



DETECTION OF WELDING FLAWS WITH MLP NEURAL NETWORK AND CASE BASED REASONING

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ABSTRACT—The correct detection of welding flaws is important to the successful development of an automated weld inspection system. As a continuation of our previous efforts, this study investigates the performance of multi-layer perceptron (MLP) neural networks and case based reasoning (CBR) individually as well as their combined use. It is found that better performance is attained by all the methods tested in this study than that was obtained by the fuzzy clustering methods employed before. For each method, the effect of using different parameters is also investigated and discussed. An improvement of CBR performance is not guaranteed when the MLP NN based attribute weighting is used. In addition, none of the three combination-of-multiple-classifiers methods (majority voting, Borda count, and arithmetic averaging) tested improve the performance of the best individual classifiers.

Key Words: Welding flaws, MLP neural networks, Case based reasoning, Attribute weighting, Combination of multiple classifiers