Selecting an Appropriate Segmentation Method Automatically Using ANN Classifier

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Abstract

In general, we can easily determine the manufacturing step that does not function properly by referring to the flaw type. However, a successful segmentation of flaws is the prerequisite for the success of the subsequent flaw classification. It is worth noticing that, different segmen- tation methods are needed for different types of images. In the study, a mechanism that is capable of choosing a proper segmentation method automatically has been proposed. The mechanism employed artificial neural networks to select a suitable segmentation method from three methods, i.e., Otsu, HV standard deviation, and Gradient Otsu. The selection is based on the four features extracted from an image including standard deviation of background image, variance coefficient, the ratio of the width to height of both foreground and background histograms. The results show the success of the proposed mechanism. The high segmentation rate reflects the fact that the four carefully selected features are adequate

Keyword：Segmentation, Feature Extraction, Flaw Detection, Flaw Classification, BPN Network.