Annotation Guideline for Knee MRI Segmentation

Background

Knee cartilage segmentation is a crucial task in orthopedic imaging, as it aids in the diagnosis and monitoring of common conditions such as osteoarthritis. The purpose of this guideline is to provide human annotators of varying expertise and skill levels the means to precisely and reliably annotate sagittal, axial, and coronal MRI images of the knee cartilage region. Knee MRI images from the publicly available OAI dataset will be used (ref. i).

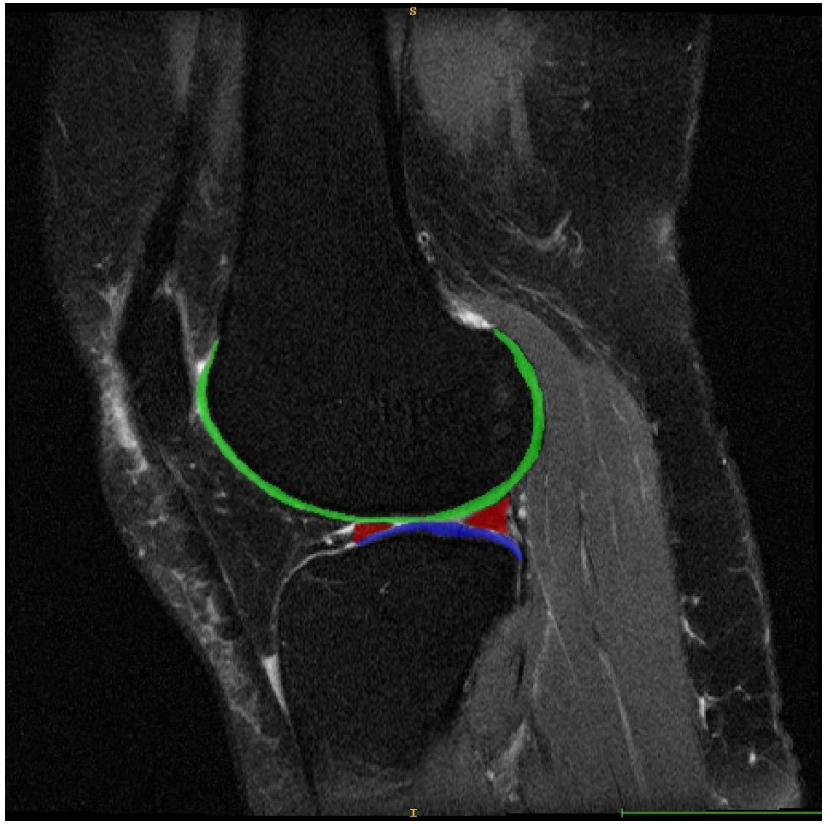
Annotation Toolset

This project uses **ITK-SNAP**, a free, open-source, multi- platform software application used to segment structures in 3D and 4D biomedical images (link ii).

Instructions

The primary anatomy of interest in this annotation is the articular cartilage of the knee joint, which is found on the distal femur and proximal tibia. The menisci (lateral and medial) are good landmarks to help locate the cartilage and can serve as a border between the two.

