Pneumonia Interpretation Project

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Agenda

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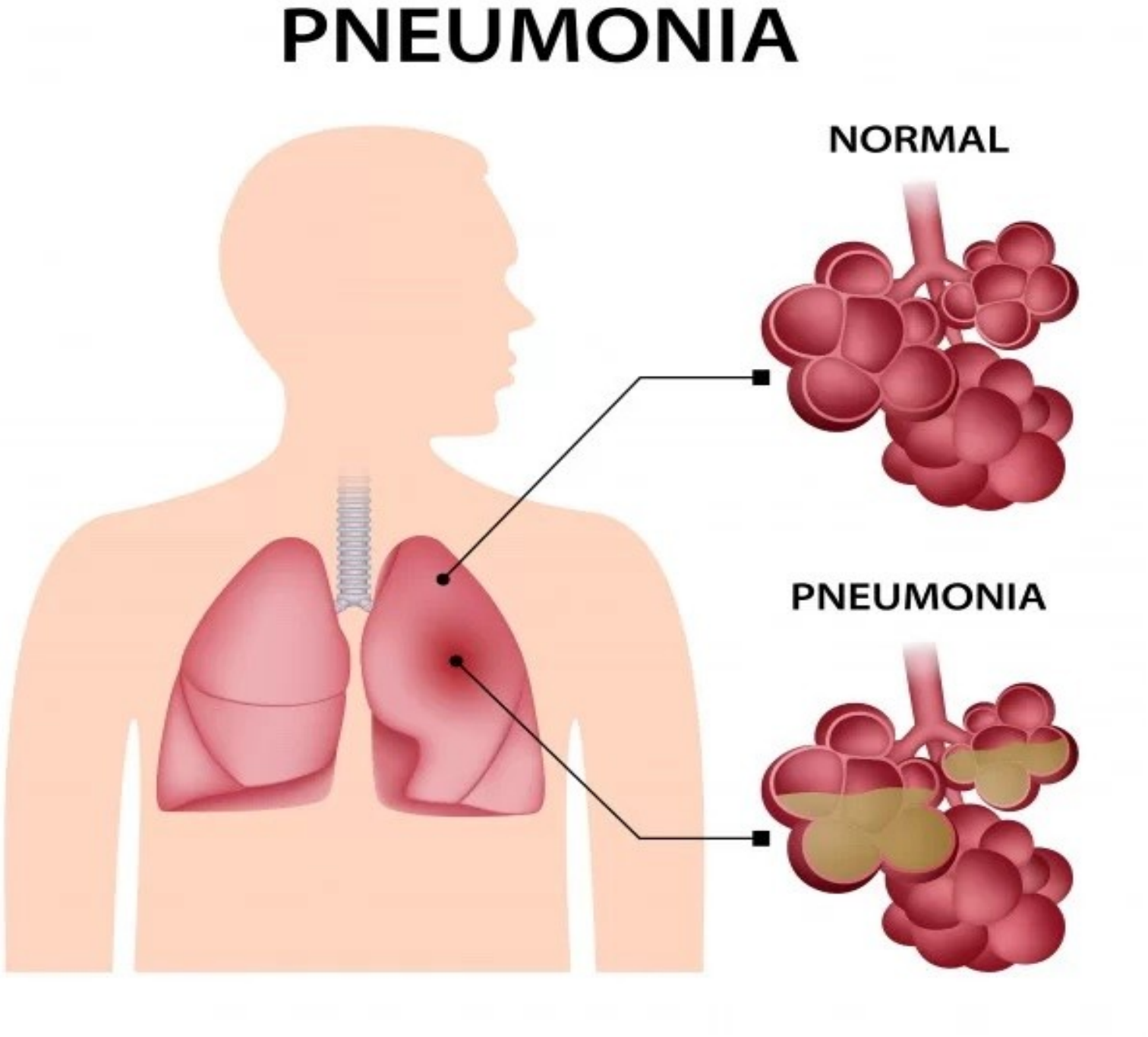


Overview

This project will use Machine Learning techniques to determine if the patient has pneumonia based on medical imaging.

Business Understanding

Why Machine Learning?

