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**DEPARTMENT OF COMPUTATIONAL INTELLIGENCE**

**III YEAR CSE- AIML I SEM**

**COURSE: AD-1 COURSE CODE: R22A6692**

**ABSTRACT**

**TITLE: “FractoScan – Automated Detection and Classification of Orthopedic Fractures Using Statistical Learning”**

Bone fracture detection is a crucial task in orthopedics, where early and accurate diagnosis helps ensure effective treatment. This project, FractoScan, introduces an automated system for detecting and classifying fractures using Convolutional Neural Networks (CNNs) trained on the MURA dataset, which includes seven bone types: finger, elbow, hand, forearm, humerus, wrist, and shoulder. The workflow begins with preprocessing techniques such as resizing, normalization, and augmentation to improve data quality and robustness. CNNs are then applied to automatically learn spatial and structural features from X-ray images without the need for manual feature extraction. The system not only classifies fracture types but also provides fracture severity estimation, automated medical report generation, and treatment suggestions, making it a valuable decision-support tool for radiologists and orthopedic doctors. By leveraging CNNs, FractoScan achieves high accuracy, efficiency, and scalability, offering a reliable and user-friendly approach to fracture analysis and diagnosis**.**

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