# BONE FRACTURE CLASSIFICATION

**Guide Name : Dr.V.Prasad**

**G.Poojitha - 21KD1A0550**

**G.Shiva - 21KD1A0554**

**G.Lahari - 21KD1A055**

**B.Jaya Sai - 21KD1A0520**

# PROBLEM STATEMENT

- **ISSUE:** Traditional methods of diagnosing bone fractures through X-ray imaging rely heavily on human interpretation, which can be subjective and prone to errors.

- **IMPACT:** Misdiagnosis or delayed diagnosis can lead to improper treatment, prolonged recovery times, and increased healthcare costs.

# OBJECTIVE

- **PRIMARY GOAL**: Develop a deep learning model to accurately detect bone fractures from X-ray images.

- **SPECIFIC OBJECTIVE**:Implement a ResNet50-based convolutional neural network for image classification.Train the model to distinguish between fractured and non-fractured bones.Evaluate the model's performance using standard metrics such as accuracy, precision, recall, and F1-score.

# ABSTRACT

This project uses the ResNet50 deep learning algorithm to classify bone images, such as X-rays or CT scans, into categories like healthy bone, fractured bone. The model is fine-tuned with transfer learning for improved feature extraction. Image preprocessing techniques like resizing, normalization, and augmentation are applied. The system is evaluated using accuracy, precision, recall, and F1 score, demonstrating its potential for accurate bone classification. This approach could assist radiologists in faster, more accurate diagnoses of bone conditions.

# FEASIBILITY STUDY


- **Technical Feasibility**: Availability of pre-trained models like ResNet50 facilitates the development process.Access to labeled X-ray image datasets supports effective training and validation.

- **Operational Feasibility**: The model can be integrated into existing medical imaging workflows to assist radiologists.

- **Economic Feasibility**: Utilizing open-source frameworks and pre-trained models reduces development costs. Potential for cost savings in healthcare through improved diagnostic accuracy and efficiency.

# REQUIREMENT ANALYSIS

**HARDWARE :**

High-performance GPU for model training
Sufficient storage for large datasets.

**SOFTWARE :**

Programming Languages: Python
Libraries: TensorFlow ,Keras ,OpenCV.

**DATA REQUIREMENTS :**

Access to MURA dataset(X-rays of elbow, hand, shoulder)which includes over 40,000 musculoskeletal radiographs.

# LITERATURE SURVEY

Key Studies

1. Bone Fracture Classification Using Deep Learning: An Overview
   - Source: MDPI Article

2. Deep Learning in Medical Imaging for Bone Fracture Detection
   - Source: Springer Article

3.Classification of Bone Fractures Using Deep Neural Networks
   - Source: Begell House Journal4.

4.Improving Fracture Detection in X-rays using Convolutional Neural Networks
   - Source: IEEE Article

# THANKYOU