Visual Computing Forum

Real-time segmentation of 3D echocardiograms, using a state estimation approach with deformable models

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Friday Mar 22, 2013, 10.15-11.15

Lille Auditorium, floor 2, Høyteknologisenteret (d. blokk)

Abstract:

We present an approach for using state estimation methods for segmentation and real-time tracking of structures in 3D cardiac ultrasound. A Kalman tracking framework is used to compute a least-squares fitting or active-shape surfaces and subdivision surfaces to boundaries in volumetric image data using edge-detection measurements, optionally in combination with speckle-tracking measurements. Typical execution times are 5ms per model per frame on standard computer hardware. Recent edge-detection improvements and biomechanical (FEM) regularization for multi-resolution segmentation will also be covered.