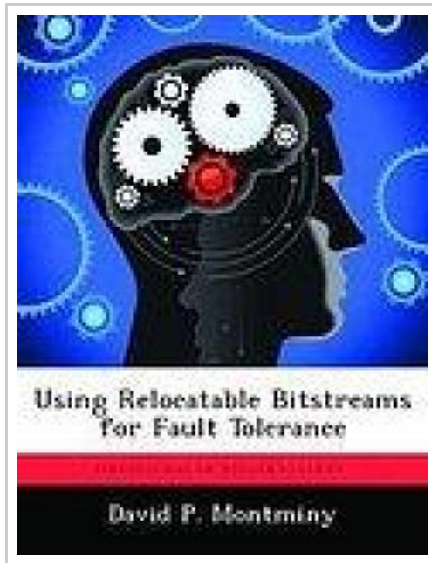




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Using Relocatable Bitstreams for Fault Tolerance

By David P. Montminy

Biblioscholar Nov 2012, 2012. Taschenbuch. Book Condition: Neu. 246x189x8 mm. This item is printed on demand - Print on Demand Neuware - This research develops a method for relocating reconfigurable modules on the Virtex-II (Pro) family of Field Programmable Gate Arrays (FPGAs). A bitstream translation program is developed which correctly changes the location of a partial bitstream that implements a module on the FPGA. To take advantage of relocatable modules, three fault-tolerance circuit designs are developed and tested. This circuit can operate through a fault by efficiently removing the faulty module and replacing it with a relocated module without faults. The FPGA can recover from faults at a known location, without the need for external intervention using an embedded fault recovery system. The recovery system uses an internal PowerPC to relocate the modules and reprogram the FPGA. Due to the limited architecture of the target FPGA and Xilinx tool errors, an FPGA with automatic fault recovery could not be demonstrated. However, the various components needed to do this type of recovery have been implemented and demonstrated individually. 134 pp. Englisch.



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