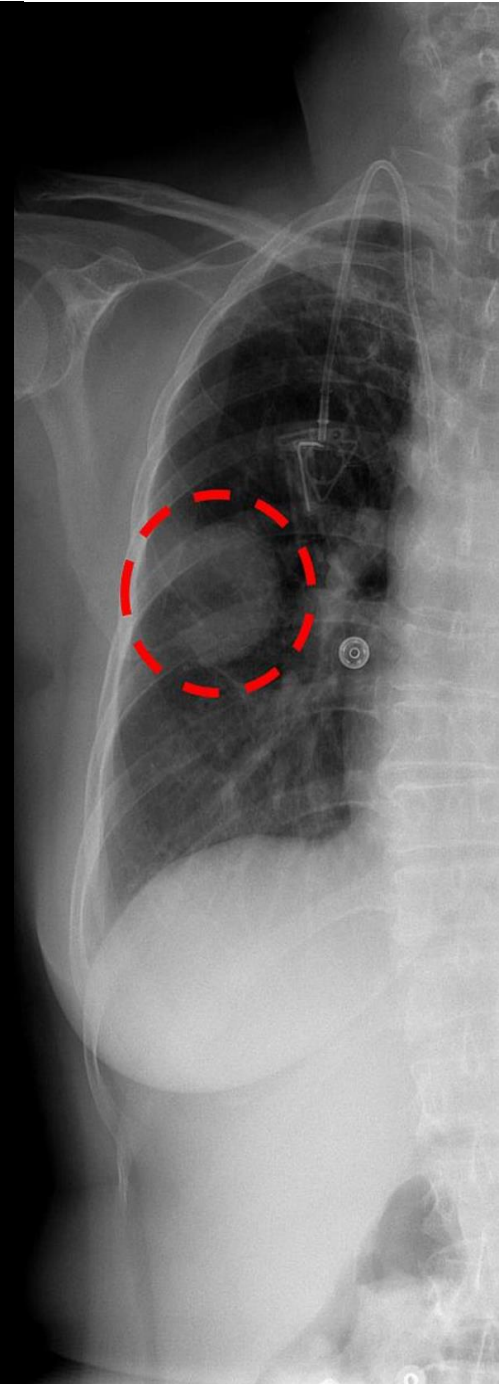# CHEST X-RAY ANALYSIS

*AI Powered Pathology Detection*

INTRODUCTION

Project Goal

- Provide AI powered diagnosis on x-rays

  - Help areas/clinics with shortage of radiologists

  - Requires careful observation and knowledge of anatomical principles, physiology and pathology.

Database

- NIH

- 45+ GB

- 112,000 anonymized chest x-ray images (1024 x 1024 px)

