

Dymanic Fixed-Point Implementation of Algorithms

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Abstract

Loss in the accuracy is one of the most important issues in the fixed point implementation of algorithms. Algorithms are generally designed and tested assuming floating-point arithmetic. However, problem arises when they are implemented on integer processors. One factor contributing in the loss is the dynamic range of the variables where implementations are generally based on a fixed set of parameters. In this paper we present a technique to reduce this loss by making the best use of available hardware at every step of the algorithm. This provides optimal performance at all signal levels. In addition, the technique can also be used as a tool to perform quick analysis of the algorithm for quantization effects and to facilitate the programmer with the fixed- point format selection.

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