Robust Image Correlation Based Strain Calculator for Tissue Systems (20130022, Dr. Victor Barocas)

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Image Correlation Software for Strain Calculation in Tissue Systems

The Image Correlation software suite uses proven image correlation algorithms combined with a graphical user interface (GUI) to measure strain in tissues. The program includes algorithms capable of handling noisy images and performing field smoothing to handle the complex task of strain calculation in tissue systems.

Engineering strain calculator packages are routinely used to measure the strain on a material by correlating images and measuring the patterns associated with the strain. When the sample is a tissue, there is additional complexity. Digital image correlation and tracking is an optical method used that employs tracking and image registration techniques for accurate measurements of changes in materials and is often used to measure strain in materials.

BENEFITS OF TISSUE STRAIN CALCULATIONS BY IMAGE CORRELATION:

- The program package combines several published methods with some heuristics in a simple graphical user interface (GUI).
- The program is capable of handling noisy images and performing field smoothing.

Researchers

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Dr. Barocas' research involves the understanding of how mechanical, physical, and chemical phenomena interact to govern the behavior of biological and medical systems.
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Publications

Extract from "Form from Function: Generalized Anisotropic Inverse Mechanics for Soft Tissues"
PhD Thesis, Aug 2011

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