A General-Purpose Vector-Quantization Processor Employing Two-Dimensional Bit-Propagating Winner-Take-All

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A general-purpose vector-quantization (VQ) processor featuring high-speed and versatile winner-take-all (WTA) functions is presented. A two-dimensionally bit-propagating WTA developed in this work accomplishes the maximum/minimum value identification for 6b 128 inputs in a single clock cycle, which is five times faster than the conventional approach. Furthermore, the new block addressing scheme enables various options in WTA operations.

The chip was fabricated in a standard CMOS process and the operation was demonstrated by applying to handwritten character recognition as an example.