SYNOPSYS®

TECHNICAL DATASHEET

Simpleware AS Cardio

Release Version U-2022.12

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Heart Segmentation and Landmarking

- Anatomy-specific automated segmentation tool for heart blood pool and muscle
- Automatic segmentation suitable for use on CT scans
- Produces masks for:
  - Aorta
  - Left Atrium
  - Left Coronary Artery
  - Left Ventricle
  - Myocardium
  - Pulmonary Artery
  - Right Atrium
  - Right Coronary Artery
  - Right Ventricle
- Landmarks placed on identified anatomy:
  - Aortic Commissure (1, 2 and 3)
  - Aortic Coronary Cusp (left, right, and posterior)
  - Aortic Coronary Ostium (left, right)
  - Atrial Appendage (left, right)
  - Coronary Sinus Ostium Centroid
  - Left Ventricle Apex
  - Left Ventricle Base
  - Right Ventricle Apex
  - Tricuspid Valve Centroid
  - Vena Cava Ostium Centroid (inferior, superior)
- Segmentation and landmarking available for 3D and 4D frames
- Automatic ROI detection within larger extent scans

Heart Valve Analysis

- Analysis tool streamlining the workflow for computing characteristics of Aortic Valve, Mitral Valve, Tricuspid Valve or Pulmonary Valve. Tools include:
  - Fit planes through Cusps (Aortic Valve only)
  - Measure distance to Ostia (Aortic Valve only)
  - Fit plane through Annulus (all)
  - Centerline analysis (Aortic and Pulmonary Valves):
    - Aortic Valve: centerlines created for the Ascending Aorta, and shapes generated representing best fit circles for the Sinotabular Junction, Sinuses of Valsalva and Tubular Ascending Aorta
    - Pulmonary Valve: the outputs include centerlines created for the Pulmonary Trunk and left/right Artery

General User Interface

- Interactive anatomy diagrams indicate the expected output, if anatomies are present and identifiable in the input data
- Toggle the segmentation of each available anatomy
- Toggle the generation of landmarks
- Landmarks accessible via the Measurements tool
- Reduce region of interest to a sub-volume of a larger extent scan, either automatically or manually

Simpleware AS Cardio (Auto Segmenter for Cardiology) provides anatomy-specific, automated segmentation tools from heart CT data using Machine Learning (ML) algorithms, generating masks and landmarks.

Scripting

- Run AS Cardio tools via the Simpleware scripting API in Python and C#
- Run with Console ScanIP for GUI-less processing from the command line