Abstract

The increasing industrial growth needs its system to be fully controllable. Such control systems are almost composed of VLSI components such as adders, multipliers and accumulators. This paper analyzes two MAC units with array, booth algorithms and those blocks are incorporated in PID controller architecture. Comparisons are made with power consumption of each architecture. The simulations are done in Modelsim and power results are synthesized using Xilinx ISE. The results suggest that the PID controller with booth based MAC unit and PID architecture consumes less power when compared to array based architectures.
Design of Multiplier based Low Power PID Controllers

References

- Liguo Qu, Yourui Huang and Liuyi Ling &quot;Design and implementation of intelligent PID controller based on FPGA&quot;, IEEE computer society, 2009, pp. 511-515.

Index Terms

Computer Science  Control Systems

Keywords

Multiply-accumulate (mac)  Array Multiplier  Booth Multiplier
Proportional-integral-derivative Controllers (pid)