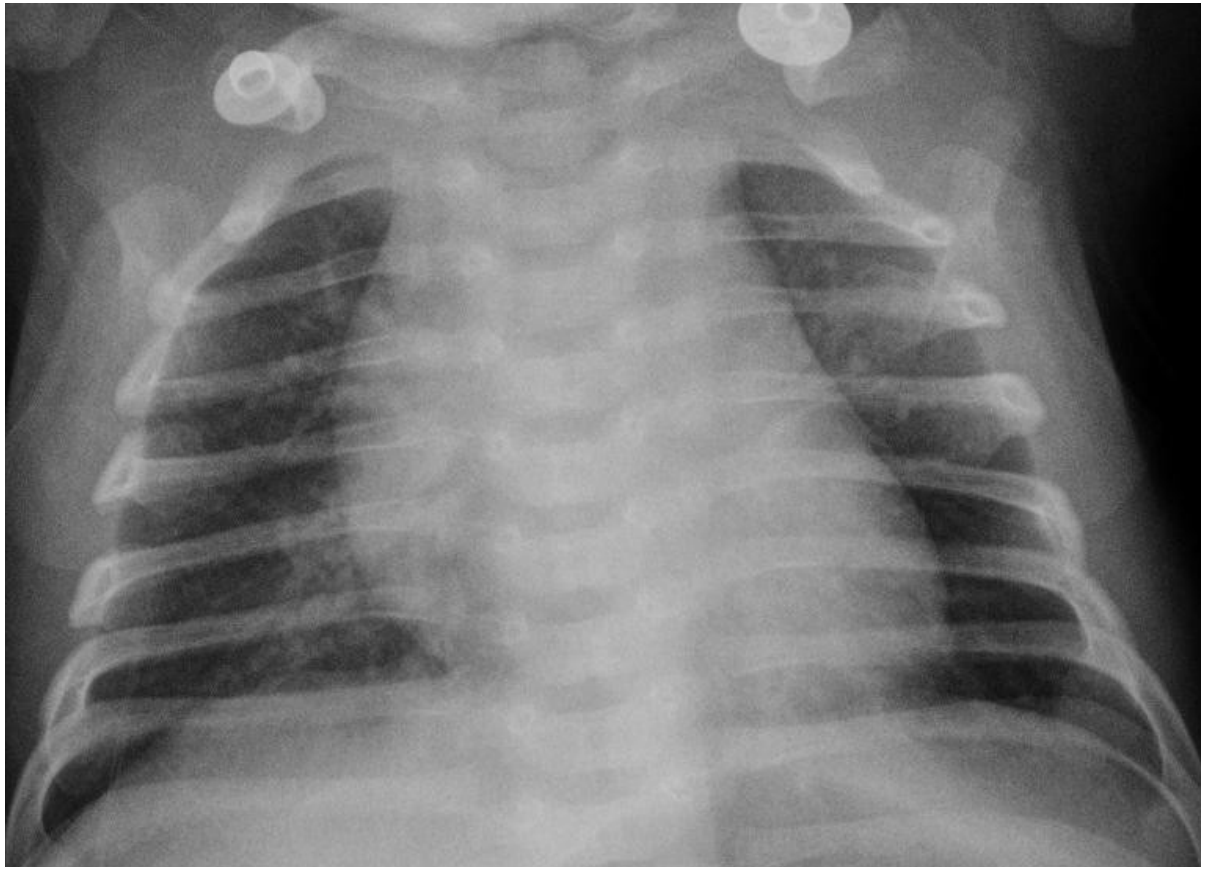
Correctly predicting pneumonia from an image will greatly imporve accuracy, effiency, and cost reduction. .

