
Medical Imaging Summer School 2014

28 July - 1 Aug 2014 Favignana, Sicily

Medical Imaging meets Computer Vision

Dorin Comaniciu

Siemens Corporate Technology, Princeton, US

Lecture 1: Engineering the Heart: Towards Personalized Cardiac Models for Therapy

Syllabus: heart modeling, structural heart disease, heart failure, anatomy, dynamics, hemodynamics, electrophysiology, electromechanics, therapy

Image-based, personalized computer models of the heart have the potential to improve risk stratification, outcome prediction, therapy guidance and patient monitoring. This lecture will present advances in personalized cardiac models that exploit patient's heart anatomy, dynamics, hemodynamics, electrophysiology, and electromechanics. The focus is on structural heart disease and heart failure. We detail various strategies for model fitting from patients data and the associated statistics. By highlighting example applications that make today a difference in hospitals we extrapolate on the imaging technology's potential, expectations for the future, and the increased demand for multidisciplinary projects and applications.