

Accepted Manuscript

Real-time Deformation of Human Soft Tissues: A Radial Basis Meshless 3D Model Based on Marquardt's Algorithm

Jianyong Zhou , Zu Luo , Xiaoping Liu , Chunquan Li , Mi Deng

PII: S0169-2607(17)30632-6
DOI: [10.1016/j.cmpb.2017.09.008](https://doi.org/10.1016/j.cmpb.2017.09.008)
Reference: COMM 4494



To appear in: *Computer Methods and Programs in Biomedicine*

Received date: 21 May 2017
Revised date: 18 August 2017
Accepted date: 12 September 2017

Please cite this article as: Jianyong Zhou , Zu Luo , Xiaoping Liu , Chunquan Li , Mi Deng , Real-time Deformation of Human Soft Tissues: A Radial Basis Meshless 3D Model Based on Marquardt's Algorithm, *Computer Methods and Programs in Biomedicine* (2017), doi: [10.1016/j.cmpb.2017.09.008](https://doi.org/10.1016/j.cmpb.2017.09.008)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Highlights

- The displacements of nodes, used to present the deformation of soft tissue, are calculated by meshless method spending too much time.
- A geometric model with the modulus of human liver is set up.
- Marquardt's algorithm is used to fit the mathematical relation between the displacements (that are calculated by meshless method in advance) and exterior force for obtaining the fast calculation formulas.
- In the simulation of deformation, this improved method takes 0.1509 seconds and the maximum deformation error is less than 0.5mm, moreover, it can preserve the authenticity of the deformation model's physical properties.

ACCEPTED MANUSCRIPT

Download English Version:

<https://daneshyari.com/en/article/6891233>

Download Persian Version:

<https://daneshyari.com/article/6891233>

[Daneshyari.com](https://daneshyari.com)