General Sagittal View Annotation



Distal femoral cartilage Proximal tibial cartilage Patellar cartilage Meniscus

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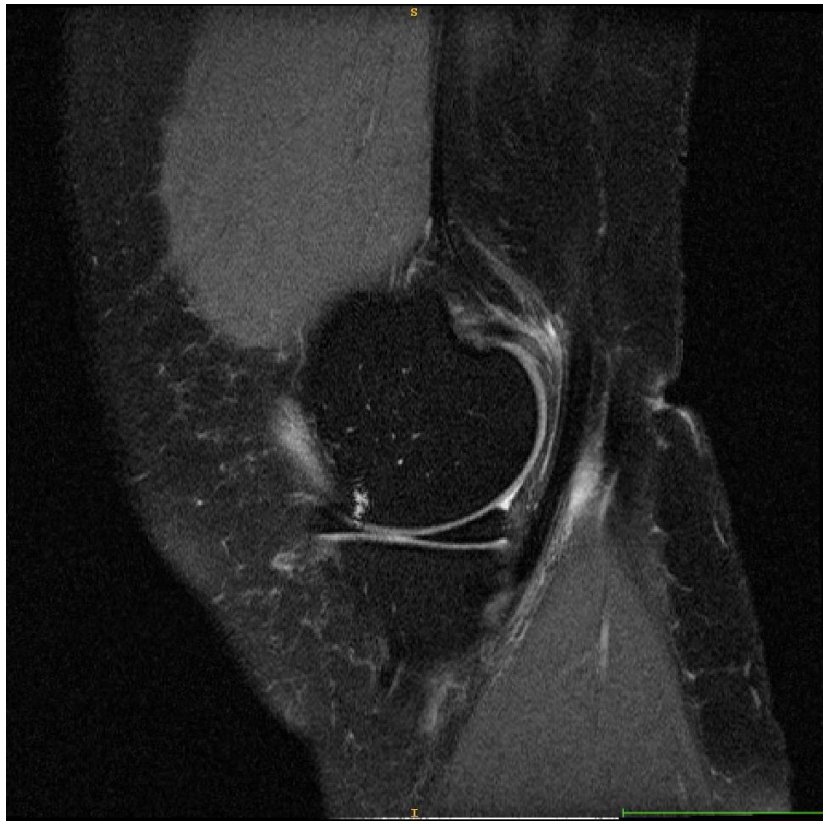

