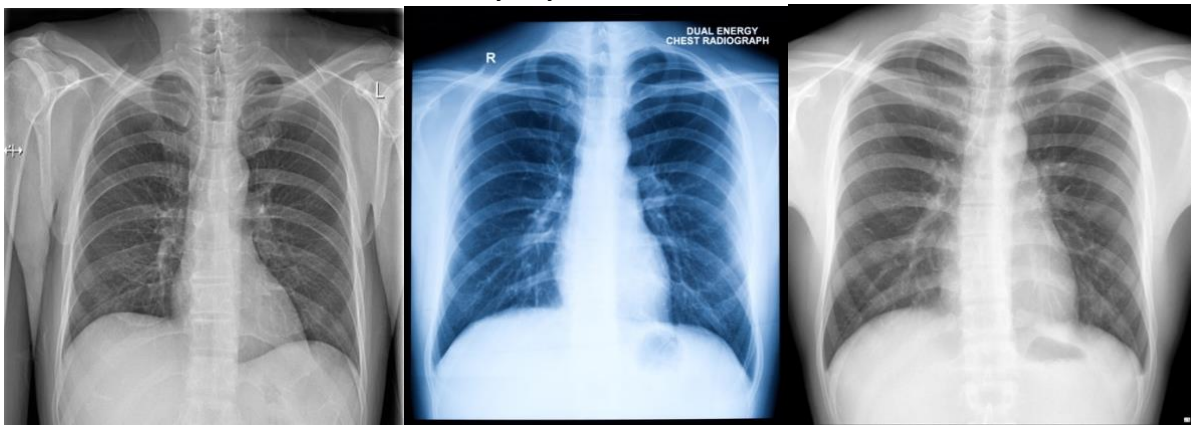
COVID-19 & Data Science: Help Diagnose a Pandemic

A UVA Data Science Case Study by Noah McIntire



Chest X-rays of various hospital patients.

Prompt: The COVID-19 Pandemic has put tremendous stress on medical infrastructure around the world. Anything to help relieve stress and automate parts of this system would be fantastic, and potentially save lives. That's where you come in. Due to the high mutation rate of the COVID-19 virus, as well as certain testing techniques leading to false positives or negatives, having another way to diagnose COVID-19 reliably would be a valuable tool in the field. Your supervisor recommends using chest X-rays to help develop a way to diagnose and determine what condition a patient may have.

A Virginia Department of Health Infographic to mitigate the spread of COVID-19.

Deliverable: You are tasked with developing a machine learning model that takes chest x-rays makes them usable in a machine learning model and a presentation of your findings. This model needs be able to help classify these images into three categories- a patient that has COVID-19, Viral Pneumonia, or healthy lungs. This can be done with several different supervised or unsupervised models, but there are some resources provided in this file to help provide guidance as to which may be possible to implement. More details can be found in the rubric.