**Project Report Outline for X-ray Fracture Detection**

**1. Introduction**

* **Objective**: Briefly explain that the model is designed to detect and locate fractures in X-ray images, enhancing diagnostic accuracy and efficiency.
* **Background**: Summarize existing work on fracture detection using X-rays, focusing on how machine learning has been applied in medical imaging for this purpose. Mention any relevant algorithms, models, or studies on fracture detection.

**2. Related Work**

* **Current Techniques**: We used model such as convolutional neural networks (CNNs), and methods used for similar medical image analysis tasks.
* **Research Studies**: We have gone through many dataset sites such as, Kaggle, Amazon Dataset, Google Development Search Engine, etc.

**3. Data Pre-processing**

* **Data Source**: We finally selected X-ray data from Kaggle, which was as we wanted( mentioned left part as L and right as R)
* **Data Augmentation**: We used rotations or flips, to increase model robustness.
* **Labeling**: Data was already labelled as mentioned above

**4. Data Visualization / Exploratory Data Analysis (EDA)**

* **Image Analysis**: 
* **Distribution Analysis**: Model was trained on mixed dataset contained fractures from all bidy parts.
* **Python Libraries**: Use Python libraries (e.g., Matplotlib, Seaborn) for creating plots to help visualize the data, identify trends, or locate imbalances in the dataset.

**5. Model Creation and Testing**

* **Model Architecture**:10 layers were made in CNN model.
* **Evaluation Metrics**: Model was then visualized using differet parameters (e.g., accuracy, F1 score, precision, recall)
* **Multiple Models**: Test multiple models or variations, comparing results to justify the final choice as AlexNet, GoogleNet and MobileNet.
* **Training Process**: We analized these models, which finally gave us a better result at 10 epochs.
* **Performance**:

**6. Results and Visualization**

* **Output Examples**: Display example images where fractures were correctly identified and located.
* **Heatmaps**: Include heatmaps or overlays showing where the model "focused" on the X-ray, explaining which areas contributed most to the prediction.
* **Comparison with Ground Truth**: Visualize comparisons between model output and actual fracture locations to demonstrate accuracy.

**7. Conclusion and Future Work**

* **Summary**: Summarize the strengths of your model and its impact on fracture detection.
* **Limitations**: Discuss any limitations, like false positives/negatives or issues with certain types of fractures.
* **Future Work**: Suggest improvements, such as training on a larger dataset, experimenting with more complex architectures, or integrating the model into a diagnostic workflow.