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Overview

Synapse® 3D offers application tools that follow the care pathway of the patient from radiology to surgery and then follow-up. By providing virtual 3D models, radiologists and surgeons are able to read, report and plan in order to establish a more accurate diagnosis and more appropriate course of treatment. Peer-reviewed research has shown that patient safety, surgical confidence[1] and surgical effectiveness[2] were all improved when using Synapse 3D.

Key benefits include:
- Clinically relevant application tools
- High image quality that improves clinical confidence
- Enterprise-wide solutions that allow easy access

The intended use of Synapse 3D Surgery Focus Tools are to provide radiologists and surgeons comprehensive and powerful tools to aid in reading, reporting, and treatment planning.

Note: This product is not intended for use with or for the primary diagnostic interpretation of Mammography images.

Lung Analysis Resection

Lung Analysis Resection is proven to be useful for thoracic surgeons to perform appropriate anatomical segmentectomy and curative resections.[4] The software allows extractions of the lung field region, pulmonary artery, pulmonary vein, bronchus, and other regions using contrasted CT images, and the result is displayed in 3D maps. Lung resection can also be simulated by extracting and segmenting the territories of pulmonary vessels and bronchi.

Main Functions include:
- Automatic and semi-automatic extraction of the lung field and lung lobe
- Extraction of the contact area between the lung field and diaphragm
- Semi-manual extraction of tumors existing in lung field and volume calculation
- Extraction of the pulmonary artery, pulmonary vein, and bronchus
- Calculation of the territories of pulmonary vessels and bronchi of the lung field region
- Provides distance from tumor to interlobular plane
- Manual modification of lung field region

Liver Analysis (MR)

Liver Analysis (MR) is a useful tool for radiologists, gastroenterologists and liver surgeons for liver function analysis. The software will display MR multi-phase contrast-enhanced images and reference images. The user is able to calculate and view calculation results for liver and spleen regions.
Main functions include:
- Display of multi-phase contrast-enhanced images and reference images
- Extraction of liver and spleen regions
- Visualization of calculation results
- Manual modification of extractions
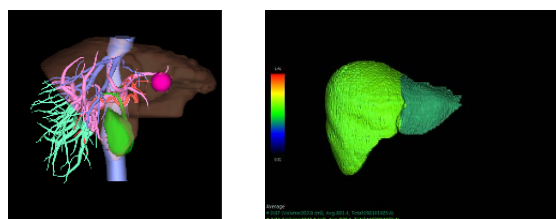
Liver Analysis (CT)

Liver Analysis (CT) is a useful tool for radiologists and liver surgeons for liver tumor analysis and nephrectomy planning. The software allows extraction of the liver and nearby vessel regions from contrast-enhanced CT images and displays the results as 3D-mapped images. In addition, the dominant region of the extracted liver region, portal vein and veins can be extracted and divided into areas. Hepatectomy simulation can be performed.

Main functions include:
- Display of images in axial, sagittal and coronal reformats
- Semi-automatic extraction of liver region
- Semi-automatic or manual options for paths of artery, vein, portal, biliary and other tubular structures
- Simultaneous display of liver, blood vessels, bile duct, tumors, bladder, body surface, bones and other regions
- Volume calculations of liver, tumors, gallbladder and other regions
- Extraction of vascular territories in liver
- Extraction resection areas by portal or arterial territory, drill or manual selections
- Manual modification of any extractions
- Observation and measurements through sector MPR of the liver region
- Fusion of NM or MR comparison data

Tensor Analysis with Craniotomy

Tensor Analysis with Craniotomy is a useful tool for radiologists, neurologists and neurosurgeons. It enables tensor analysis from diffusion-weighted MR images and tractography-based extraction and observation of white matter tractography pathways. Additional images (mainly CT images) can be loaded, and skin, bone, brain parenchyma, tumor, and cerebral vessels can be extracted in craniotomy simulations.

Main functions include:

- Displays Fractional anisotropy (FA) and diffusion colormap images
- Extract and observe white matter tractography
- Calculate FA value, number of fibers, area, and volume in the specified ROI
- Simultaneous display of white matter tractography and skin, bone, brain parenchyma, tumor, artery, vein, and other regions.
- Simultaneous display of DWI and ADC, useful to differentiate between malignant and benign tumors.[3]
- Craniotomy simulations involving cutting of skin and bone regions, brain surface clipping by depth, and tumor plane clipping
- Automatic and manual data registration options
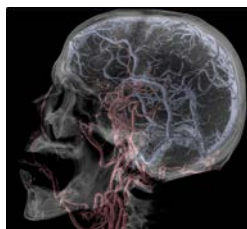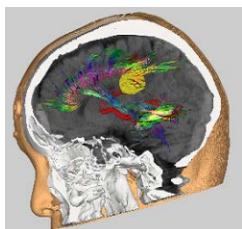
Vessel Extraction

Vessel Extraction is a useful tool for radiologists and neurologists. In Vessel Extraction, the blood vessel region is semi-automatically extracted from the post-contrast image by removing the bone region using the pre-contrast image. Main functions include:
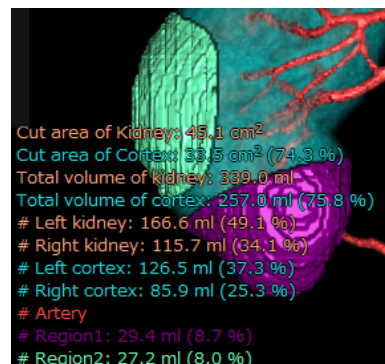
- Display three planes (axial, sagittal, and coronal) and respective 3D images
- Display of artery, vein and calcium
- Automatic and manual registration of images
- Displays of the brain vessel extraction result as 3D, MIP or Fusion
- Stereoscopic display using two 3D images with differing angles

Kidney Analysis

Kidney Analysis is a useful tool for radiologists, nephrologists and renal surgeons for kidney tumor analysis and nephrectomy planning. Synapse 3D Kidney Analysis allows the user to extract the kidney, renal cortex, and regions including various surrounding organs from contrast-enhanced CT images and displays results as 3D images. In addition, further extraction of the extracted kidney region and arterial territory region extraction are possible, regions can be divided, and nephrectomy simulations can be performed.

Main functions include:

- Display of axial, sagittal, and coronal images
- Semi-automatic extraction of the kidney region
- Semi-automatic or manual searching for paths of tubular structures.
- Simultaneous display of kidney, blood vessels, urinary duct, tumors, renal calculus, body surface, bones, and other regions
- Volume calculation for kidney, tumors, renal calculus, gallbladder, and other regions
- Extraction of the vascular territories in the kidney
- Extraction through tumor drilling in the kidney region
- Manual segmentation of the kidney region
- Observation and measurement through sector MPR of the kidney region

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Compositor

Compositor is an application tool helpful to radiologists and surgeons, especially for complex surgical interventions. The software allows the fusion of up to five series in the same space to display the volume rendering of combined images. Example uses include displaying CT images of the liver exposed at multiple time phases, CT images of bone fused with MRI images of soft tissue or MRA images of artery with phase contrast of vein.

Main functions include:
- Fusion of up to five 3D series in the same space and display the 3D volume rendered images
- Automatic and manual registration of images
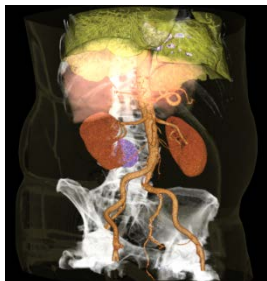
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For more information, or to schedule a demonstration, please contact your Fujifilm Representative by calling 1-866-879-0006.