

Automating Visual Inspection for Underfloor Equipment of Railway Vehicles Using On-Track Cameras

Takashi KOJIMA Kohei MIYAHARA Akihito KAZATO Masato UKAI

The authors developed an image capturing system and a diagnosis algorithm for automating visual inspection of underfloor equipment of railway vehicles. The developed system consists of a line scan camera, line lights, a laser Doppler velocimeter and a computer, to scan passing vehicles from the ground. Test results using real vehicles indicate that the system can obtain detailed continuous images of the side of vehicles. The proposed algorithm using template matching and subtraction is designed to be robust against disturbances. The algorithm was tested on images captured under simulated variations in weather and the stain of underfloor equipment. As a result, the algorithm diagnosed, for example, whether the valve was fully open normally with an accuracy of AUC 0.990.