

High speed and Power efficient Digital VLSI Architecture of Artificial Neural Network for reliable in-situ Water Quality Application

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Abstract

This paper presents a low-power portable Digital VLSI architecture using an Artificial Neural Network (ANN) for Water Quality Monitoring. The study uses Posit number representation to implement ANN on both FPGA and ASIC platform. The proposed ANN Posit architecture has 50% improvement over IEEE 754 in terms of Power and Silicon Area, and 13% improvement in speed it achieves the comparable accuracy. The same design using FPGA consumes 6 orders higher power than VLSI architecture.

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