Improvement of Detection Accuracy of Tunnel Cracks Using Image Processing

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Our previous RTRI report presented a basic crack detection algorithm. However, the technology which detects the crack automatically with high accuracy is strongly requested. In this report, we describe the algorithm developed by us as given below. We have developed image inpainting algorithm which removes noise element efficiently, and the new image processing algorithm which detects a closed crack, a water leak, and a repair part, and improved the accuracy of diagnosis of tunnel health. Further, we have developed the image browser which can show continuous image of the tunnel efficiently, and the image editor which can joint or delete cracks by using pixel information. As a result, the detection accuracy of the crack has been improved and the practicability of application of this detection system has fairly progressed.