AI Chip Wafer Map Systemic Defect Detection Using Lightweight Models and Feature Matching

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Abstract

Wafer defect pattern recognition is important for stable semiconductor production, but many deep learning models are too large for edge devices. This study uses a public wafer map dataset to build a fast edge-based automatic detection system. It includes defect classification, detection of unknown defects, and abnormal batch filtering. The final workflow can be used on production lines to help engineers find abnormal batches more efficiently and improve manufacturing performance.