

PROCEEDINGS

Characterizing Nonhomogeneous Variation in Material Properties of Soft Tissues

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ABSTRACT

Characterizing nonhomogeneous variation in material properties of soft tissues has wide application in biomedical engineering and clinical medicine, including but not limited to cancerous disease detection and patient-specific surgical planning of cardiovascular diseases. With the advancement of imaging techniques, we are capable of acquiring not only the geometry of soft tissues in vivo, but also the associated deformation in the physiological state. With the obtained displacement data, the nonhomogeneous material property distribution of soft tissues can be determined by solving inverse problem in elasticity. In this presentation, we will present our recent work on identification of nonhomogeneous property distributions of several different types of tissues or tissue mimicking phantoms. The imaging datasets are obtained experimentally from various imaging modalities. This presented work will show the penitential feasibility of the state-of-the-art imaging techniques and inverse computational approaches on diseases diagnosis in clinical practice.

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