

Semi-automated Segmentation Pipeline for Analysis of Knee Joint Kinematics

A comparision with manual based segmentation

Jena | 12.09.2024 | Aayush Nepal

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Motivation

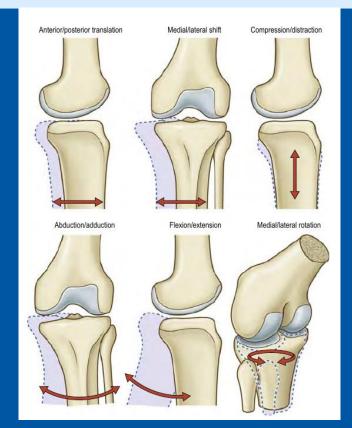
Six Degrees of freedom

3 Rotations

- Flexion-Extension: ~160°
- Medial-Lateral: 25-30°
- Abduction-Adduction: ~5°

3 Translations

- Anterior-Posterior: 5-10 mm
- Meidal-Lateral: 1-2 mm
- Compression-Distraction: 2-5 mm



(Credit: Gray's Anatomy 42nd ed.)

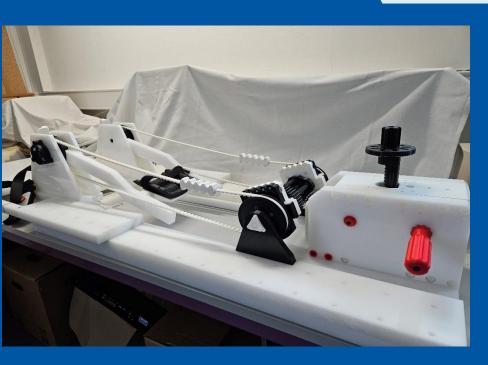


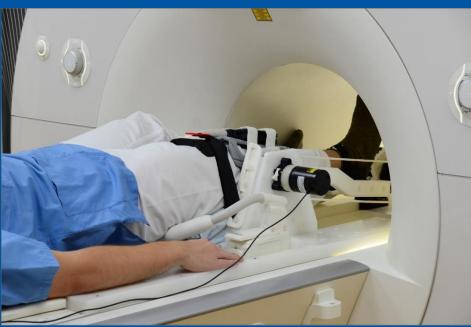






