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Defective PCB Detection System

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Abstract: *The PCB industry seeks advanced automation for defect-free production, with Machine Vision being a key method. This study introduces enhanced automation by using local feature detectors like SURF and ORB to identify PCB types before defect detection. A MATLAB-based prototype was developed, achieving 98.66% accuracy for database images and 100% for camera-acquired images. Defect detection reached 92.3% accuracy, effectively identifying issues like SMD defects. The system reduces human dependency and boosts production efficiency, showing strong potential for closed-loop, automated PCB inspection.*

Keywords: PCB inspection, Machine Vision, SURF, ORB, Automated Defect Defection, Image Processing, Quality Control