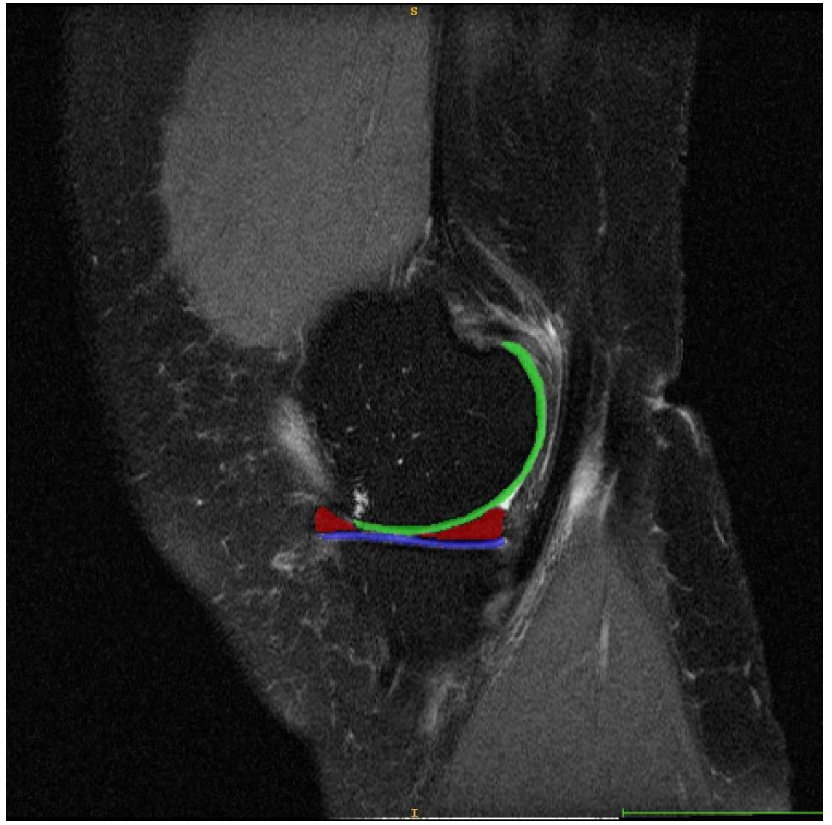

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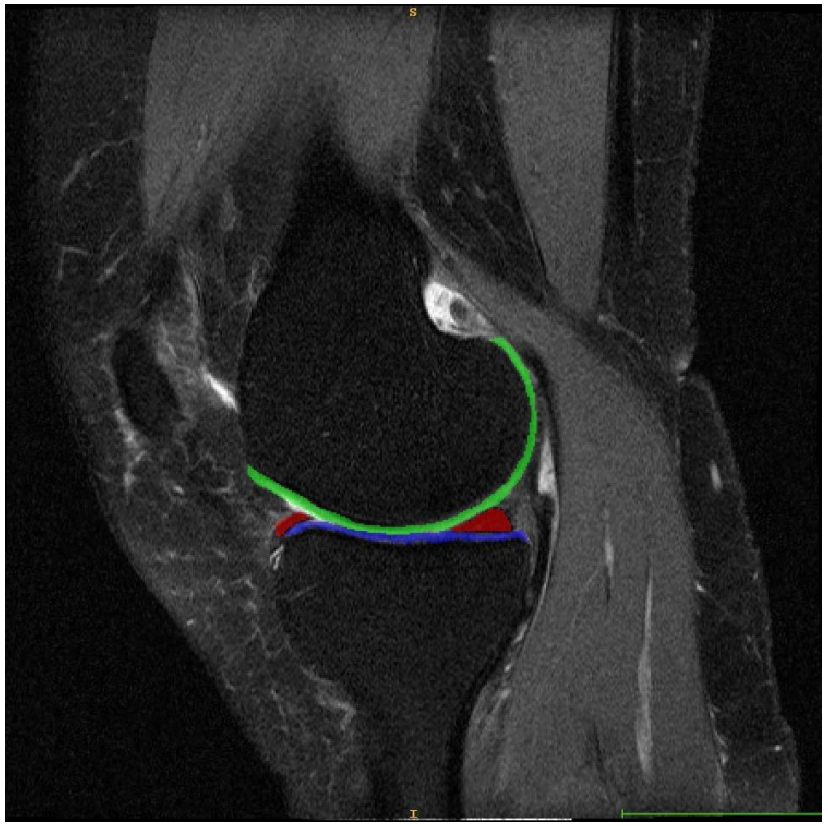

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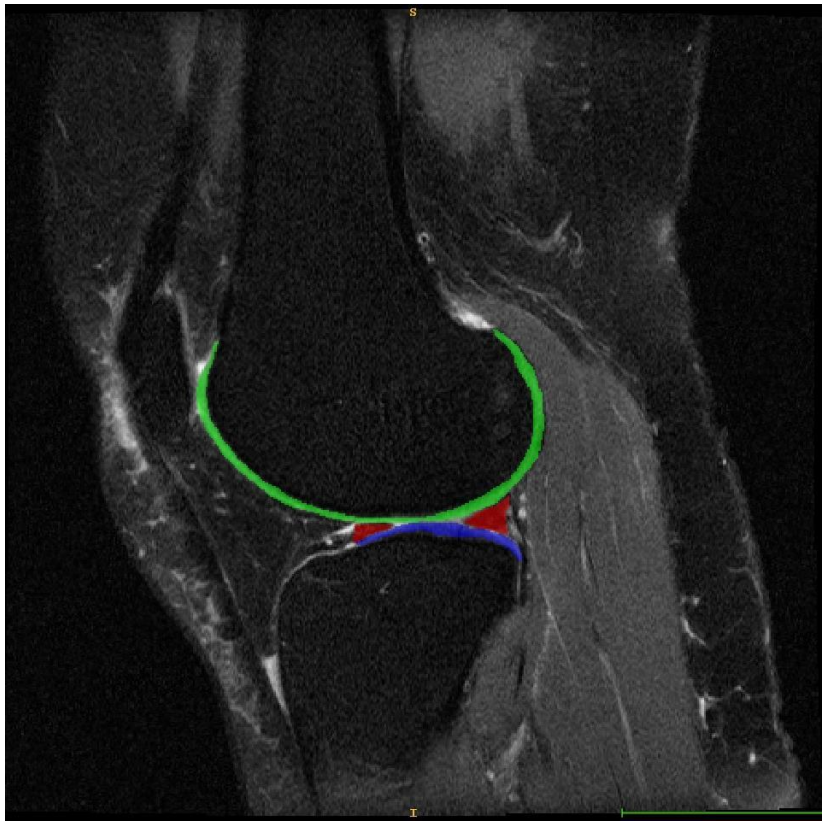

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Appendix

References/Links

i. The Osteoarthritis Initiative (OAI): https://nda.nih.gov/oai

ii. ITK Snap: http://www.itksnap.org

iii. Anatomical Images: Netter Atlas of Human Anatomy, 8th Ed.