Applicability of Non-Rigid Medical Image Registration using Moving Least Squares

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Abstract

A drawback of the non-rigid registration is its unpredictable nature of the deformation on the target image. Mapping every point on images can cause deformations even to regions, which are expected to remain rigid. A non-rigid registration is desirable that produces only local deformations where needed, while still preserving the overall rigidity. This work focuses on one such method called the Moving Least Squares (MLS) transformation and compares the results with Thin Plate Splines (TPS). An intensity based non-rigid registration algorithm is applied a priori, if the input medical images are from two different patients in order to facilitate for the selection of homologous control points in them. We compare the performance of both the techniques by calculating the Target Registration Error (TRE) at certain points and results are encouraging.

Reference


Index Terms

Computer Science  Image Processing

Key words

Moving Least Squares  Non-rigid medical image registration

As-rigid-as-possible transformations