AI IN MEDICAL IMAGINING

Problem Statement

Implement a AI algorithm to analyze medical images, such as X-rays, MRI scans, and CT scans, to assist radiologists in detecting and diagnosing diseases.

Statistics

AI in radiology is expected to reach $3.06 billion by 2026, with a CAGR of 25.6% from 2019 to 2026. (https://www.reportsanddata.com/report-detail/artificial-intelligence-in-radiology-market)

A study published in the journal Radiology in 2019 found that AI algorithms can detect lung nodules on CT scans with a sensitivity of 94% and a specificity of 78%, which is comparable to the performance of human radiologists. (https://pubs.rsna.org/doi/full/10.1148/radiol.2019182532)

How is the problem being solved today?

- Analyzing medical images such as X-rays, MRI scans, and CT scans involves a more manual and labor-intensive process.
  - Radiologists review the images to identify abnormalities or areas of concern.
  - They compare the images with previous scans (if) and consider the patient's medical history.

What are the other solutions?

Quantitative Analysis:

Using software tools to measure specific features in the image, such as the size of a tumor or the density of a tissue.

Quantitative analysis can provide objective measurements that aid in diagnosis and treatment planning.

Pattern Recognition:

Identifying patterns in the images that are indicative of certain conditions or diseases.

This can be done manually by experienced radiologists or using computer-aided detection (CAD) systems.

3D Reconstruction:

Creating a 3D model of the internal structures from 2D medical images, such as CT or MRI scans.

3D reconstruction can provide a more detailed view of the anatomy and aid in surgical planning.

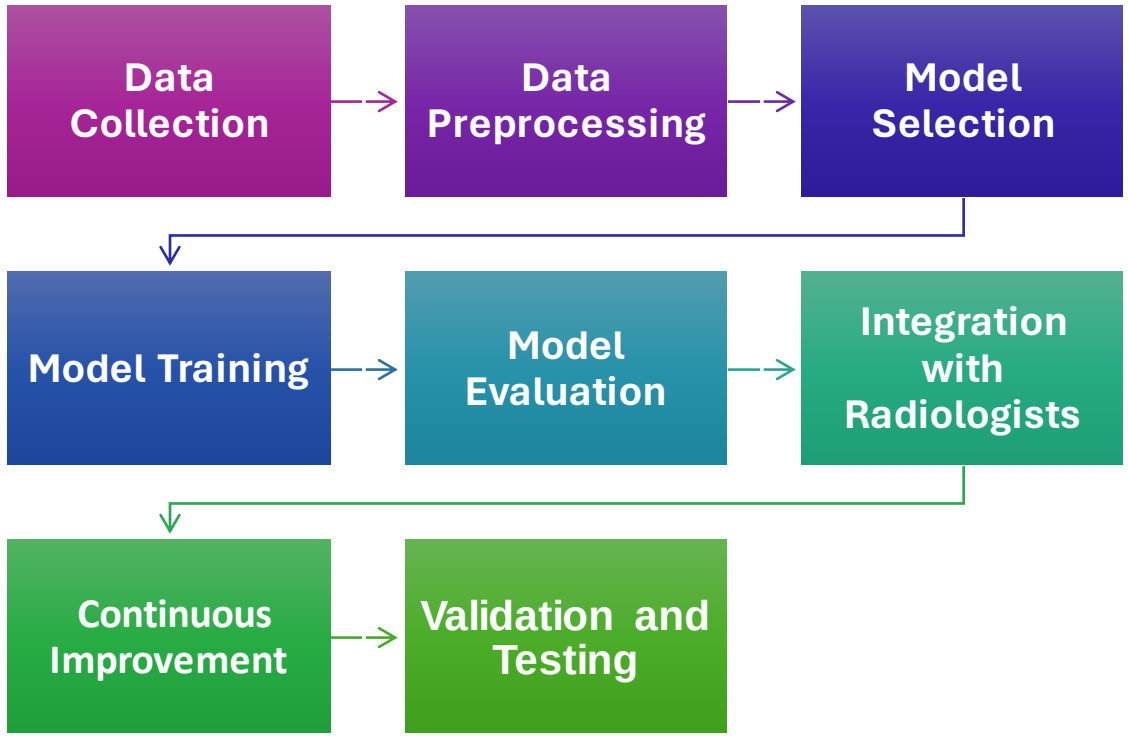
Statistical Analysis:

