Clustering failure patterns in wafer bin maps when some of them are partially masked

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ABSTRACT

We construct a new procedure for clustering partially masked images from wafer bin maps (WBMs). A WBM is an image of bin codes from circuit probe tests on a wafer after a semiconductor manufacturing process. Certain defect patterns of WBMs provide engineers with information to isolate manufacturing problems. However, some WBMs may be masked at a small or large area due to the sequential circuit probe tests for bin codes. We proposed a new modified Radon transformation to extract features for better clustering and an approach by convolutional neural networks. We demonstrated our procedure on synthetic WBMs with various defect patterns and levels of masking through a simulation study.