Docket #: S08-339

MRI - JIGSAW: Joint Inhomogeneity estimation via Global Segment Assembly for Water-fat separation

A method for estimating values of a field map to generate a magnetic resonance display image with species separation is provided. A set of MR images is acquired based on an applied magnetic resonance excitation. A set of feasible field map values for each pixel in a field map are determined from the set of MR images. Estimated values of the field map for each pixel are chosen from the set of feasible field map values using a combinatorial optimization algorithm that includes a smoothness constraint. The combinatorial optimization algorithm includes iteratively communicating, between neighboring pixels in the field map, sum-product belief messages that include likelihoods for feasible field map values. Field map values are fixed to most likely field map values if the pixel satisfies the smoothness constraint with its neighboring pixels. A magnetic resonance display image with species separation is generated using the estimated field map.

Applications

- Provide robust field map estimation for water-fat separation in challenging but clinically important scenarios.

Patents

- Published Application: 20100283463
- Issued: 7,952,353 (USA)

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