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Design of Sobel Filter in VHDL

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Abstract : In order to automate the quality control process of pipe's welding joint, we present in this paper a new design of an embedded computer vision system, which is based on a camera, controlled by an FPGA platform (Zynq-7000) for acquisition and image processing on the same FPGA circuit. A VHDL implementation of Sobel Edge Detection Algorithm is proposed. The obtained results were validated with those obtained by MATLAB. This will allow us to develop other tools more powerful and more robust.

Keywords : Quality control, pipe welds, FPGA, Sobel, VHDL