Overview

Synapse® 3D offers cardiology-focused application tools that follow the care pathway of the patient from diagnosis to treatment and then follow-up. By providing virtual 3D models, radiologists, cardiologists and cardiothoracic surgeons are able to read, report and plan in order to establish a more accurate diagnosis and more appropriate course of treatment.

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 Cardiology CT tools are to provide trained clinical users comprehensive and powerful tools to aid in reading, reporting, and surgical treatment planning.

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

Cardiac Function CT

Cardiac Function CT is a useful tool for cardiologists and radiologists. The software allows cardiac function analysis by obtaining the contour of ventricle and myocardium from CT images constructed by the multiple time phases. Cardiac Function CT calculates ejection fraction, end-diastolic volume, end-systolic volume, stroke volume etc.

Main Functions include:
- Automatic extraction of the heart
- Automatic extraction of the contours of ventricle and myocardium which are required cardiac function analysis
- Display the long axis and short axis images of the heart
- 3D mapping display of analysis results
- Volume measurement and display of the bull’s eye for ventricle and myocardium
- Measuring of various cardiac function evaluations including end-diastolic volume, end-systolic volume, end-diastolic ventricular index, end-systolic ventricular index, stroke volume, cardiac output, peak filling rate, time to peak filling, cardiac index, ejection fraction, body surface area, heart rate, and myocardial mass
- Output cine movies

Coronary Analysis CT

Coronary Analysis CT is a useful tool for cardiologists and radiologists. Using the software, the user is able to extract the path of the target blood vessels and perform evaluation of the coronary arteries.

Main functions include:
- Display of axial, sagittal, and coronal images
- Automatic extraction of the heart
- Automatic extraction of coronary arteries
- Color-coded display of plaque (hard plaque and soft plaque)
- Measure coronary artery stenosis ratios
- Virtual stent graft
- Display coronary artery CPR images
- Save coronary artery CPR and orthogonal plane images
- Modify coronary artery paths and heart region
- Various types of 3D displays for observation of coronary arteries
- Simultaneous display of CT images in direct comparison to related XA images
4-Chamber Analysis

4-Chamber Analysis is a useful tool for cardiologists and radiologists. The software extracts left and right ventricles, atria, and myocardium region from CT images consisting of the multiple time phases, calculates cardiac function parameters such as ventricular ejection fraction, and enables observation of transitions in ventricle and atrial volume.

Main functions include:
- Automatic extraction of the heart
- Automatic extraction of ventricular, atrial, and myocardial regions
- 3D surface rendering of ventricular, atrial, and myocardial regions
- Automatic extraction of the contours of ventricle and myocardium which are required cardiac function analysis
- Display the long axis and short axis images of the heart
- 3D mapping display of analysis results
- Volume measurement and bull’s eye display of ventricle, atrium, and myocardium
- Measuring of various cardiac function evaluations including end-diastolic volume, end-systolic volume, end-diastolic ventricular index, end-systolic ventricular index, stroke volume, cardiac output, peak filling rate, time to peak filling, cardiac index, ejection fraction, body surface area, heart rate, and myocardial mass
- Output cine movies
- Non-rigid phase registration

Calcium Scoring

Calcium Scoring is a useful tool for cardiologists and radiologists. The software displays the plaque area of the coronary artery by color and calculates the quantitative value of plaque by using the Agatston score method.

Main functions include:
- Automatic extraction of the heart
- Calculation of the Agatston score based on the Agatston score method
- Threshold value setting for scoring
- Specification for the plaque area in 2D and 3D images

Cardiac Ablation Analysis

Cardiac Ablation Analysis is a useful tool for cardiologists and electrophysiologists. The software extracts left and right ventricles, atria, and myocardium regions from CT images consisting of the multiple time phases. The software also extracts the pulmonary vein based on the left atrium region, in pre-operation simulation for ablation, and in post-operation observation.

Main functions include:
- Automatic extraction of the heart
- Automatic extraction of ventricular, atrial, and myocardial regions
- Extraction of the pulmonary vein based on the left atrium region
- ROI-based extraction of the gullet region
- 3D view inside the pulmonary vein
- Virtual endoscopic view of inside the pulmonary vein
**Cardiac Fusion**

Vessel Extraction is a useful tool for cardiologists and radiologists for viewing fusion of cardiac anatomy and functional analysis.

Main functions include:

- Display the axial, sagittal, and coronal plane images
- Overlay display of a functional image and a structural image
- Automatic and manual registration of images

For more information, or to schedule a demonstration, please contact your Fujifilm Representative by calling 1-866-879-0006.

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**Aortic Valve Analysis**

Aortic Valve Analysis is useful for cardiologists in preparation for Transcatheter Aortic Valve Replacement (TAVR) planning. The software measures various aspects of the vicinity of the aortic valve by extracting the heart and aorta regions from the input CT images. Aortic Valve Analysis also allows the confirmation of the size of the aorta and the performance and calcification of the aortic valve to support an aortic valve replacement.

Main functions include:

- Automatic extraction of the heart and aorta regions
- Automatic detection of the contour of the aorta
- Measurement of the vicinity of the aortic valve
- Measurement of the calcification area in the aorta
- Transapical measurements
- Output cine movies