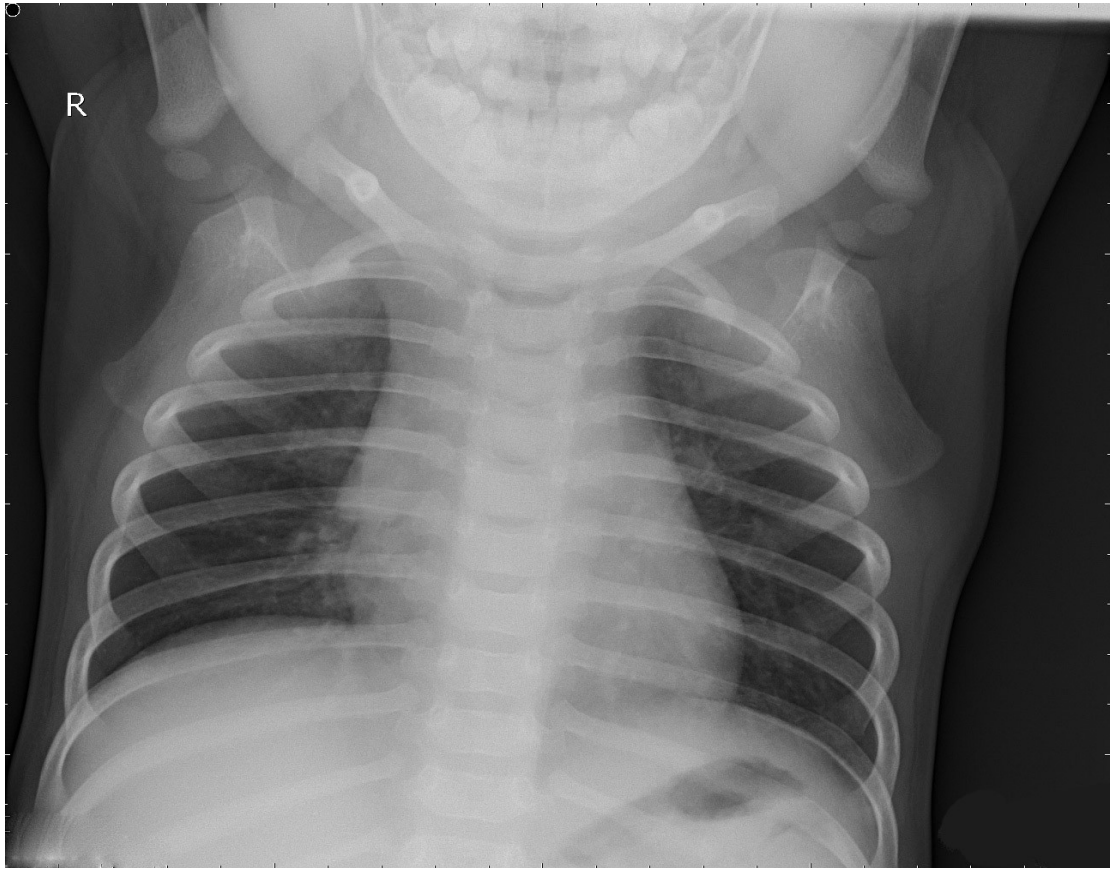
The Data

The Hospital has provided us with images of normal type, and pneumonia type. We will use Machine Learning to train a model on the images and predict outcomes of new images

