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**A STUDY OF DIGITAL IMAGE PROCESSING OF LARGE-SCALE
QUALITY IMPROVEMENT**

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ABSTRACT

Flexible and self-adaptive behaviour in automated quality control systems are features that may significantly enhance the robustness, efficiency and flexibility of the industrial production processes. However, most current approaches on automated quality control are based on rigid inspection methods and are not capable of accommodating to disturbances affecting the image acquisition quality, fact that has direct consequences on the system's reliability and performance. In an effort to address the problem, this paper presents the development of a self-adaptive software system designed for the pre-processing (quality enhancement) of digital images captured in industrial production lines. The approach introduces the use of scene recognition as a key-feature to allow the execution of customized image pre-processing strategies, increase the system's flexibility and enable self-adapting conducts. Real images captured in a washing machines production line are presented to test and validate the system performance. Experimental results demonstrate significant image quality enhancements and a valuable reliability improvement of the automated quality control procedures.

Keywords: Image Acquisition Quality, Quality Control, Rigid Inspection Methods