Defect Detection using Image Processing and AI

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Abstract: *In the manufacturing industry, ensuring product quality is essential to maintain customer satisfaction and reduce losses. This research focuses on developing an automated defect detection system using image processing and artificial intelligence (AI). The proposed system captures product images and applies preprocessing techniques to enhance image quality. It then uses AI models, particularly machine learning or deep learning algorithms, to identify and classify defects such as cracks, scratches, or misalignments. By combining traditional image processing methods with intelligent algorithms, the system achieves high accuracy in detecting both visible and subtle defects. This approach reduces human error, speeds up inspection processes, and improves overall production efficiency. The solution also features a user-friendly web interface for real-time monitoring and analysis. This project demonstrates the potential of AI-powered image analysis in modern quality control systems.*

Keywords: artificial intelligence