

Accelerated optimization methods for large-scale medical image reconstruction

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Advanced medical image reconstruction methods for X-ray CT and MRI usually involve optimization with large data sets that require substantial computation. Model-based image reconstruction methods for X-ray CT have recently become available commercially, which is a breakthrough in the field, but current computation times remain undesirably long (approximately 1 hour for a chest CT scan, using a dedicated server with over 100 cores). Routine clinical adoption of such methods hinges on accelerating the convergence of the methods so that computation times are feasible for all patients. This talk will describe recent advances in accelerating optimization algorithms for image reconstruction, particularly in X-ray CT.