Ultrasound Based Volumetric Particle Tracking Method

Tech ID: 31732 / UC Case 2018-823-0

BRIEF DESCRIPTION

The disclosure relates to method of processing three-dimensional images or volumetric datasets to determine a configuration of a medium or a rate of a change of the medium, wherein the method includes tracking changes of a field related to the medium to obtain a deformation or velocity field in three dimensions. In some cases, the field is a brightness field inherent to the medium or its motion. In other embodiments, the brightness field is from a tracking agent that includes floating particles detectable in the medium during flow of the medium.

FULL DESCRIPTION

Disclosed is a technique that processes volumetric (3D) images in time to capture the motion of a body of fluid based on tracking/tracing changes in the fluid's brightness field. These changes can be due to inherent patterns in the scattered echo images or from injected particles shining in the flow. This technique processes the brightness information in the flow to obtain the velocity vector field in three dimensions over time.

Data consist of a multidimensional array that stores a quantity, such as the brightness of the fluid tracking agent. These dimensions represent the value of the quantity in three dimensional space and time. The spatial location of the quantity is known at the time of the acquisition, once the data is acquired by a volumetric image modality, such as, but not limited to a 4D ultrasound transducer, there is no need for estimation or computation of the depth or the third component of the coordinate system.

SUGGESTED USES

in vivo mapping of the flow inside the heart chambers

ADVANTAGES

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10460452	10/29/2019	2018-823

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OTHER INFORMATION

CATEGORIZED AS

- » **Imaging**
  - » 3D/Immersive
  - » Medical
- » **Medical**
  - » Disease: Cardiovascular and Circulatory System

RELATED CASES

2018-823-0

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