- More than 30,000 patients
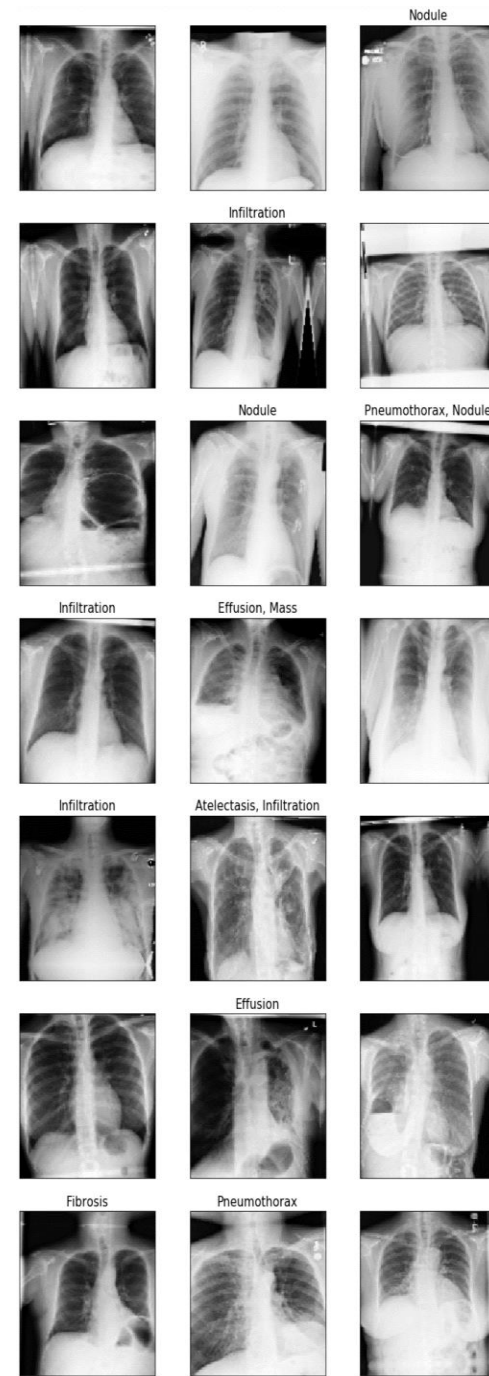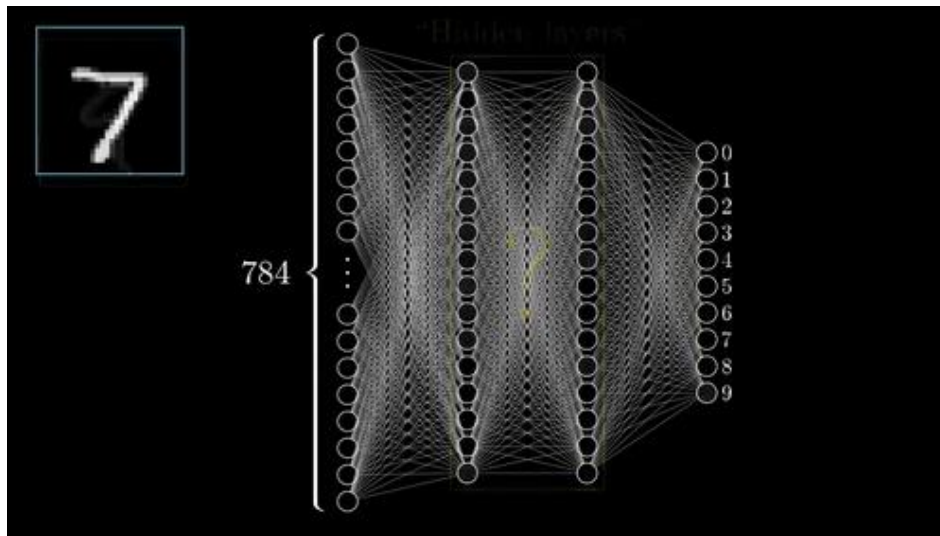
