Abnormality Detection in Musculoskeletal Radiographs

Idea Presentation

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WHAT IS MURA?

MURA (musculoskeletal radiographs) is a large dataset of bone X-rays. Algorithms are tasked with determining whether an X-ray study is normal or abnormal.

SIDE NOTE

MURA IS A DATASET OF MUSCULOSKELETAL RADIOGRAPHS CONSISTING OF 14,863 STUDIES FROM 12,173 PATIENTS, WITH A TOTAL OF 40,561 MULTI-VIEW RADIOGRAPHIC IMAGES

WHERE WE ARE TODAY

Musculoskeletal conditions affect more than 1.7 billion people worldwide, and are the most common cause of severe, long-term pain and disability, with 30 million emergency department visits annually and increasing. Computer aided diagnosis (CAD) has a vital role and becomes an urgent demand nowadays. Bone fractures cases are considered from the most frequently occurred diseases among individuals. Moreover, the incorrect diagnosis of the bone fractures cases may cause disability for the patient. Hence, CAD system for bone fractures has become a must.
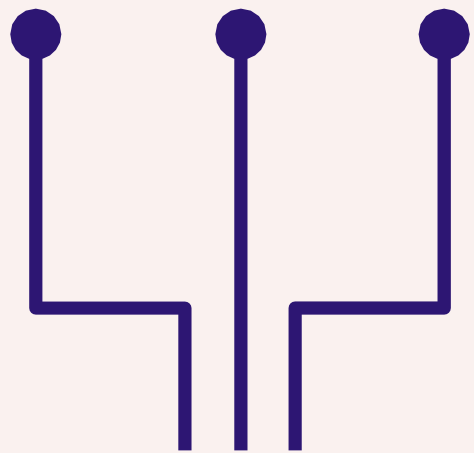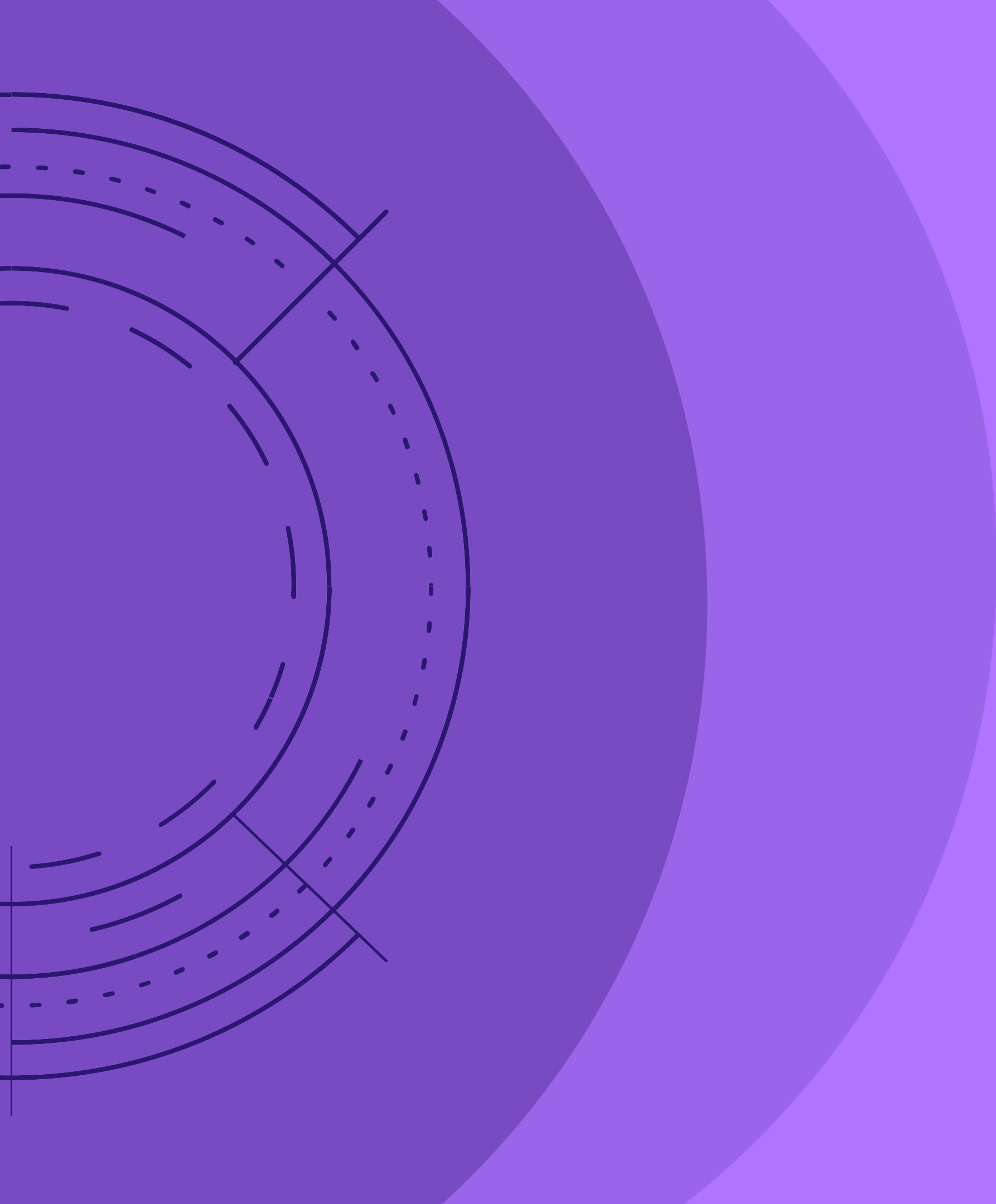
PREPROCESSING DATA AND EXPLORATION