Our Outcome

We were able to achive 92% accuracy overall on the images

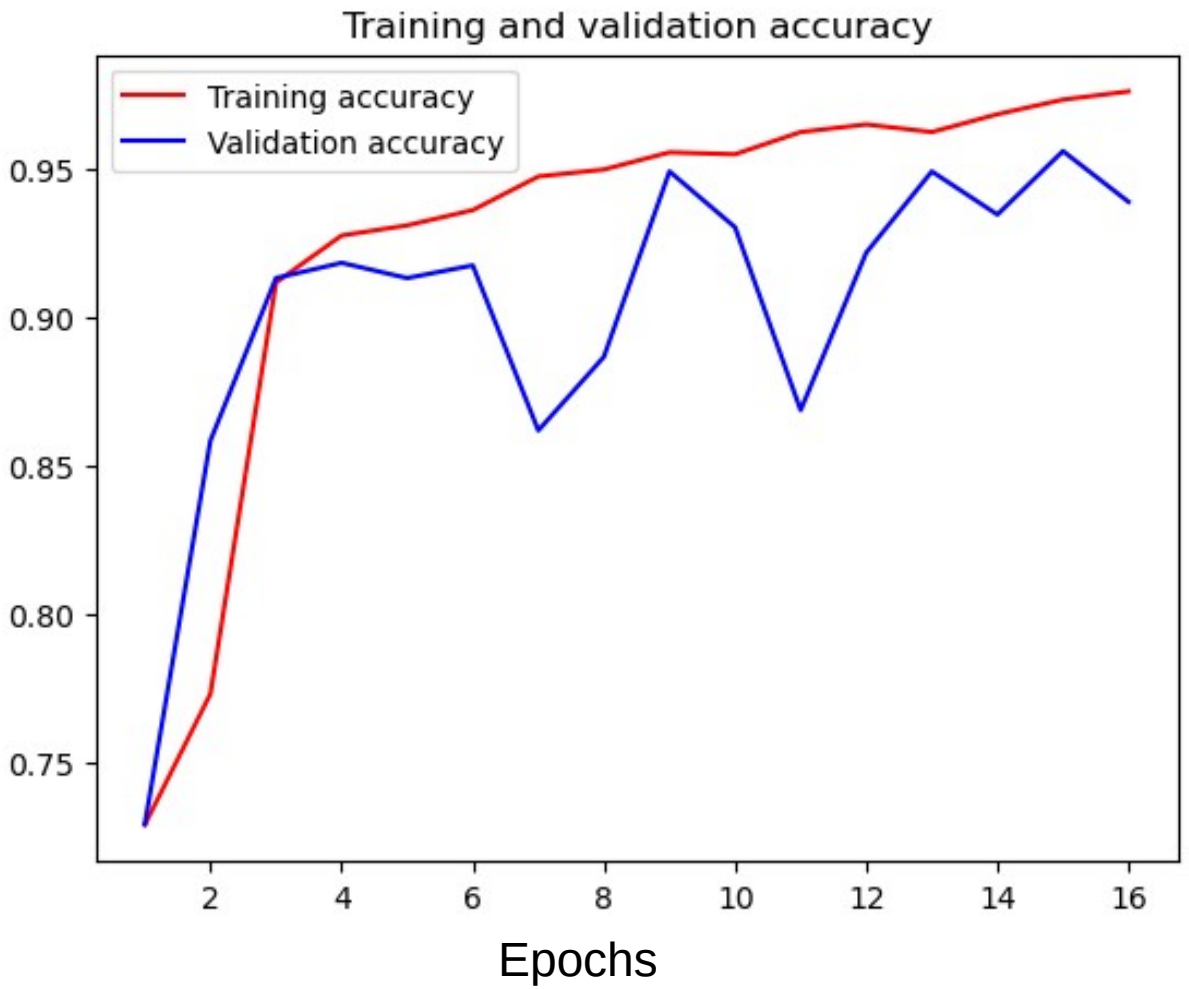


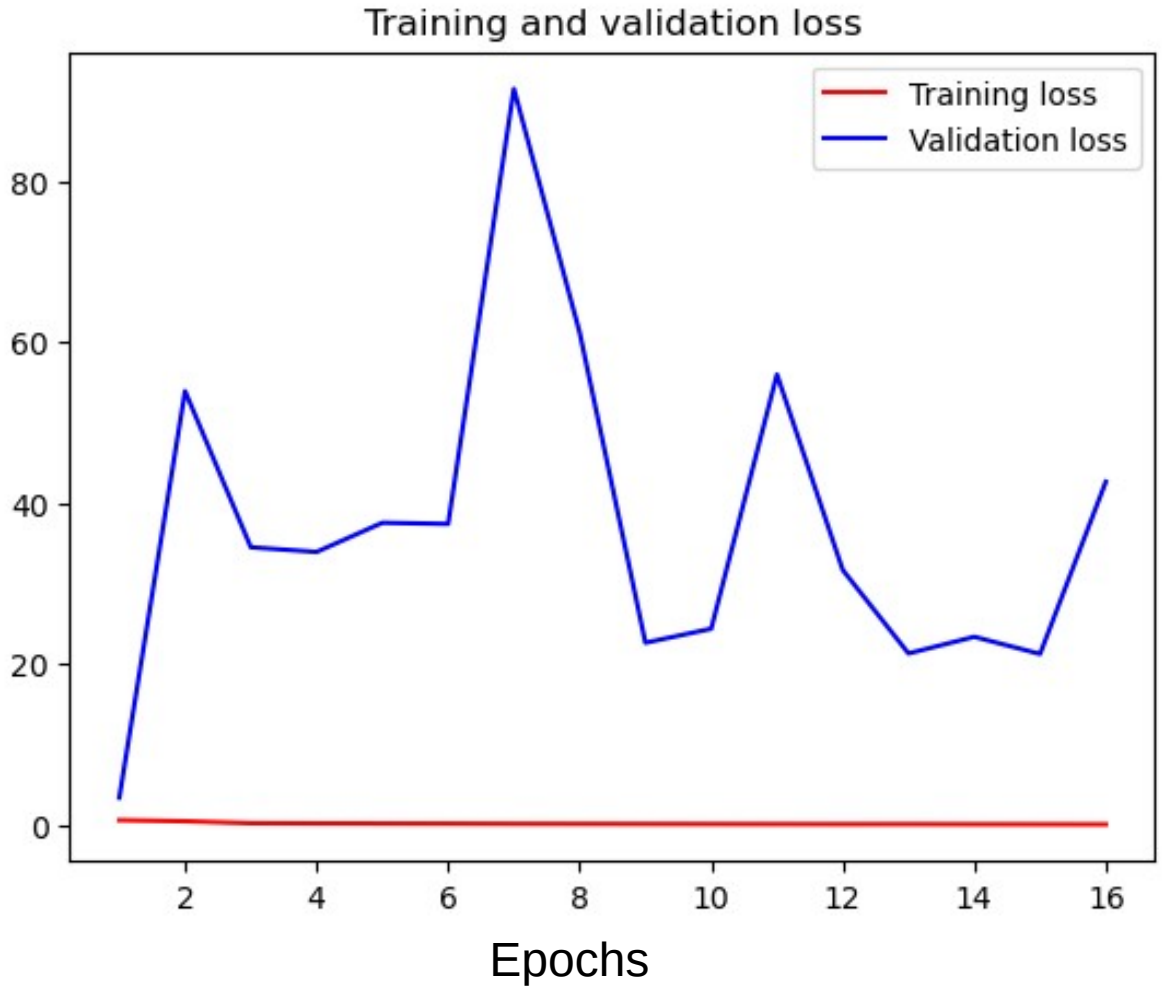


Data Understanding

The images were provided in two sets, those that have pneumonia and those that do not.

