

ANALYSIS OF CRACKS AND DEFECTS ON CONCRETE SURFACE USING IMAGE PROCESSING TECHNIQUES

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Abstract

Concrete is nowadays one of the most required materials used in construction and for this purpose its properties have been more and more studied so that it can be used at its maximum performance. In this paper, aim is to concentrate on the quality of the concrete by considering the color changes occurring in the curing process. For a curing test it requires various types of tests such as tensile strength test, temperature test etc to be checked. But in this proposed idea digital image processing can be used for determining the color of the concrete for each age of the specimen used. Cracking can invite sudden failures of concrete structures. The objective of this paper is to develop an integrated model based on digital image processing in developing the numerical representation of defects. The integration model consists of crack quantification, change detection, neural networks, and classifiers to visualize the defects in such a way that it mimics the on-site visual inspections. Quantifying the surface color changes by digital image analysis to assess the quality of the concrete mixture is investigated. Based on these results the concrete strength can be determined. This type of set up can be done for the industries producing the large amount of cement products so that no manual inspection of the things can be done. We also detect the cracks automatically by using the images as the data and based on the information the type of concrete quality can be determined.

Keywords : Concrete mixture, Tensile strength test, temperature test, crack detection.