

A New Algorithm for Detecting Texture Defects of Ceramic Tiles

Mahdi Saadatmand-Tarzjan

Electrical Engineering Faculty, K.N.-Toosi University of Technology, Tehran, Iran
m_saadatmand_tarzjan@yahoo.com

Morteza Khademi

Engineering Faculty, Ferdowsi University, Mashad, Iran

Abstract In this paper a new algorithm to detect texture defects of ceramic tiles is proposed. The proposed algorithm has two stages: *feature extraction* and *inspection*. In the *feature extraction* stage, the parameters of proposed algorithm is determined using one (few) reference ceramic tile(s) with no defect. At first, the colors of the texture are clustered to form a model of texture colors. Then, each image is decomposed into a multi-level image according to nearest neighborhood rule and using extracted color clusters. And finally, a criterion to measure local density of blobs in each level of the image is obtained by applying morphological operators to each level. In the *inspection* stage, the inspected image is decomposed into a multi-level image by the method mentioned former, firstly. And then, for each level, the criterion of local density of blobs is computed. The texture defects of inspected ceramic tile are extracted by comparing its local densities with local densities of reference image(s), level by level. Simulations show that the proposed algorithm in comparison to other algorithms has less computational complexity and acceptable precision in detecting texture defects.