For one model we changed all images to size 224x224x3 and for another model we used size 112x112x3.





Model – 1

This is a tensflow Conv2D model with 10 layers, relu activation and a .001 learning rate.

We achived 92% accuracy on the test data set.

Accuracy Rate

73%

Loss

.588

Model – 2

This model is a ConvNeXtTiny model with softmax activation and a .01 learning rate.

We achived 73% accuracy on the test data set.

Evaluation

92%

Overall acuracy for all images using CNN model

Our Next Steps

Fine Tune CNN model

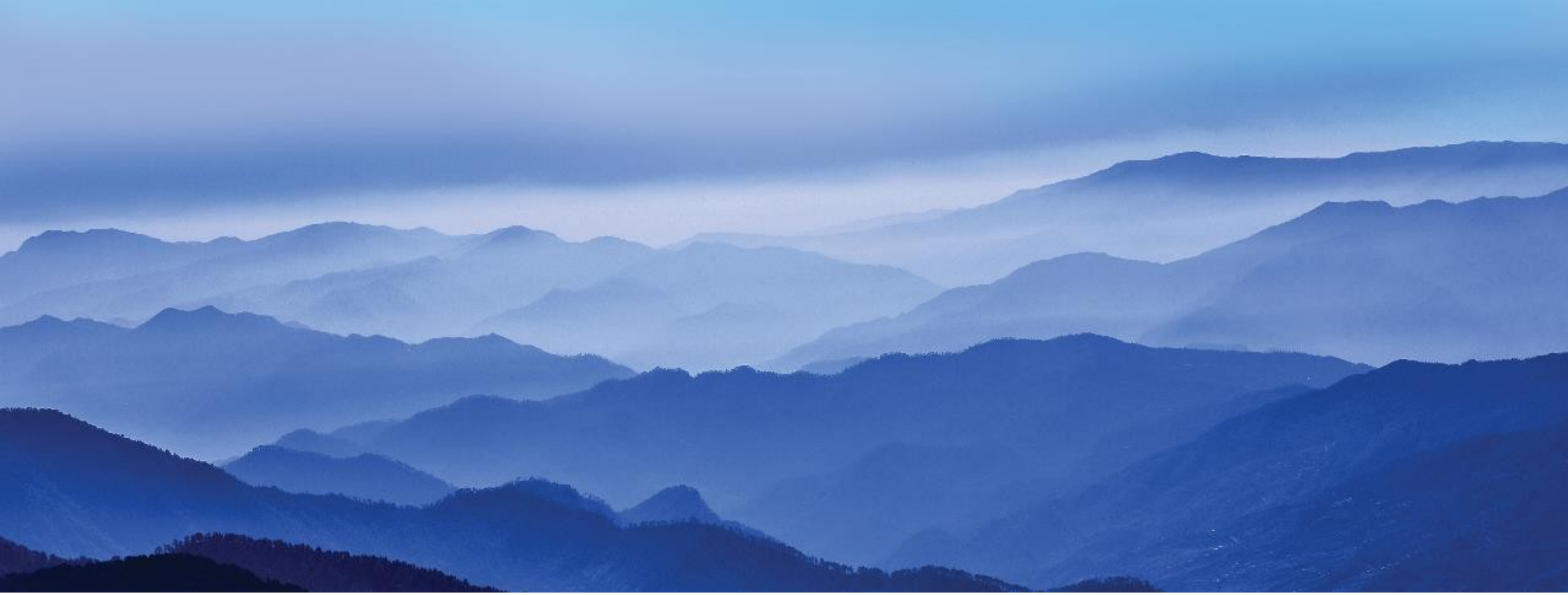
Our model was not tuned. We can achieve better results by tuning the model

Change Image Sizes

The image sizes wer limited by the GPU memory reslulting in smaller batch sizes. We should determine the optimal image size.

Use Different Metrics

We should explore other metrics in addition to accuracy.



Q & A

We’re Happy to answer Questions