Knee Joint Articular Cartilage Segmentation, Visualization and Quantification using Image Processing Techniques: A Review

Abstract

Knee is a complex and articulated joint of the body. Cartilage is a smooth hyaline spongy material between the tibia and femur bones of knee joint. Cartilage morphology change is an important biomarker for the progression of osteoarthritis (OA). Magnetic resonance imaging (MRI) is the modality widely used to image the knee joint because of its hazard free and high resolution soft tissue contrast. Cartilage thickness measurement and visualization is useful for early detection and progression of the disease in case of OA affected patients. A wide variety of algorithms are available for knee joint image segmentation. They are classified as pixel based and model based methods. Based on the human intervention required, segmentation methods are also classified as manual, semi-automatic and fully automatic methods. This paper reviews knee joint articular cartilage segmentation methods, visualization, thickness measurement, volume measurement and validation methods.

References


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Index Terms

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