Docket #: S02-044

Real-Time Optimized Reconstruction Algorithm for Adaptive Imaging

A method for reconstructing non-uniformly sampled data to create an image includes: receiving a new partial data set, the new partial data set including a vector of non-uniformly sampled data at k-space positions; subtracting an old partial data set at the same k-space positions from the new partial data set to create a difference vector; gridding the difference vector to create a difference matrix; adding the difference matrix to a frame of previously gridded data to create a new frame; and transforming the new frame to create the image. In one embodiment, gridding includes constructing a gridding table for a data point in a complete data set, and convolving a data point in the difference vector with the gridding table. In another embodiment at least one of a grid size and a first parameter of the window function is optimized using input parameters for at least one of aliasing energy and computation time.

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