- 14 different chest conditions
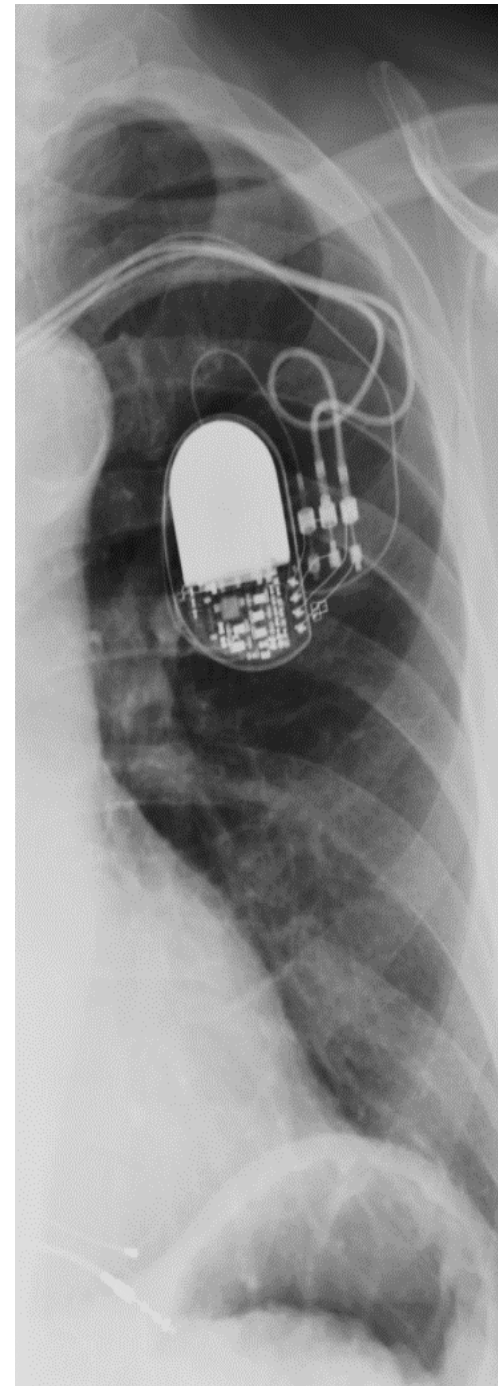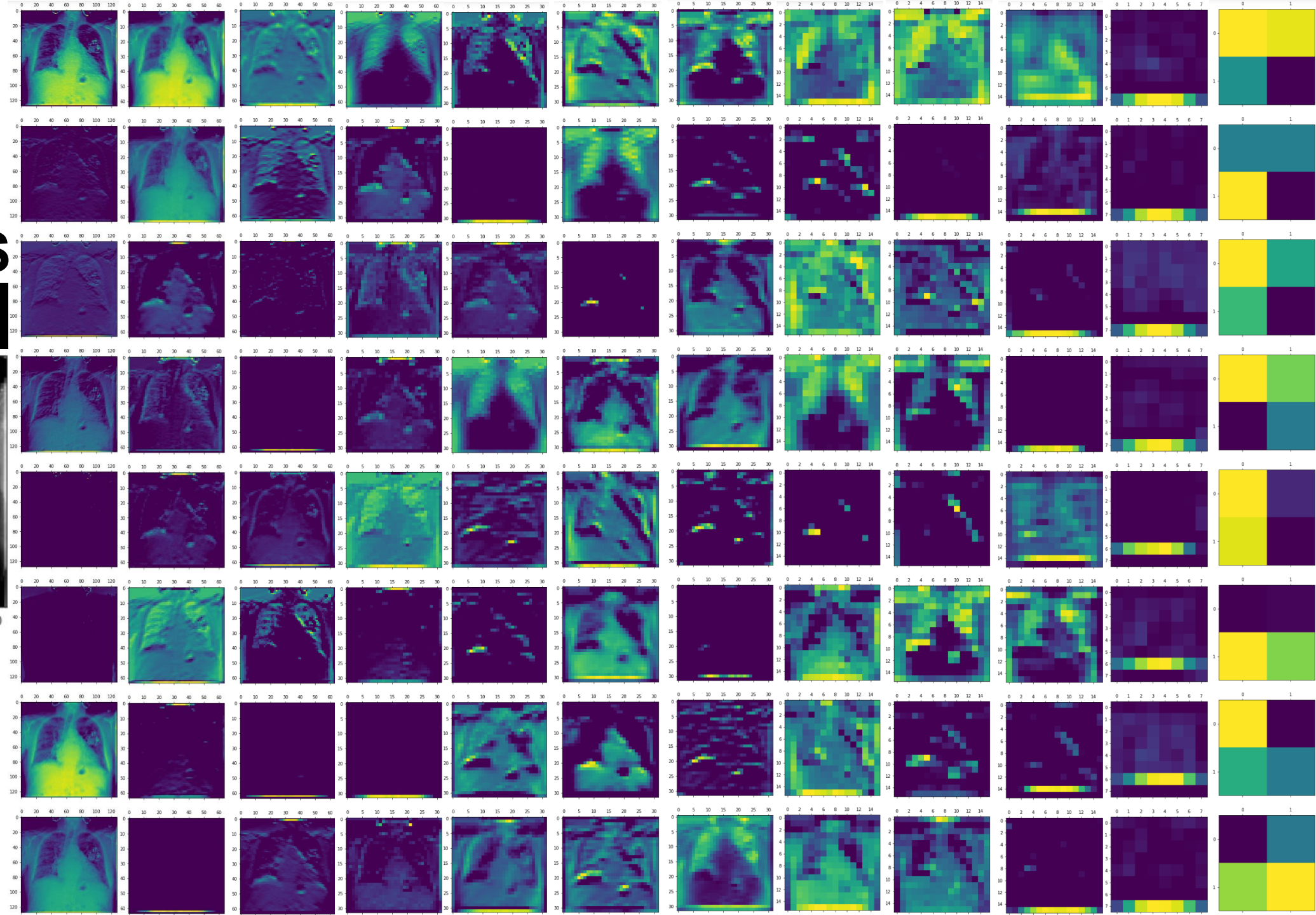
METHODS

