

# Accepted Manuscript

## Fast Elastic Registration of Soft Tissues under Large Deformations

Igor Peterlík, Hadrien Courtecuisse, Robert Rohling,  
Purang Abolmaesumi, Christopher Ngan, Stéphane Cotin,  
Septimiu Salcudean

PII: S1361-8415(17)30188-3  
DOI: [10.1016/j.media.2017.12.006](https://doi.org/10.1016/j.media.2017.12.006)  
Reference: MEDIMA 1326



To appear in: *Medical Image Analysis*

Received date: 9 December 2016  
Revised date: 7 December 2017  
Accepted date: 7 December 2017

Please cite this article as: Igor Peterlík, Hadrien Courtecuisse, Robert Rohling, Purang Abolmaesumi, Christopher Ngan, Stéphane Cotin, Septimiu Salcudean, Fast Elastic Registration of Soft Tissues under Large Deformations, *Medical Image Analysis* (2017), doi: [10.1016/j.media.2017.12.006](https://doi.org/10.1016/j.media.2017.12.006)

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**Highlights**

- A surface-matching model-based method of deformable registration is proposed.
- A validation on semi-synthetic data obtained by simulation and filtering is presented.
- A validation on nine pairs of real human data is described, based on features extracted from tissue vascularization.
- The evaluation shows that the registration compensates large deformations, reducing the initial error from  $>40\text{mm}$  to  $<10\text{mm}$
- The parametrization of the method are studied and discussed. The proposed method is compared an intensity-based registration.

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