

## Deep Learning Based Road Crack Detection on an Embedded Platform

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**Abstract :** It is important that highways are in good condition for traffic safety. Road crashes (road cracks, erosion of lane markings, etc.) can cause accidents by affecting driving. Image processing based methods for detecting road cracks are available in the literature. In this paper, a deep learning based road crack detection approach is proposed. YOLO (You Look Only Once) is adopted as core component of the road crack detection approach presented. The YOLO network structure, which is developed for object detection, is trained with road crack images as a new class that is not previously used in YOLO. The performance of the proposed method is compared using different training methods: using randomly generated weights and training their own pre-trained weights (transfer learning). A similar training approach is applied to the simplified version of the YOLO network model (tiny yolo) and the results of the performance are examined. The developed system is able to process 8 fps on NVIDIA Jetson TX1 development kit.

**Keywords :** deep learning, embedded platform, real-time processing, road crack detection

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