

Platform Programmable Digital Signal Processors (PDSPs), Advanced System Integrated Circuit (ASICs) have become key components for implementing high-performance Digital Signal Processing (DSP) systems, especially in digital communications, image and video processing applications. But more difficulties are still in existence when using these conventional processors. This research work shows how one parallel technology Field Programmable Gate Array (FPGA) can be applied to digital signal processing problem to increase computational speed. The best algorithm for solving Digital Signal Processing Applications; Fast Fourier Transform (FFT) algorithm has shown significant speed improvement when implemented on a FPGA. The design methodology, the design tools for implementing DSP functions in FPGAs is discussed e.g. System Generator from Xilinx (Impulse Codeveloper), Impulse C programming model etc. FPGA design in compares with other technology e.g. Programmable Digital Signal Processors (PDSPs), Advanced System Integrated Circuit (ASICs) is envisaged. In this research work FPGA typically exploits parallelism because FPGA is a parallel device. With the use of simulation tool, Impulse Codeveloper (Impulse C), of FPGA platform on FFT algorithm, graphical tools that provide initial estimates of algorithm throughput such as loop latencies and pipeline effective rates are generated. Using such tools, you can interactively change optimization options or iteratively modify and recompile C code to obtain higher performance. Also both hardware and software elements of the complete application is described.

Abstract

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