

Crack Detection and Cost Analyzer Using AI

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Abstract: *Crack Vision is an innovative AI-powered Android application developed to detect and analyze wall cracks, providing users with real-time, automated repair cost estimates. By leveraging advanced object detection models such as YOLOv7 and Mask R-CNN, Crack Vision enhances both the accuracy and efficiency of crack detection, enabling precise measurement of crack dimensions, severity assessment, and quick identification of structural issues. This application simplifies the inspection and budgeting process for wall repairs, making it an essential tool for homeowners, contractors, and structural engineers who seek to minimize reliance on manual inspection methods.*

The core functionality of Crack Vision combines high-resolution image processing with state-of-the-art machine learning algorithms, ensuring reliable detection across various wall types and crack textures. Using computer vision and deep learning techniques, the app can differentiate between structural and non-structural cracks, thereby offering a comprehensive solution for repair prioritization.

Furthermore, Crack Vision integrates with a robust backend that stores user data, allowing users to track the condition of their walls over time. This feature aids in preventive maintenance by identifying trends in crack expansion and deterioration, potentially mitigating costly repairs. Additionally, the application provides a detailed breakdown of estimated repair costs based on crack size, depth, and type, empowering users to make informed decisions about necessary repairs.

Crack Vision is designed with user-friendliness in mind, featuring an intuitive interface that guides users through the inspection process. The app also supports multilingual options and customizable settings to cater to diverse user needs. In sum, Crack Vision redefines wall crack inspection, offering a rapid, accurate, and accessible solution for both casual users and industry professionals, ultimately contributing to improved building safety and maintenance efficiency.

Keywords: Android application, Computer Vision, Object Detection, Machine Learning.