Segmentation in Mimics Innovation Suite

Training Set Creation

CT healthy pelvis

Segmented CTs

Watertight 3D model
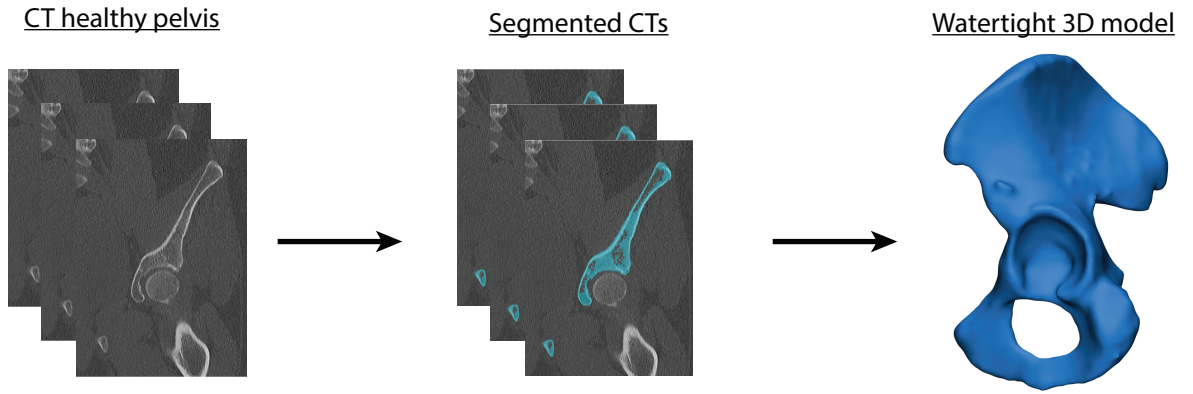
Registration and Allignment using MeshMonk toolbox in MATLAB

Shape Model Creation

3D Shapes

Subject 1
Subject 2
⋮
Subject X
⋮
Subject 90

Rigid registration

Non-rigid registration

Principal Component Analysis

3σ

-3σ

Mean shape calculation

■ : Goal Shape   ■ : Template
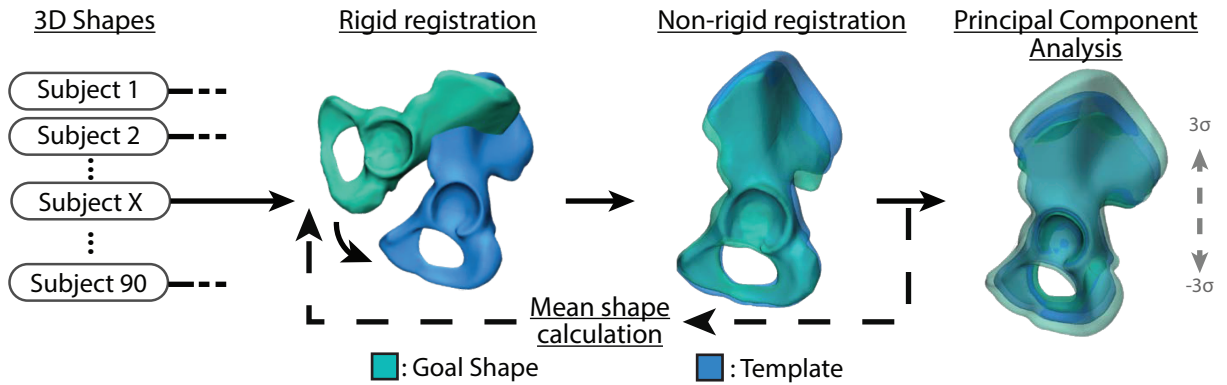
Markov chain Monte Carlo-based reconstruction using Scalismo library in Scala

Shape reconstruction

Defect shapes

Rigid registration

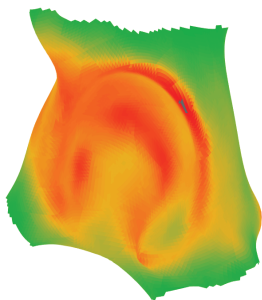MCMC algorithm

Reconstructed shape
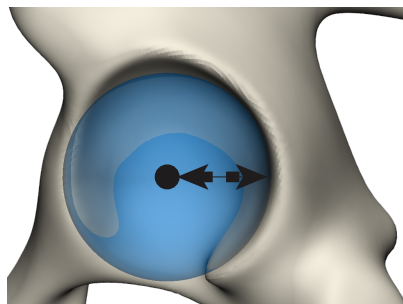
■ : Shape model   ■ : Defect Shape
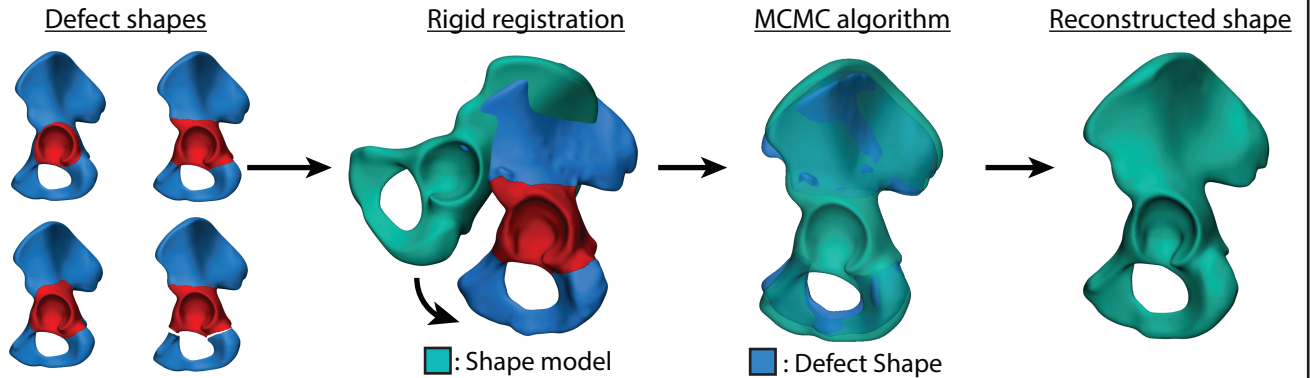
Automated Measurements in MATLAB

Reconstruction Validation

Reconstruction and fit error

Hip joint centre position and acetabular radius

Acetabular direction