

DATS – 6203 (Spring 2020)
Machine Learning – II
Final Project Proposal
Group 4

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Dataset: (<https://www.kaggle.com/paultimothymooney/chest-xray-pneumonia>)

To address the problem, a dataset was obtained from Kaggle that contained 5,863 chest X-Rays of pediatric patients aged 1-5 years old from Guangzhou Women and Children's Medical Center in Guangzhou. These images are split into a train set (5,216 images), a validation set (16 images) and a test set (624 images). The images consist of 3 channels of the same pixels, and are approximately (1200 x 1800 pixels) in size.

Problem Statement: The original dataset is meant to be used to determine whether the patient is diagnosed with Pneumonia or not which leads it to be a binary classification problem. The labels for these images however, are divided into three classes. Each class is Normal, Viral Pneumonia or Bacterial Pneumonia. We want to define our problem statement as to predict a method of treatment based on the predicted label. This would make the problem a multi – class classification problem. Considering over 5500 samples and each sample image of size 1200 x 1800 pixels, This problem is large enough to require high computation power and considering that these x-ray scans have not just been taken at a common angle and perspective, it makes the problem we are trying to solve complex as well.

Proposed Solution: We would like to use convolutional neural networks and perhaps also might use pre trained networks for the purpose of making the solution more viable. This would resolve and help various doctors and patients all over the world where doctors cannot determine the diagnoses of the patients themselves. We hope to make a difference in the medical community by making this classification.