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Probabilistic deformable models for weld defect contour estimation in radiography

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Abstract:
This paper describes a novel method for segmentation of weld defect in radiographic images. Contour estimation is formulated as a statistical estimation problem, where both the contour and the observation model parameters are unknown. Our approach can be described as a region-based maximum likelihood formulation of parametric deformable contours. This formulation provides robustness against the poor image quality, and allows simultaneous estimation of the contour parameters together with other parameters of the model. Implementation is performed by a deterministic iterative algorithm with minimal user intervention. Results testify very good performance of such contour estimation approach.

Keywords: Gaussian and Rayleigh distributions, contour estimation, maximum likelihood, parametric deformable contours