AutoML Modeling Report

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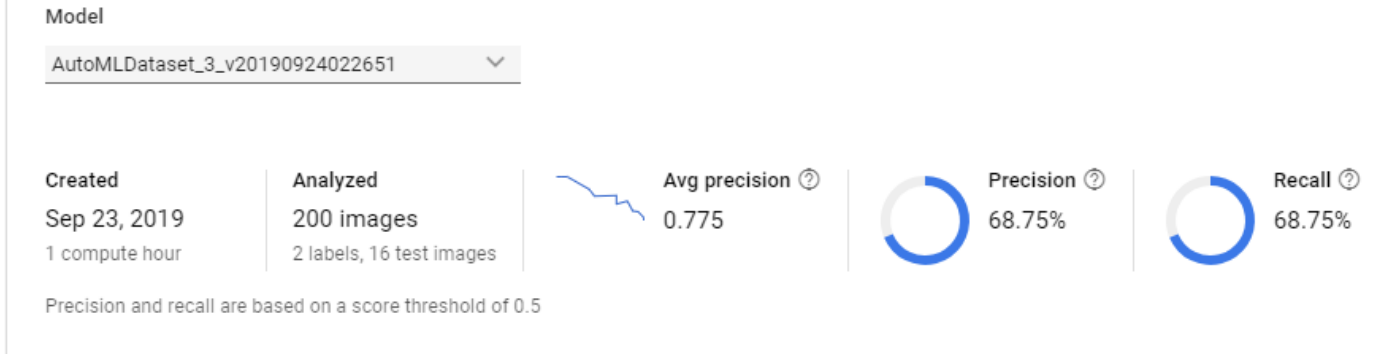
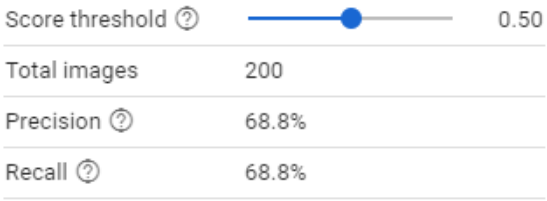
Binary Classifier with Dirty/Balanced Data

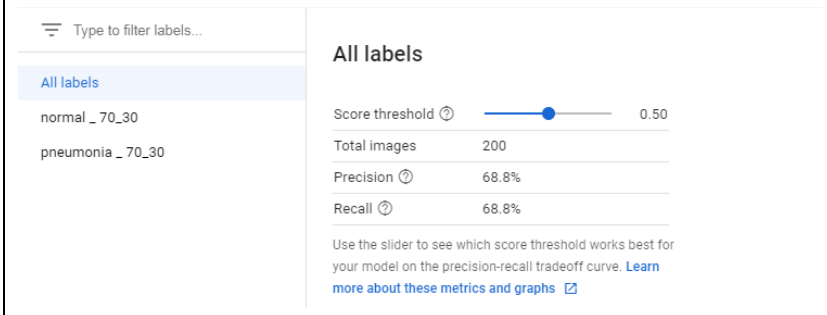
Confusion Matrix	(70% pneumonia, 30% normal) and (70% normal, 30% pneumonia) The model's performance with dirty data (where 30% of the data is mislabelled) shows that all the values in the diagonal boxes (blue) are higher than other values on either side of the diagonal (pink) which is low, indicating that the desired categories are being identified correctly to the extent indicated, with low misclassification of test images. However, the visualization of the performance of the algorithm shows that 'pneumonia' class labels are more commonly mislabeled/most often confused for 'normal' class labels; also normal labels are more correctly predicted (75%) with 25% lower rate of misclassification and ambiguity compared to 'pneumonia' class labels (37.5%). Confusion matrix This table shows how often the model classified each label correctly (in blue), and which labels were most often confused for that label (in orange). Predicted label: pneumonia _ 70_30, normal _ 70_30 True label pneumonia _ 70_30: 62.5%	37.5% normal _ 70_30: 25.0%	75.0%
Precision & Recall	Model's precision and recall are the same for a score threshold of 0.5: Precision = 68.75%; Recall = 68.75%; Average Precision = 0.775 Since 30% of the data is mislabelled, it shows that the mislabeled images share similar visual patterns as correctly labelled images and the model has a bias to 'favour' one class of label/image over the other. Score threshold 0.50 Total images 200 Precision 68.8% Recall 68.8% Of the binary classifiers, binary classifier with Clean/Balanced Data has the highest precision (100%) and highest recall (100%)

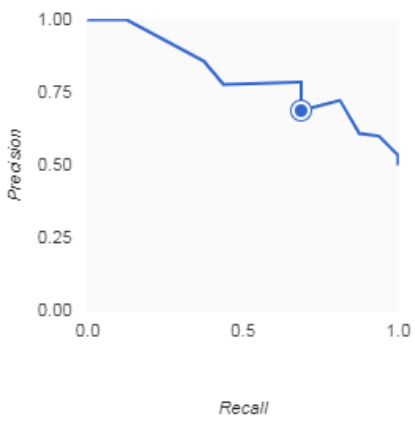
Dirty Data	I observed that algorithm trained on dirty data does not reflect the absolute/complete classification of the labels, as the dirty data caused some bias in the model. ML model is only as useful as the data used to train it so it's not necessarily a model problem, but data collected and used to train the model in the first instance.

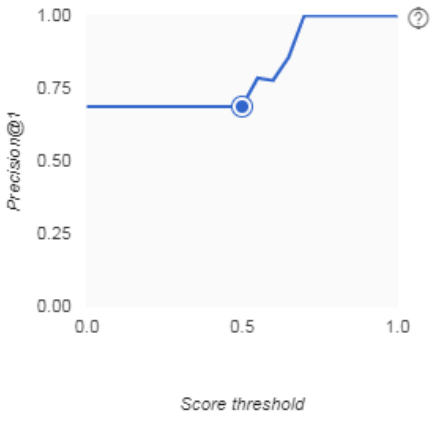
EVALUATE

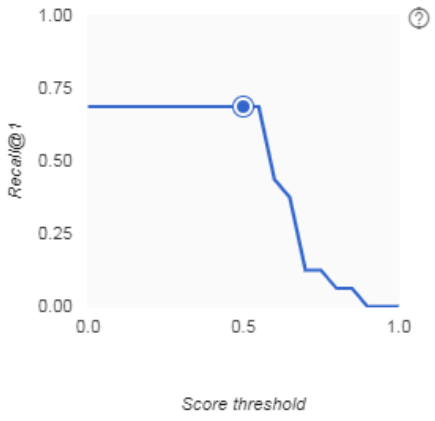












Confusion matrix

This table shows how often the model classified each label correctly (in blue), and which labels were most often confused for that label (in orange).

True label	Predicted label: pneumonia _ 70_30	Predicted label: normal _ 70_30
pneumonia _ 70_30	62.5%	37.5%
normal _ 70_30	25.0%	75.0%

How do I use the Confusion Matrix?

We can compare the model's performance on each label using a confusion matrix. In an ideal model, all the values on the diagonal will be high, and all the other values will be low. This shows that the desired categories are being identified correctly. If any other values are high, it gives us a clue into how the model is misclassifying test images.