Annotation

The purpose of the thesis is to develop the design and software of a device for automated detection of surface defects in printed circuit boards that can be used in production.

This thesis presents theoretical information on PCB defects. The theoretical information about the methods of controlling printed circuit boards, their advantages and disadvantages in certain industries is presented.

The choice of elements for the device and the justification for their selection; the choice of a neural network and a detailed analysis of all the possibilities are carried out. The design of the device, the software algorithm for detecting defects, the capabilities of the neural network and its results are described. The performance of the neural network was evaluated and showed a result of 92.5%. The general statistics of the neural network are described. The advantages and disadvantages of this device are analyzed, and the prospects for improving and developing this development are considered.

The work is presented on 85 pages, contains 4 chapters, 36 figures, 28 references.

Keywords: neural networks, printed circuit boards, defect detection, visual and optical inspection.