

Advanced Concrete Crack Detection Using Light-Weight MobileNetV2 Neural Network

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Abstract : Concrete structures frequently suffer from crack formation, a critical issue that can significantly reduce their lifespan by allowing damaging agents to enter. Traditional methods of crack detection depend on manual visual inspections, which heavily relies on the experience and expertise of inspectors using tools. In this study, a more efficient, computer vision-based approach is introduced by using the lightweight MobileNetV2 neural network. A dataset of 40,000 images was used to develop a specialized crack evaluation algorithm. The analysis indicates that MobileNetV2 matches the accuracy of traditional CNN methods but is more efficient due to its smaller size, making it well-suited for mobile device applications. The effectiveness and reliability of this new method were validated through experimental testing, highlighting its potential as an automated solution for crack detection in concrete structures.

Keywords : Concrete crack, computer vision, deep learning, MobileNetV2 neural network

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