IMAGE-BASED QUALITY INSPECTION IN METAL ROOFING SHEETS PRODUCTS USING IMAGE PROCESSING

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Abstract: Metal roofing sheets have a vital function in the construction sector, serving to safeguard and enhance the visual appeal of buildings. Colored metal roofing is highly preferred due to its exceptional durability and aesthetic appeal. It is important to guarantee the quality of these sheets. However, the existing method of inspecting them manually, which depends on human participation, is both time consuming and prone to mistakes. Progress in computer vision has led in a development of effective solutions for complex issues in industrial quality inspection processes. This study suggests the use of an automated image-based inspection system to improve the quality inspection process in the roofing sheet manufacturing industry. The paper described use image processing algorithms to identify surface defects on metal roofing sheets. The method commences with the acquisition of images of the metal roofing sheets, which is then followed by a sequence of stages comprising image conversion, denoising, enhancement, normalization, thresholding, and feature extraction. These strategies jointly improve the precision and effectiveness of the quality inspection process, decreasing the need for manual methods and reducing the chance of human mistakes.

Keywords: Image processing, Defect detection, Metal sheets.