Deep Learning

- Preprocessing
  - Resizing to 128 x128
  - Sample wise Pixel Scaling (Normalization, Standardization)
  - Image Augmentation (Rotation, Contrast normalization, etc.)
- From Scratch Model vs. Pretrained Model
- Cloud Computing
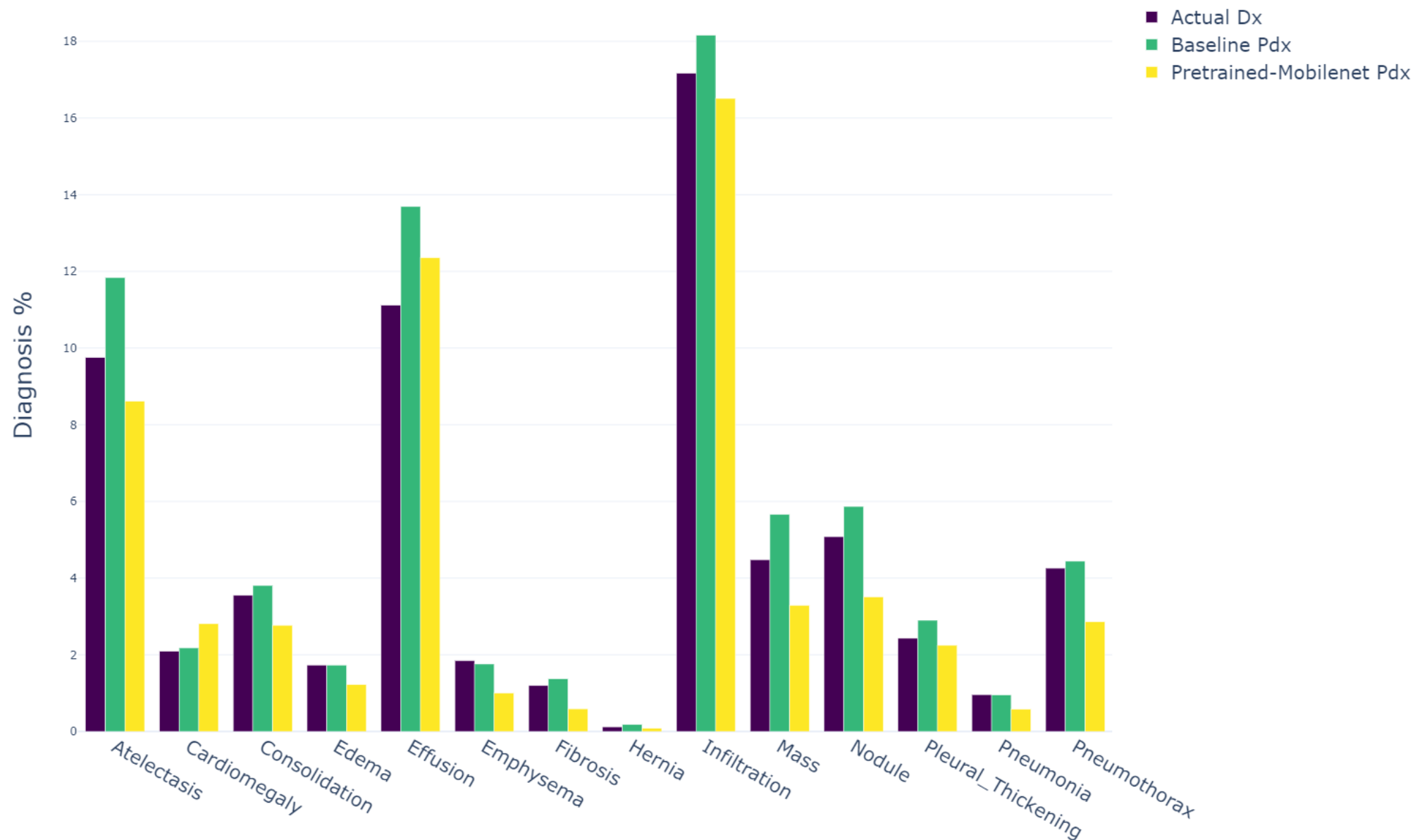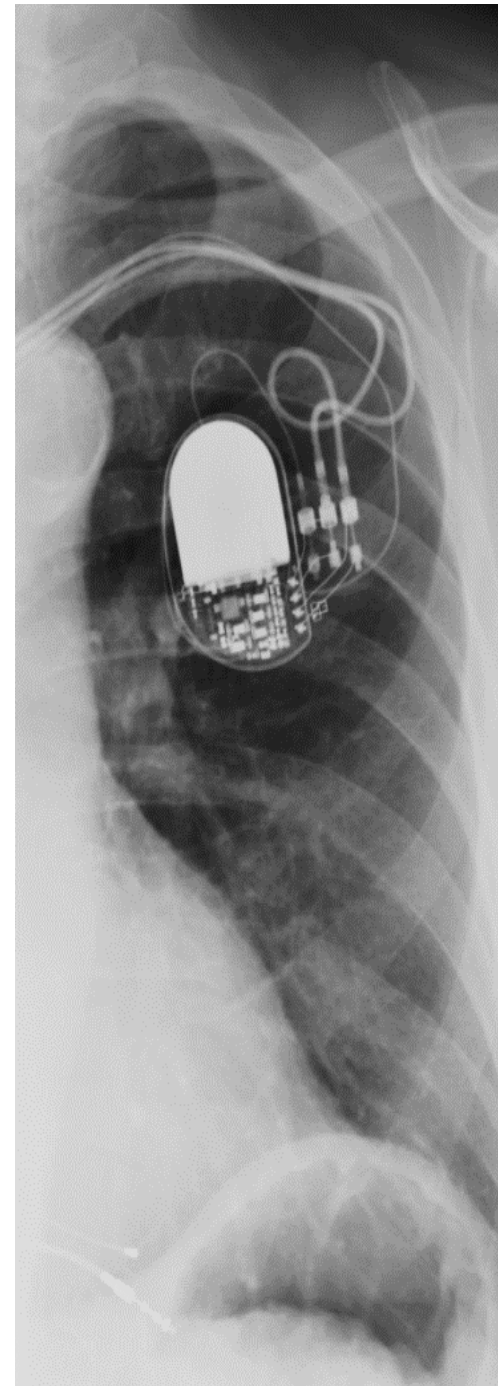- Metric = AUC Score

