Hybrid Shape Descriptors for an Improved WeldDefect Retrieval in Radiographic Testing

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Abstract : In this paper, four region-based shape descriptors well reported in the literature are used to characterize weld defect types ofcrack, lack of penetration, porosity and solid inclusion, usually encountered in radiographic testing of welds. The rectangularity and the roundness in the geometric descriptor (GEO) are used in order to propose anhybridization algorithm so that the hybrid descriptor issued from GEOand each of the other descriptors becomes more discriminant in suchapplication where, due to bad radiographic image quality and weld defect typology, the human film interpretation is often inconsistent andlabor intensive. According to the results given in the experiments, theefficiency of the proposed hybrid descriptors is confirmed on the welddefects mentioned above where, the retrieval scores are significantly improved compared to the original descriptors used separately.

Keywords : Weld decfec, radiography, shape descriptor, hybridization