

PARALLEL SINGLE STEP PREDICTION ALGORITHM FOR CONDUCTIVITY-TENSOR ESTIMATION

Gilboa, Elad, La Rosa Araya, Patricio, Nehorai, Arye

Maland, Brett

T-011907

A novel method for solving the inverse problem of inferring the conductivity tensor field structure (e.g. biological tissue) from a set spatiotemporal measurement. The new method is computationally more efficient than existing methods. We achieved the computational efficiency by using the optimization concept of block-relaxation to split the original joint problem into a set of smaller problems that interact with each other in order to maximize the joint gain (score function). We used a game theoretical approach to formalize the step-size control term in the optimization problem for improved convergence, and formulated the joint gain as the score function of a sequential single-step approximation. We also developed methods to incorporate information from several experiments estimations.