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Article

High resolution smart image sensor with integrated parallel analog processing for multiresolution edge extraction
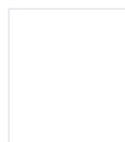
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ABSTRACT This paper presents a vision sensor which generates a multiresolution edge description using parallel analog processing support. Its multimodule architecture is based on a Multi-port Access of photo-Receptor (MAR) hexagonal sensor coupled to an external but powerful analog processing unit and a microcoded digital interface. The system supports image scanning and edge tracking. Satellite analog processing allows extensive computation using VLSI technology, leaving all the sensor area available for photo-transduction and communication pathways. It is thus possible to design a sensor with up to 500 × 500 pixels on a single CMOS chip using 1.2 μm technology. The goal of the approach described here is to exploit an imbedded edge tracing algorithm in order to generate a scene description as a list of connected edge segments. Experimental results are presented for the current prototype which implements 256×256 pixels with corresponding multiresolution edge maps.

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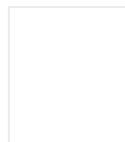Wayne H. Wolf

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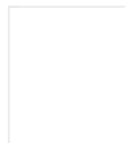Analog Integrated Circuits and Signal Processing 01/1998; 15(2). DOI:10.1023/A:1008203907863 · **0.40 Impact Factor**

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