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## Reconstruction of 3D Patient - Specific Bone Models From Biplannar X- Ray Images Utilizing Morphometric Measurements

Mohamed Riaz

**Abstract :** Obtaining 3D patient-specific bone models from 2D image data ( e.g. x - rays flouroscope ) remains a practical and desirable alternative to segmentation of bone models from 3D image data ( e.g. Ct , MRI ) . It also provides an initial step to automatically calculating the relevant axes and angles needed in Computer Aided Surgery (CAS). Our method utilizes a statistical atlas of bone based on Principal Component Analysis (PCA ) and biplanar X - ray images to fully reconstruct a patient - specific 3D bone model. Reconstruction is done through a robust 3D-2D registration technique where the deformation is constrained through extracted 2D morphometric measurements. Reconstruction of othfemur and lumbar were undertaken with results compared to manual segmentations.