Weld Defect Classification in Industrial Radiography through Hu and Zernike Moments

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Abstract: In this study, we use moments-based features for classification of welding defects in radiographs. A set of descriptors corresponding to Hu and Zernike moments was extracted for each segmented defect and given as input to Support Vector Machine (SVM) classifier to identify the defect type. The performance of the classification system is evaluated using 344 radiographic images representing four types of defects: Crack, Lack of penetration, Porosity, and Solid inclusion. The experimental results show that Zernike moments allow efficient weld defect discrimination and achieve high recognition rate compared to Hu moments.

Keywords: Radiographic image, weld defect, classification, Hu moments, Zernike moments, Support vector machine