Convolutional Neural Networks

Layers

RESULTS

Model Prediction Comparison of Different Conditions

RESEARCH IMPACTS

- Improves the current approach to interpreting radiology reports

- Assist the radiologists in diagnostics

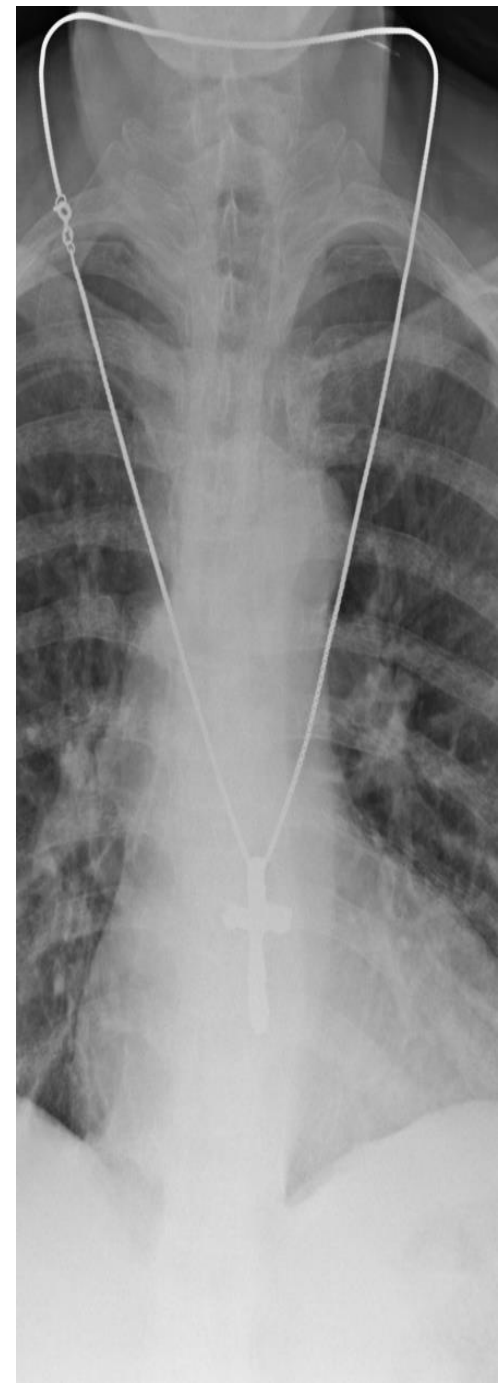- Apply similar techniques to other fields of healthcare

FURTHER RESEARCH

Next Steps

- More Training

- Creating Heatmaps of areas that the model detects

- Implementing a web app for doctors to upload images and predict the outcome

- Refining the dataset and finetuning the model

- Resizing images to higher resolution

- Trying other pretrained models

THANK YOU

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