VISUAL INSPECTION AND CRACK DETECTION OF RAILROAD TRACKS

ABSTRACT :

Surface analysis is a very important measurement for track maintenance for Railroad Tracks, because deviations in surface geometry indicate where potential defects may exist. A rail surface defects inspection method based on computer vision system is proposed in the paper. Various algorithms related denoising, filtering, thresholding; segmentation and feature extraction are applied for processing the images of Railroad surface defect and cracks. It has mostly been implemented on computers. For better speed and complexity, the algorithms need to be implemented on embedded platforms. These methods were designed for MATLAB library.

INTRODUCTION / PROJECT ASSOCIATES:

The incidence of railway accidents in our country is greater as compared to other countries of the world. Accidents occur due to the errors and negligence of the employees. Many high speed and heavy railways have been built and applied in recent years. The reliability of railway tracks needs to be paid more attention than before. In the past, majority of rail problems were attributed primarily to the propagation of internal defects in the rail web and head due to fatigue and excessive wear. As some advanced manufacturing technology were introduced, such as higher carbon steels and cleaner steel-making processes, the probability of inner defects reduced a lot. Rail failures caused by surface defects in the rail head have become much more common within the rail industry these days.

Surface defects can be distinguished into following types:

a) The cracks in the rail surface and the rolling contact fatigue damage which have occurred due to high stresses and resistance. In most cases, cracks grow out of some internal defects and can be defined as severe damage directly.

b) The main two kinds of rolling contact fatigue damage, including spalling of rail head and rail corrugation, are also of great significance to the track inspection .

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