

# Fast Level Set Algorithm for Extraction and Evaluation of Weld Defects in Radiographic Images

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**Abstract:** The classification and recognition of weld defects play an important role in weld inspection. In this paper, in order to automate inspection task, we propose an aide-decision system. We believe that to obtain a satisfied defects classification result, it should be based on two kinds of information. The first one concerns the defects intensity and the second one is about its shape. The vision system contains several steps; the most important ones are segmentation and feature computation. The segmentation is assured using a powerful implicit active contour implemented via fast algorithm. The curve is represented implicitly via binary level set function. Weld defect features are computed from the segmentation result. We have computed several features; they are ranked in two categories: Geometric features (shape information) and Statistic features (intensity information). Comparative study, on synthetic image, is made to justify our choice. Encouraging results are obtained on different weld radiographic images.

**Keywords :** Code generation, State machine, Radiographic inspection, image segmentation, Level set, Region-based models, Features computation