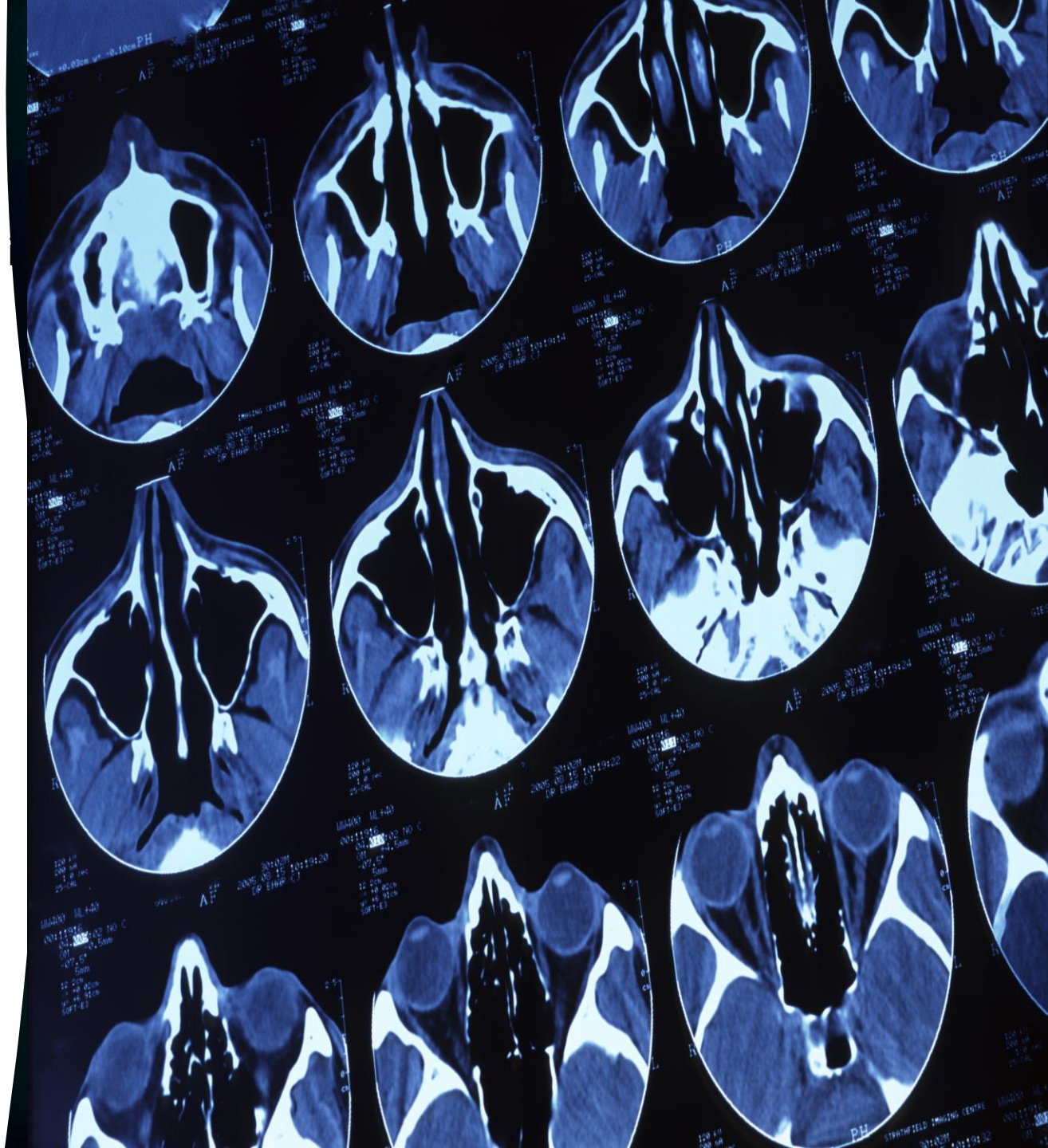
Using statistical methods to analyze the distribution of pixel intensities or other features in the images.

Statistical analysis can help identify outliers or patterns that are not easily discernible visually.

Proposed Solution

Develop a system for automated analysis of medical i
radiologists in detecting and diagnosing diseases.





Mobile Chest X-Ray Analysis

Import from Photos

Select a chest x-ray image from your camera roll to begin analysis

Import from Files

Select a chest x-ray image and begin analysis.

