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# A Method for Extracting Features of Infrared Cloud Image Data of the Printed Circuit Board

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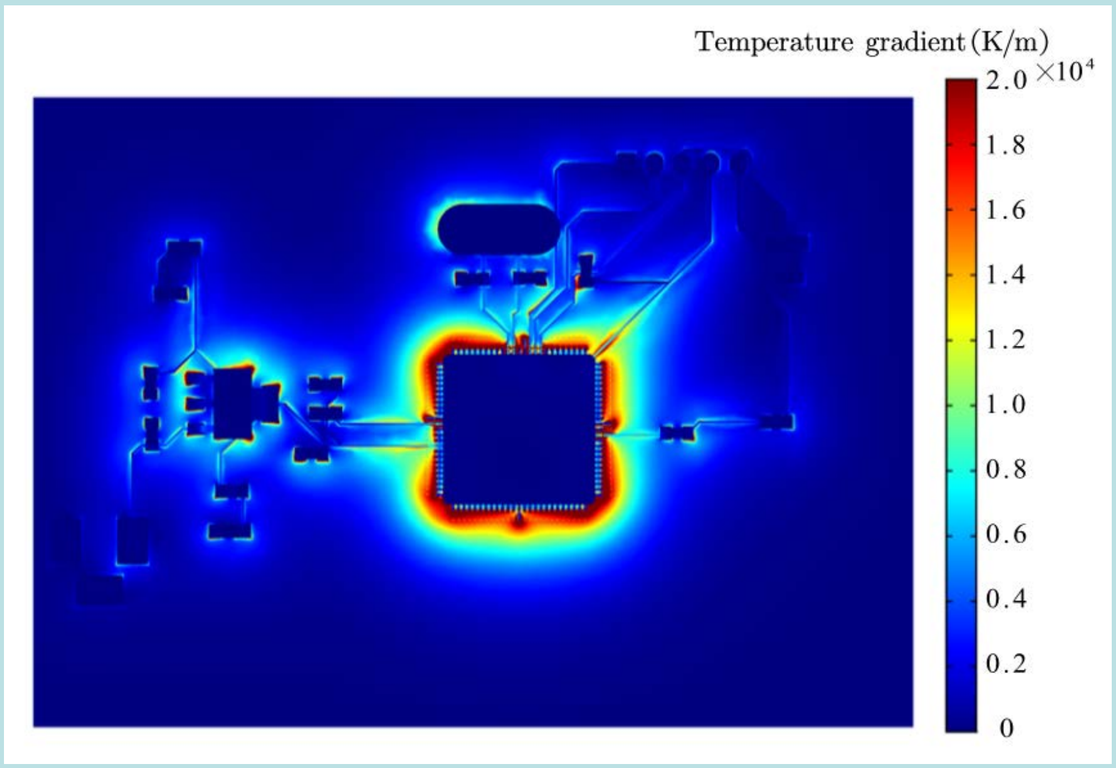
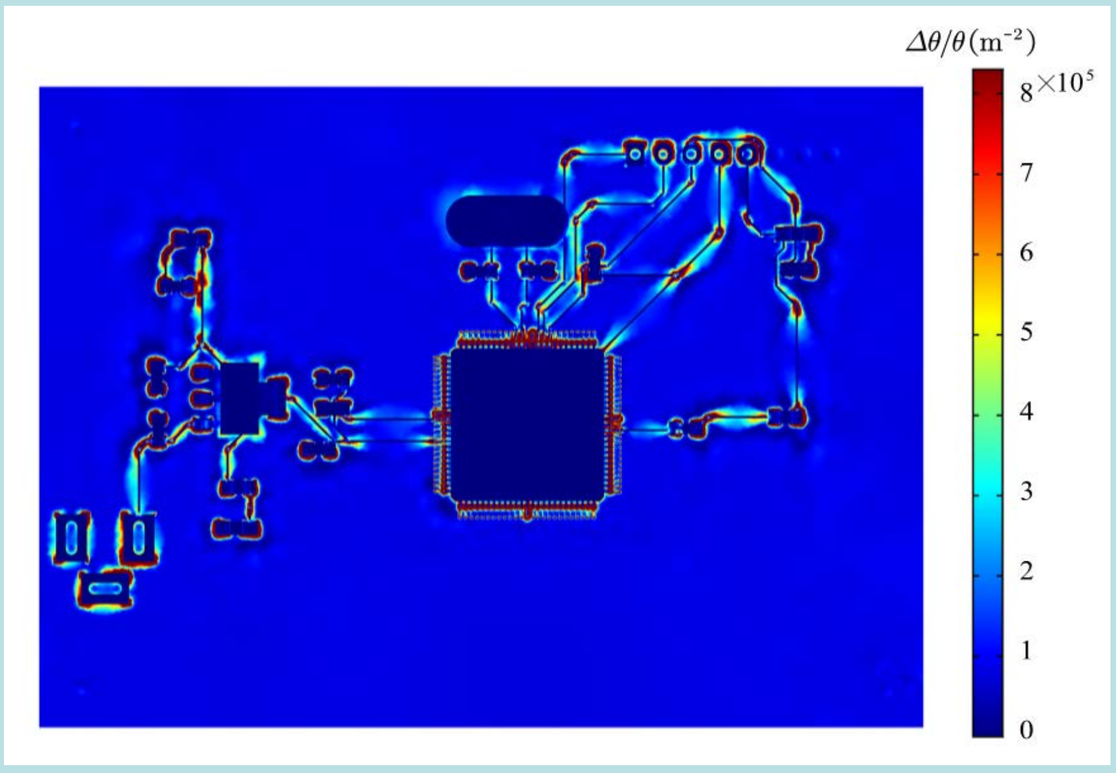



**The temperature gradient and feature recognition using the temperature gradient threshold operator on the PCB.**




**The improved Laplace parameter and feature recognition using the improved temperature Laplace threshold operator on the PCB.**

The non-intrusive equipment PCB state identification technology is developed in this study. A temperature field model of the PCB is established. The temperature fields of typical components are analyzed. Two methods of extracting component boundaries in infrared cloud images are proposed including the temperature gradient threshold operator and improved temperature Laplace threshold operator.

## Summary

- The quantitative relation between the temperature distribution of the PCB and the boundary conditions of components is established.
- Two edge feature recognition methods of components in infrared cloud images are studied.
- The feature recognition of the simulated temperature cloud image verifies that the proposed recognition methods can accurately extract the edge position of components.