

AI-Powered Bone Fracture Detection and Depth Measurement: A Review

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Abstract: Bone fractures are a prevalent clinical condition, and classical diagnosis based on X-rays, MRI, and CT scans is time-consuming, expensive, and error-prone. To overcome this drawback, deep learning-based approaches have been investigated for automatic fracture detection and classification. In this work, we propose a light-weight system with Convolutional Neural Networks (CNNs) and light-weight models such as MobileNet and EfficientNet for accurate classification of fractures in X-ray images. Data augmentation and training with optimal configurations enhance performance with up to 98 accuracy. Furthermore, VGG16-based a model is embedded within a Flask-based web application for classifying fracture severity into mild, moderate, and severe classes. The system also suggests diet and exercise for recovery, with an effective and precise tool for the guidance of healthcare providers and patients in fracture management.

Keywords: Bone fracture, Deep learning, CNN, MobileNet, VGG16, Medical image classification, Flask application

