Scientific Visualization in Medicine (or a Christmas-Tree in Heaven)

Meister Eduard Gröller

Institute of Computer Graphics and Algorithms
Vienna University of Technology
Vienna / Austria

The visual processing of medical data is a prominent subtopic in scientific visualization. The first part of the talk surveys some of the recent respective projects done at the Vienna University of Technology. These projects include, e.g., virtual endoscopy and colon unfolding, non-photorealistic rendering of volume data, intuitive transfer-function specification. The second part of the talk deals with visualization of blood vessels. CTA (Computed Tomopgraphy Angiography) processes contrast media enhanced blood vessels. In collaboration with radiologists deseases of the lower peripheral arteries, like calcifications, stenoses, occlusions, are investigated. Sub-tasks are vessel segmentation, calculation of central paths, interactive volume and cross-section rendering. CPRs (Curved Planar Reformations) are defined by a free-form surface through the central vessel path. The volume data is resampled along a CPR. The properties of various CPR variants are discussed. The last part of the talk concerns a case study to employ computed tomography for the acquistion of complex geometric models. Further information on the research projects is available at `http://www.cg.tuwien.ac.at/research/vis/`