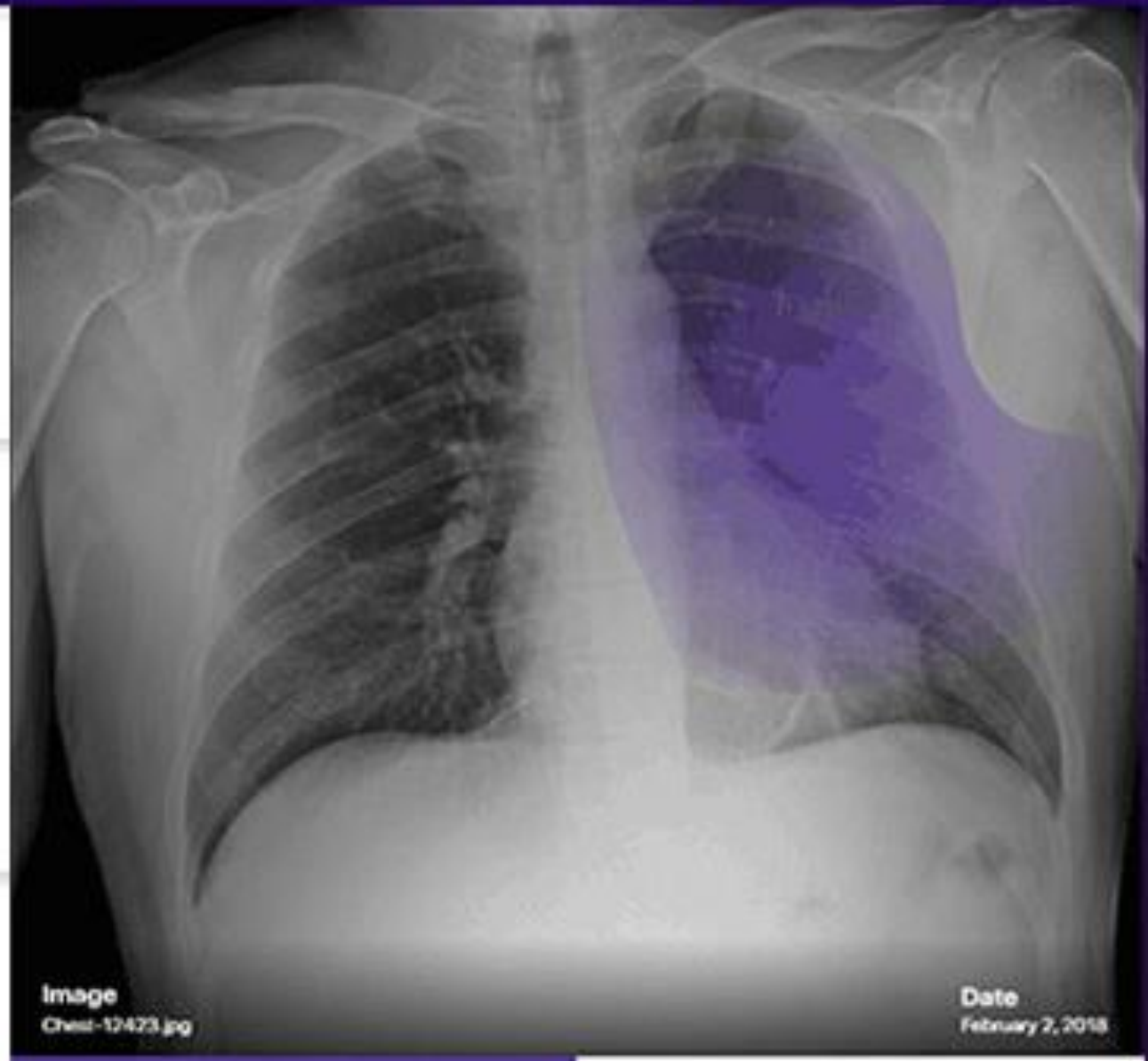
Take a Photo

Take a photo of a printed chest x-ray to begin analysis

Back

Mobile Chest X-Ray Analysis

New Session



Pleural Thickening
86.3% Very Likely

Pneumothorax	62.9%	Likely
Edema	43.2%	Uncertain

The Idea is Preprocessing the images and focusing on the desired area .

And detecting the problem through Deep Learning Algorithms and training the model and

Evaluating model with unseen data . The model is then integrated with web page or mobile app for easy use.


Thank
you!