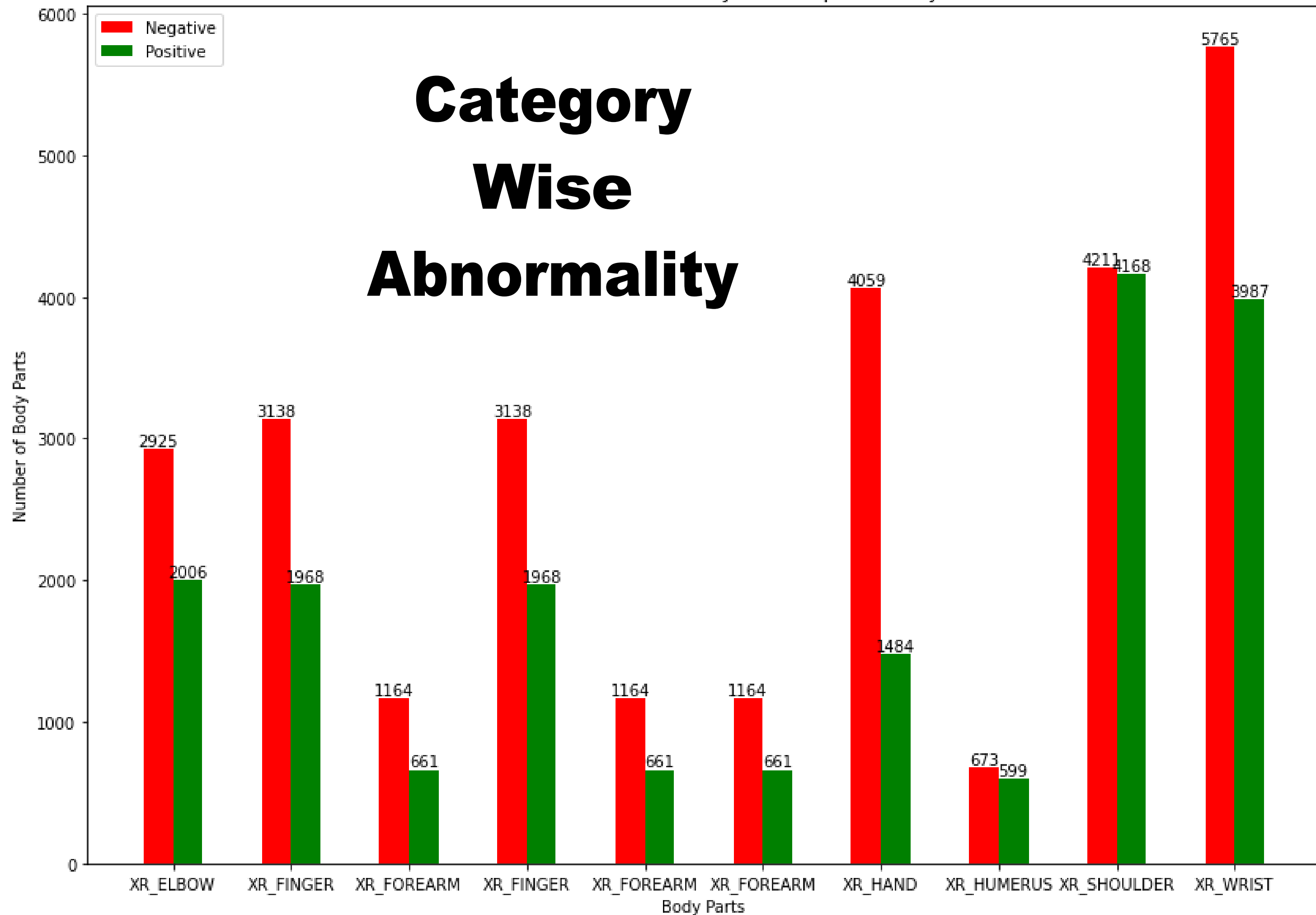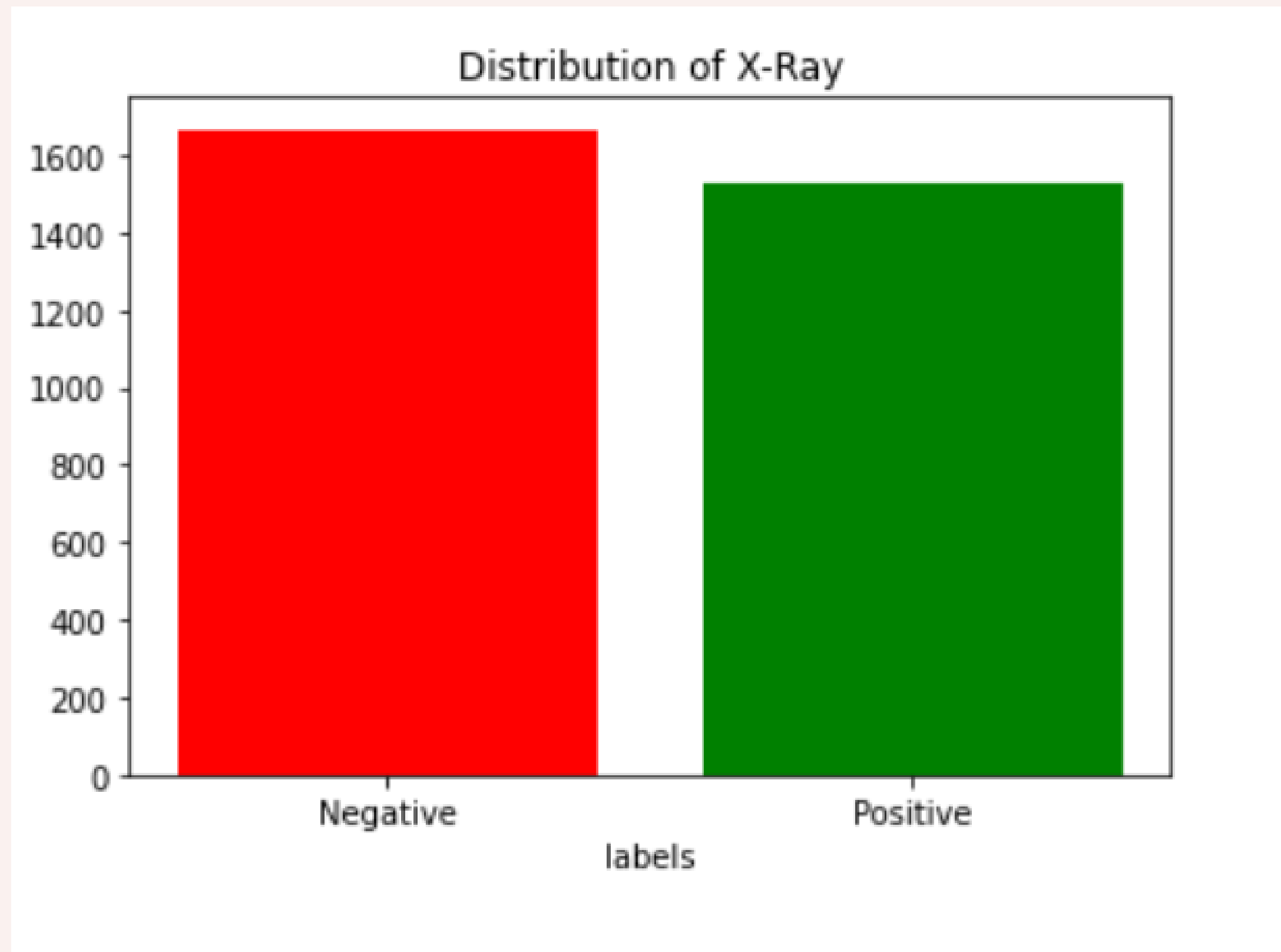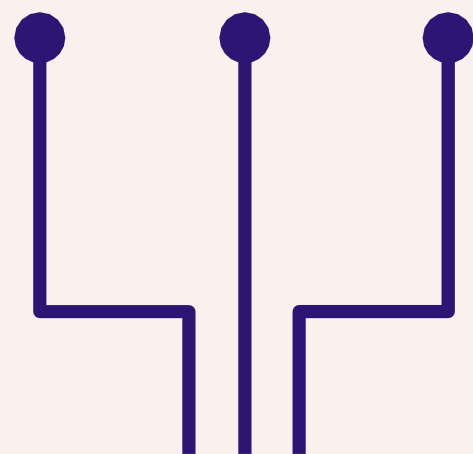Normal and Abnormal Detection
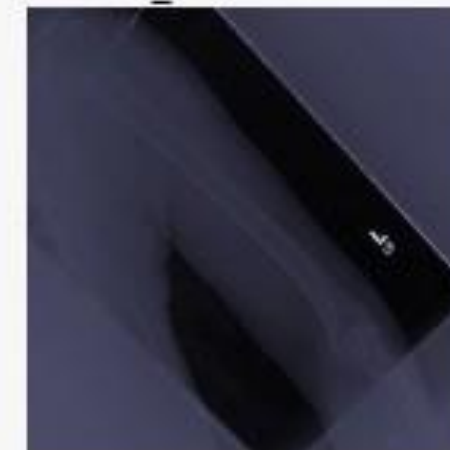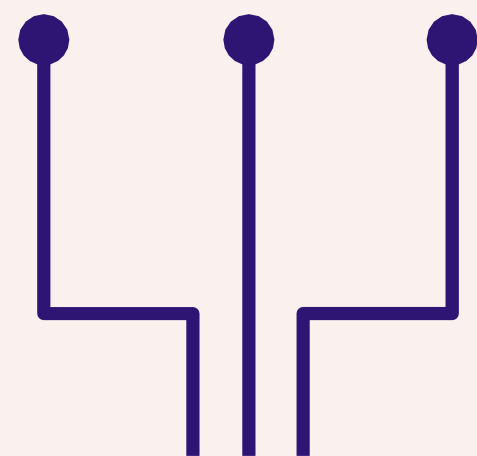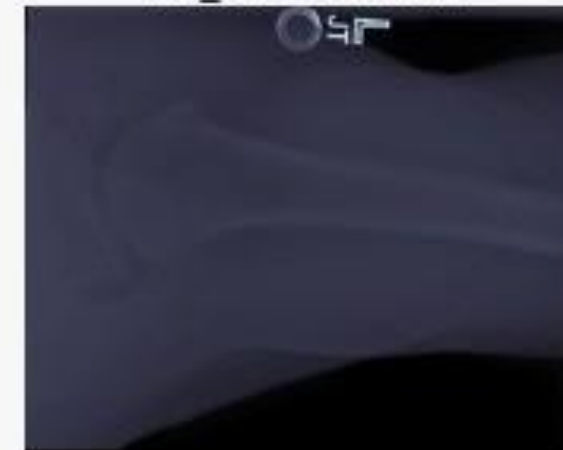
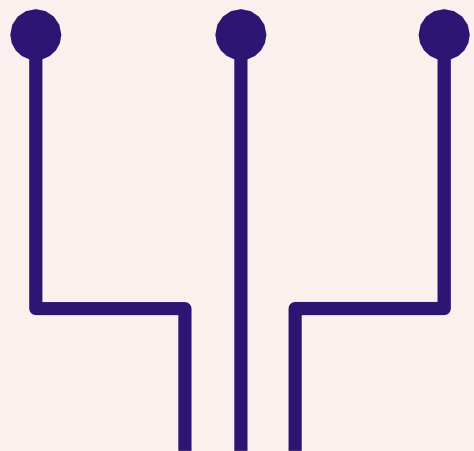Counts distribution of X-Ray for each part of body

Distribution of X Ray Images

ENSEMBLING

Ensemble learning helps improve machine learning results by combining several models. This approach allows the production of better predictive performance compared to a single model. Basic idea is to learn a set of classifiers (experts) and to allow them to vote.

Here, we have combined results for the 13 models to get a better result. We took the average of the results obtained from each model.

DEMO

On Colab

RESEARCH PAPER

https://sci-hub.hkvisa.net/10.1109/MCNA509
57.2020.9264285

Thank You!