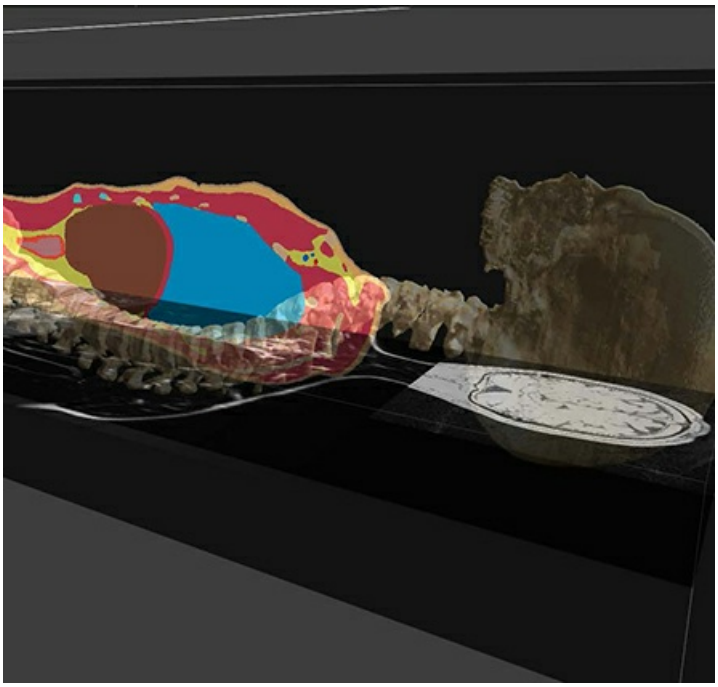
Medical Image Segmentation Tool Set

The Medical Image Segmentation Tool Set (iSEG) is a fully integrated segmentation (including pre- and postprocessing) toolbox for the efficient, fast, and flexible generation of anatomical models from various types of imaging data. A wide selection of segmentation methods, including competitive region growing approaches, fuzzy connectedness analysis, level-set methods, topologically flexible interpolation, and dedicated vasculature segmentation, ensures the efficient and flexible generation of surface models.



Co-visualization of image data and segmented regions.

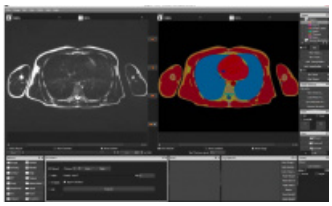
iSEG features a unique set of novel flexibly combinable (semi-) automatic and interactive segmentation algorithms, e.g., to optimize the generation of models with many different tissues. Anatomical reference atlases are also available.

Capable of handling a variety of image data (CT, MRI) and large-scale models.

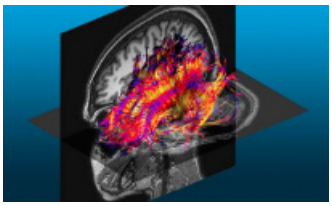
iSEG offers unique possibilities for medical diagnosis/ treatment and basic research applications, e.g., for personalized modeling and treatment planning, or to investigate physical and physiological processes in realistic anatomical environments.

Key Features

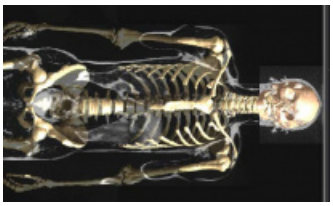
- Fully integrated image segmentation toolbox
- Efficient, fast & flexible generation of anatomical models
- Compatible with all common CT & MRI image formats available
- Various segmentation methods: competitive region growing approaches, clustering, live-wire delineation, fuzzy connectedness analysis, level-set methods, etc.
- Dedicated vasculature segmentation approaches
- Topologically flexible interpolation for accelerated segmentation
- Flexible combination of interactive & automatic segmentation algorithms
- Including anatomical reference atlases
- Enabling personalized modeling & treatment planning
- Supporting large data-sets
- Image pre- & postprocessing (noise removal, masking, filtering, image math, image transformations, skin adding, hole/gap removal, smoothing, morphological operations, etc.)
- Feature analysis, edge extraction, connected components, measurements (areas, volumes, distances, angles, torsion)
- Advance surface extraction & processing (smoothing, simplification) available in Sim4Life
- Surface generations produces conforming, topologically compatible, high quality triangle surface meshes ideally suited for volume mesh generation
- Hierarchical tissue organization, support for multilayer segmentation
- Advanced 3D rendering



Slice view during MRI data segmentation.



Visualization of image data and DTI-based fiber tracking to facilitate the realistic placement of neuron models.



Overlay of MR imaging data and segmented bones and organs of an anatomical model.

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