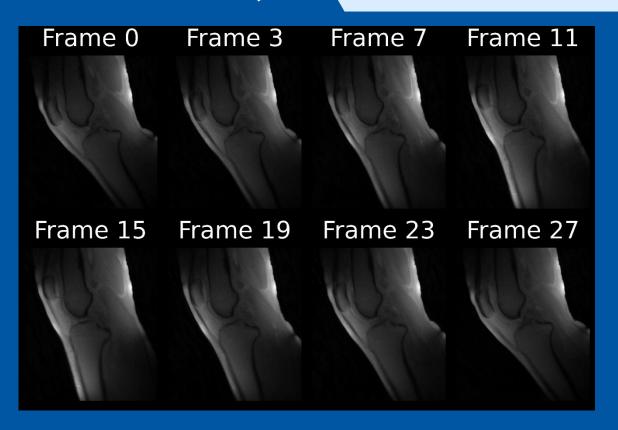
Knee flexion-extension device

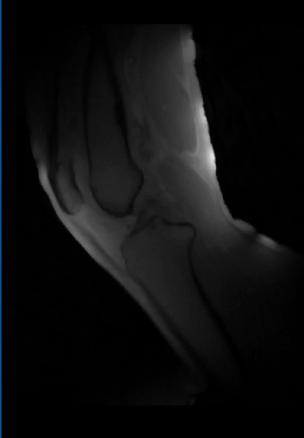




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Reconstructed frames

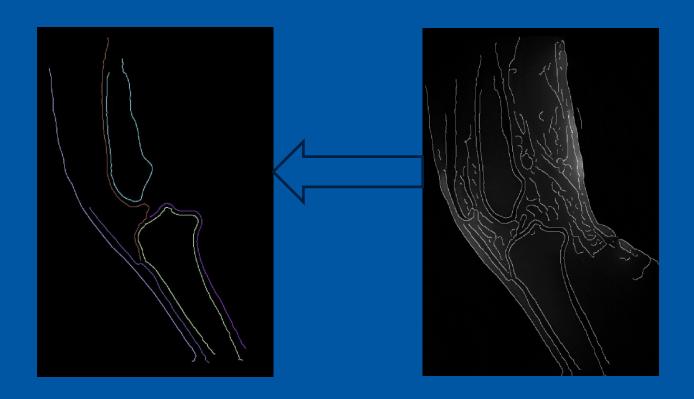




Methods

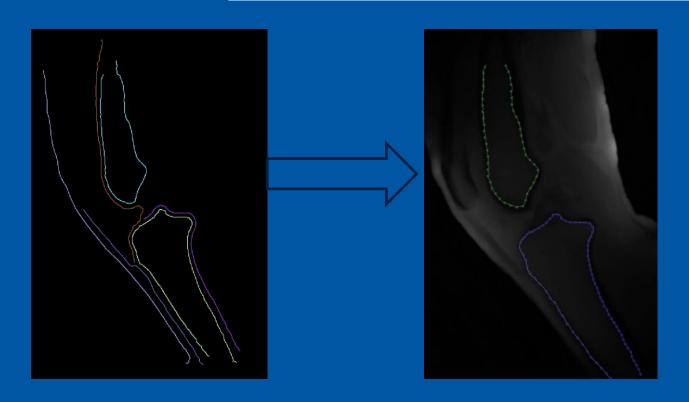


Methods



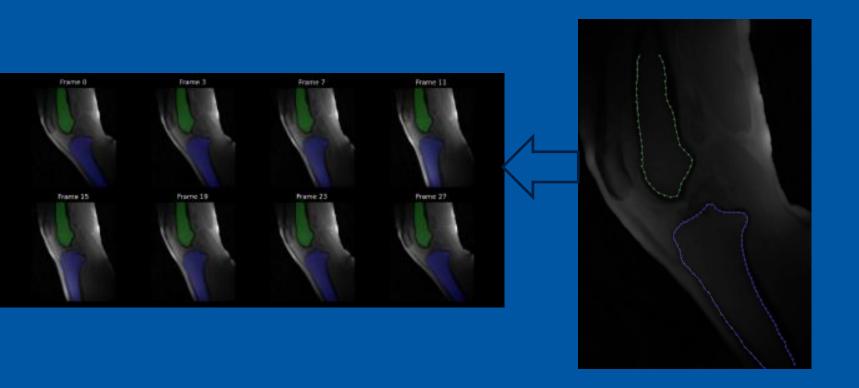


Methods



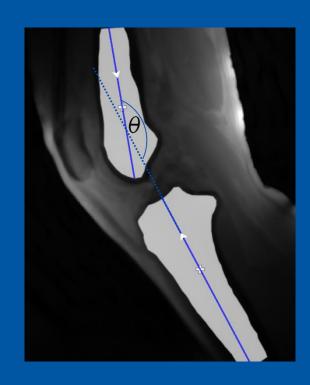
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Methods



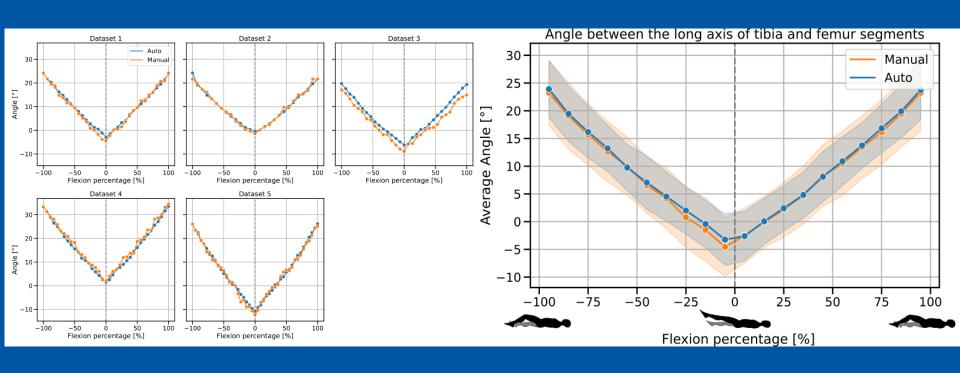


Angle extraction and tracking

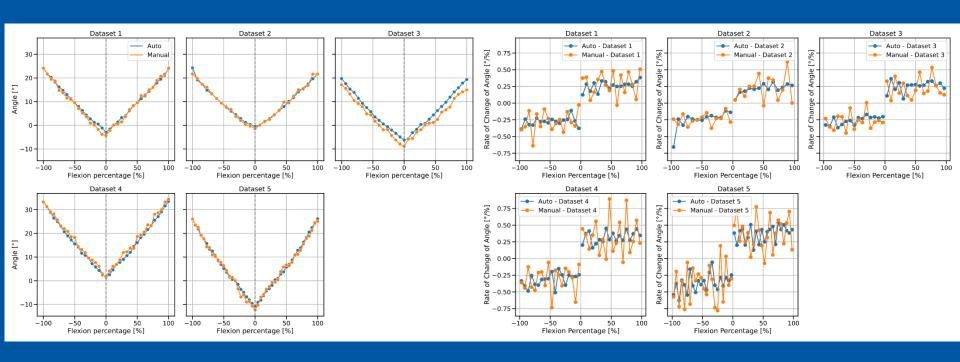




Results



Results





Concluding Remarks





