Detection of Weld Defects in Radiographic Image by the Level Set Methods.

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Abstract : All level set based image segmentation methods are based on an assumption that the level set function is or close to a signed distance function (SDF). Small time step and costly reinitialization procedure must be applied to guarantee this assumption, and in order to calculate the gradient, simple numerical schemes, based on finite differences, are applied. In this paper, in order to achieve higher order accuracy in the temporal discretization, we have used Total Variation Diminishing (TVD) Runge Kutta (RK) methods. The spatial derivatives are determined by using the Essentially Non- Oscillatory methods (ENO) that accurately capture the formation of sharp gradients in the moving fronts. Experiments results show that we have obtained good results both on synthetic and real images.

Keywords : ENO and WENO schemes, Edge detection, Image processing, image segmentation