

Thesis Title	An Electrical Impedance Tomographic Image Reconstruction
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ABSTRACT

This thesis proposes an implementation of electrical impedance tomographic image reconstruction algorithm. Based on the finite elements method, the node voltage distribution which the boundary value is the small current injected through the cross-section is calculated. The Newton-Raphson method is used in this work for varying the resistivity distribution fitting to the set of outer node voltage measured. Two new finite elements models with irregular discretization, each element has equal size, and the inner element is larger, are proposed in this thesis. By simulation, the models provide better results of distinguishability compared with the classical model. The performance of two techniques in data collection, neighboring and opposite method run with the models are also compared. Finally an algorithm of 3-D model is proposed with some results obtained from a saline solution phantom compared with the 2-D algorithm.