

# Deep Learning Based Knee Osteoarthritis Detection and Classification

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**Abstract:** *Knee osteoarthritis (OA) is a musculoskeletal disease that significantly affects patients' quality of life. Early and accurate diagnosis of knee osteoarthritis is important for timely intervention and development of appropriate treatment plans. In this study, we present a novel approach using artificial intelligence (AI)-based deep learning to solve the problem of knee joint localization, joint width (JSW) area, and grading of knee OA from digital radiographs. The main aim of this study is to investigate the effectiveness of the deep learning method in predicting knee OA severity based on the Kellgren Lawrence (KL) rating. To achieve this, we developed a custom tool that uses neural networks (CNN) to analyze digital radiographs of the knee joint. Our approach focuses on identifying the presence of knee OA and measuring its severity according to the KL score.*

**Keywords:** Knee Osteoarthritis, Musculoskeletal disease, Deep learning, Knee joint localization, Joint width, Kellgren Lawrence Grading system, Digital radiographs, CNN

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