Abstract

The Four-Quadratic Arctangent (atan2) function is used in many fields: telecommunication to recover the phase of the signal, robotics to computing the inverse kinematic for a robot arm control system, and in general used in transformation from Cartesian to polar coordinates. In this paper an FPGA based architecture design and its implementation has been presented. The piecewise polynomial approximation method with non-uniform segmentation has been used to implement the arctangent because it is suitable in hardware implementation. It is saving in resource utilization and takes a suitable accuracy.

References

2. Roberto Gutierrez and Javier Valls, 2009, Low-power fpga-implementation of atan (y/x) using look-up table methods for communication applications, Journal of Signal Processing
Systems.

Index Terms
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FPGA, Four–Quadratic Arctangent, piecewise polynomial approximation