

Steel Bridge Coating Inspection Using Image Processing with Neural Network Approach

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Abstract : Steel bridges deterioration has been one of the problems in North America for the last years. Steel bridges deterioration mainly attributed to the difficult weather conditions. Steel bridges suffer fatigue cracks and corrosion, which necessitate immediate inspection. Visual inspection is the most common technique for steel bridges inspection, but it depends on the inspector experience, conditions, and work environment. So many Non-destructive Evaluation (NDE) models have been developed use Non-destructive technologies to be more accurate, reliable and non-human dependent. Non-destructive techniques such as The Eddy Current Method, The Radiographic Method (RT), Ultra-Sonic Method (UT), Infra-red thermography and Laser technology have been used. Digital Image processing will be used for Corrosion detection as an Alternative for visual inspection. Different models had used grey-level and colored digital image for processing. However, color image proved to be better as it uses the color of the rust to distinguish it from the different backgrounds. The detection of the rust is an important process as it's the first warning for the corrosion and a sign of coating erosion. To decide which is the steel element to be repainted and how urgent it is the percentage of rust should be calculated. In this paper, an image processing approach will be developed to detect corrosion and its severity. Two models were developed 1st to detect rust and 2nd to detect rust percentage.

Keywords : steel bridge, bridge inspection, steel corrosion, image processing

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