Abstract

This paper describes the exploration of design parameters for widely used Digital Signal Processing (DSP) algorithms and techniques. In this paper, some of the DSP algorithms and techniques are considered and executed them on soft core processors like General Purpose Processors, Digital Signal Processing processors and also on hard core processor Field Programmable Gate Array (FPGA). After execution, the design parameters like execution time, area (number of slices required on FPGA) of the DSP techniques are acquired for the computing architectures. The acquired parameters play crucial role in selection of resources for their optimum execution in real time. In this paper, the acquired design parameters are represented as DSP techniques resource utilization chart for hardware software co-design. The resource utilization chart could help in designing optimized computing architecture for DSP applications. Finally, the described methodology has been evaluated by considering OFDM transmitter, a real time DSP application, as a case study and proposed optimized computing platform for OFDM transmitter.

**Index Terms**

Computer Science

Communications

**Keywords**

Design Space Exploration, Hardware-Software co-design, TMS320C6713 DSK, Virtex-5 FPGA.