Abstract

Recently, parallel computing has been considered increasingly and many researchers have focused on this topic in order to enhance their designs, especially speed parameter to reach lower delay in computational operations. Among the methods which use parallel computing, systolic arrays have attracted researcher's attention because of its unique characteristics. Systolic arrays are arrays of processors which are connected to a small number of nearest neighbors in a mesh-like topology. Processors perform a sequence of operations on data that flows between them. Generally, the operations will be the same in each processor, with each processor performing an operation (or small number of operations) on a data item and then passing it on to its neighbor. Systolic arrays are often used for specific operations, such as "multiply and accumulate", to perform massively parallel integration, convolution, correlation, matrix multiplication, or data sorting tasks. On the other hand, silicon limitations for transistors fabrication in future causes a need to substitute this technology by an appropriate one that among them carbon nanotube (CNT) technology has the most probability. In this paper we
conducted a survey on using systolic array in multiply and accumulate operations by a VLSI circuit based on CNT technology.

References


Index Terms
Keywords

Systolic Array; Parallel, CNT, Matrix Multiplication, CMOS, Cell.