

Computer aided weld defect delineation using statistical parametric active contours in radiographic inspection

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Abstract: A perfect knowledge of a defect shape is determinant for the analysis step in automatic radiographic inspection. Image segmentation is carried out on radiographic images and extract defects indications. This paper deals with weld defect delineation in radiographic images. The proposed method is based on a new statistics-based explicit active contour. An association of local and global modeling of the image pixels intensities is used to push the model to the desired boundaries. Furthermore, other strategies are proposed to accelerate its evolution and make the convergence speed depending only on the defect size as selecting a band around the active contour curve. The experimental results are very promising, since experiments on synthetic and radiographic images show the ability of the proposed model to extract a piece-wise homogenous object from very inhomogeneous background, even in a bad quality image.

Keywords : Welded joint, Radiographic inspection, Active contours, local statistics-based model, band region selection