

2014

# Multiclass Classification of Weld Defects in Radiographic Images Based on Support Vector Machines

**F. Mekhalfa, N. Nacereddine**

**Abstract :** In this paper, we present through the experimental study the use of support vector machines (SVMs) in the automatic classification of weld defects in radiographic images. SVM is a machine learning tool used for classification and regression and it is well known for binary classification, but there are many approaches for multiclass classification, the most popular are one versus all and one versus one. The performance of the proposed classification system is evaluated using hundreds of radiographic images representing four types of defects. The experimental results show that the SVM classifier is an efficient automatic weld defect classification algorithm and can achieve high accuracy percent and is faster than multilayer perceptron artificial neural network (MLP-ANN).

**Keywords :** Weld defect classification, Support vector machine, one versus all approach, one versus one approach, multilayer perceptron artificial neural network