

Study of gauss–newton and total variation image reconstruction approach in imaging the phantom in concrete using electrical resistance tomography

Abstract

This paper is to evaluate different imaging method to reconstruct the image of phantom located in a concrete medium. This research uses three types of image reconstruction technique such as NOSER prior, Laplace prior and Total Variation (TV) to image the different numbers and sizes of steel in concrete. The reconstructed images undergo image quality assessment using Mean Structural Similarity Index (MSSIM) to evaluate the similarity compared to the reference image. The TV algorithm is found most superior after comparing with all the cases stated to reconstruct the better image for Electrical Resistance Tomography system in concrete structure application.

Keywords

lectrical resistance tomography; Mage reconstruction algorithm; MSSIM; Prior