SYNOPSYS®

TECHNICAL DATASHEET

Simpleware AS Ortho/CMF

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Ankle CT Segmentation and Landmarking

- Anatomy specific automated segmentation tool for the ankle
- Automatic segmentation suitable for use on CT scans
- Produces masks for:
  - Calcaneus
  - Fibula
  - Talus
  - Tibia
- Landmarks placed on identified anatomy:
  - Ankle center
  - Fibular notch
  - Malleolus (lateral, medial)
- Automatic ROI detection within larger extent scans
- Option to retain all bone fragments

Craniomaxillofacial (CMF) CT Segmentation and Landmarking

- Anatomy specific automated segmentation tool for the CMF region
- Automatic segmentation suitable for use on CT scans
- Produces masks for:
  - Cranium
  - Cranium (filled orbitals)
  - Mandible
  - Cervical spine
  - Upper/lower canines
  - Upper/lower incisors
  - Upper/lower molars
  - Ear canals
  - Airways
  - Eyeballs
  - Optic nerves
  - Mandibular nerves
  - Cranial cavity
  - Skin
- Landmarks placed on identified anatomy:
  - Mandibular foramen (left/right)
  - Mandibular angle (left/right)
  - Mandibular symphysis
  - Coronoid process (left/right)
  - Condylar process (left/right)
  - Orbitale (left/right)
  - Porion (left/right)
  - Nasion
  - Foramen magnum center (FMC)
- Automatic ROI detection within larger extent scans
- Option to retain all bone fragments
- Option to split teeth into canines, incisors and molars

Simpleware AS Ortho/CMF (Auto Segmenter for Orthopedics and Craniomaxillofacial Applications) provides anatomy- specific, automated segmentation tools for orthopedic data using Machine Learning (ML) algorithms, generating masks and landmarks from CT and MRI.

Hip CT Segmentation and Landmarking

- Anatomy specific automated segmentation tool for hip or pelvis region
- Automatic segmentation suitable for use on CT scans
- Produces masks for:
  - Hip (left and right)
  - Sacrum
  - Proximal Femurs
- Landmarks placed on identified anatomy:
  - Anterior Superior Iliac Spine (left and right)
  - Posterior Superior iliac Spine (left and right)
  - Greater Trochanter (left and right)
  - Lesser Trochanter (left and right)
  - Pubic Tubercle (left and right)
  - Femur Head (left and right)
  - Coccyx
- Automatic ROI detection within larger extent scans
- Option to retain all bone fragments

Knee MRI Segmentation and Landmarking

- Anatomy specific automated segmentation tool for the knee
- Automatic segmentation suitable for use on MRI scans (PD weighted Sagittal/Coronal and T1 Coronal and T2 Sagittal)
- Produces masks for:
  - Femur and associated cartilage
  - Tibia and associated cartilage
  - Patella
  - Fibula
- Landmarks placed on identified anatomy:
  - Femur Condyles (lateral and medial)
  - Femur Epicondyles (lateral and medial)
  - Tibia Condyles (lateral and medial)
  - Tibia Intercondylar Eminence
- Automatic ROI detection within larger extent scans

Knee CT Segmentation and Landmarking

- Anatomy specific automated segmentation tool for the knee
- Automatic segmentation suitable for use on CT scans
- Produces masks for:
  - Femur
  - Tibia
  - Fibula
  - Patella
  - Fabella (where present)
- Landmarks placed on identified anatomy (for left and right knees):
  - Femur posterior condyles (lateral, medial)
  - Femur epicondyles (lateral, medial)
  - Femur distal condyles (lateral, medial)
  - Femur proximal shaft centre
  - Tibia condyles (lateral, medial)
  - Tibia intercondylar tubercles (lateral, medial)
  - Tibia posterior condyles (lateral, medial)
  - Tibial tuberosities
  - Tibia distal shaft centre
  - Patella poles (distal, proximal)
  - Patella borders (lateral, medial)
  - Fibula apices
- Automatic ROI detection within larger extent scans
- Option to retain all bone fragments

Shoulder CT Segmentation and Landmarking

- Anatomy specific automated segmentation tool for the shoulder
- Automatic segmentation suitable for use on CT scans
- Produces masks for:
  - Humerus
  - Scapula
  - Clavicle
- Landmarks placed on identified anatomy:
  - Clavicle lateral end
  - Clavicle medial end
  - Malleolus (lateral, medial)
  - Humerus bicepital groove
  - Humerus bicipital groove
  - Humerus greater tuberosity
  - Humerus head centre
  - Humerus lesser tuberosity
  - Scapula acromion
  - Scapula coracoid
  - Scapula glenoid cavity
  - Scapula inferior angle
  - Scapula medial border
  - Scapula notch
  - Scapula spine
  - Scapula superior angle
- Automatic ROI detection within larger extent scans
- Option to retain all bone fragments

General User Interface

- Interactive anatomy diagrams indicate the expected output, if anatomies are present and identifiable in the input data
- Toggle 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

Scripting

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