Maximum Likelihood Approach to Weld Defect Detection

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Abstract : Among the segmentation methods, boundary extraction based on deformable models is a powerful technique to describe the shape and then deduce after the analysis stage, the type of the defect under investigation. This paper describes a new method for automatic estimation of the contours of weld defect in radiographic images. The method uses a statistical formulation of contour estimation by exploiting a region based maximum likelihood criterion. Implementation is performed by a deterministic iterative algorithm that drives the model quickly to the boundaries, by limiting the investigation to the pixels laying in the normal directions of the contour at each iteration. By this way, the computation cost will be reduced compared to implementation using the eight connected neighbors. Simulation results seem to be very promising

Keywords : Contour detection, Maximum likelihood criterion, weld defect, Non destructive testing, radiographic images