

A New Algorithm for Detecting Sharp Defects of Ceramic Tiles Using Morphological Operators and Genetic Algorithms

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Abstract Sharp defects such as cracks and spots usually create high-contrast thin structures in the image, so the morphological operators are suitable tools to extract them. In this paper, a new algorithm to detect sharp defects of ceramic tiles using morphological operators and genetic algorithms is proposed. The proposed algorithm includes two stages: *feature extraction* and *inspection*. In *feature extraction* stage, a fast genetic algorithm introduces an optimal mask for morphological operators; using one (few) reference image(s) with no defect. In the *inspection* stage, the sharp defects are extracted using the mask that is obtained former. The computational complexity and precision of the proposed algorithm is acceptable. Simulations show the precision of the proposed algorithm is more than the convolution-based methods as benchmark, as well as its flexibility.