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Segmentation of Weld Defects Using Multiphase Level Set by the Piecewise-Smooth Mumford-Shah Model

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Abstract: This paper deals with the problem of the X-ray image segmentation used to detect weld defects for a non-destructive testing task. In this work we have implemented a multiphase method using the Mumford and Shah piecewise smooth model to extract the size and the texture information of defect and its region. Using this model which is more robust to the noise and less sensitive to the position of the initial curve, we have obtained a maximum of information for several regions in the X-ray image (the geometry of weld beads and defects). Our results show that the model developed can do at the same time the image segmentation and restoration.

Keywords : Level set