Group Proposal
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For our project we plan to create a deep learning model to classify COVID-19 cases through X-ray images of the lungs. The goal of this project is to show the effectiveness of using deep learning methods for identifying medical ailments—especially during a scarcity of proper testing equipment. To train our model, we will be using a data set containing 9,547 X-ray images. The dataset is separated into two classes—images of lungs plagued with pneumonia/other various lung illnesses and images of lungs plagued with COVID-19.

Since the dataset includes just under 10,000 images, it can be said that it is sufficiently large to train a deep neural network. We will utilize a VGG16 pretrained network within the frameworks TensorFlow and Keras. The documentation for transfer learning on the TensorFlow and Keras websites (https://keras.io/guides/transfer_learning/ and https://www.tensorflow.org/tutorials/images/transfer_learning) will be utilized as reference for transfer learning. Because this is a two-class classification problem, we will utilize binary cross entropy as our metric for measuring model loss, and we will use accuracy to measure the performance and generalizability of the model. Carious callbacks, such as EarlyStopping and ReduceLearningRateOnPlateau, will be specified to combat overfitting.

Rough Schedule:

3/25—Have data preprocessed

4/1—Have begun modeling process

4/6—Have model completed

4/7—Begin report and presentation

4/10 to 4/19—Report and presentation complete

4/30—Video presentation complete