HIGH-PERFORMANCE MULTIMODAL APPROACH FOR DEFECT IDENTIFICATION IN KNITTED AND WOVEN FABRIC

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Degree of Master of Philosophy

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Thesis submitted in partial fulfillment of the requirements for the degree Master of Philosophy in Computer Science and Engineering

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Dr. Chathura de Silva

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Dr. (Mrs.) Sulochana Sooriyarachchi

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Abstract

Fabric inspection is a key quality assurance process in the garment industry as it involves the detection of defects in a fabric roll prior to being sent for production. Many studies have been conducted on defect identification in either knitted or woven fabrics, but only a few have considered both types. In this paper, a method for detecting defects in both knitted and woven fabrics is proposed. The method involves extracting co-occurrence, wavelet and local entropy features from a fabric image and classifying the image as defective or defect-free using a classifier with these features given as input. Five commonly-used classifiers were tested. This method was applied to a dataset with seventeen different types of defects and an overall classification accuracy of 93.31% was achieved by the k-nearest neighbours classifier.

Keywords:

fabric inspection, defect detection, co-occurrence, wavelet, local entropy

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