

AutoML Modeling Report



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Binary Classifier with Clean/Balanced Data

Train/Test Split

How much data was used for training? How much data was used for testing?

177 images are used for training and 23 images are used for

Tutte le etichette

Immagini totali	180
Elementi di test	23
Precisione	100%
Richiamo	100%

Confusion Matrix

What do each of the cells in the confusion matrix describe? What values did you observe (include a screenshot)? What is the true positive rate for the "pneumonia" class? What is the false positive rate for the "normal" class?

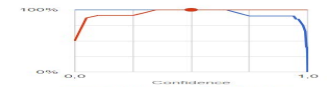
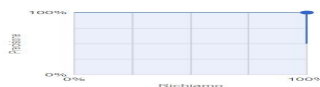
Etichetta True	Etichetta prevista	
	pneumonia	normal
pneumonia	100%	-
normal	-	100%

The 4 cells are: the first is true positive the second is false positive. The first bottom cell is false negative, the last cell is true negative so 100% true positive Normal and Pneumonia 100 true negatives both are 100% Predictive.

Precision & Recall

What does precision measure? What does recall measure? What precision and recall did the model achieve (report the values for a score threshold of 0.5)?

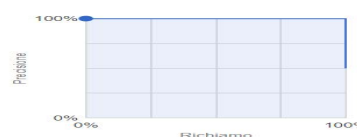
Precision is defined as 'the quality of being exact' and refers to how close two or more measurements are to each other. Recall is a metric that quantifies the number of correct positive predictions made out of all positive predictions that could have been made.




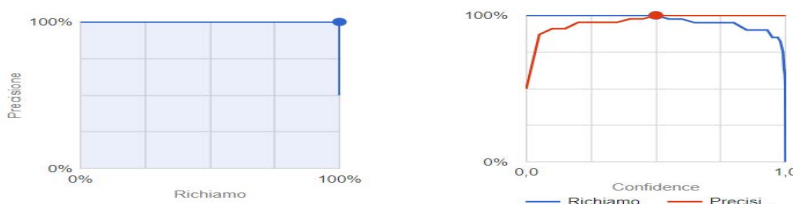
Score Threshold

When you increase the score threshold, what happens to precision? What happens to recall? Why?

Precision goes to 100% recall 0%



Binary Classifier with Clean/Unbalanced Data

<h3>Train/Test Split</h3> <p>How much data was used for training? How much data was used for testing?</p>	<p>400 images scenario is run,300 pnumonia 100 normal 360 images are used for training and 40 images are used for testing</p>						
<h3>Confusion Matrix</h3> <p>How has the confusion matrix been affected by the unbalanced data? Include a screenshot of the new confusion matrix.</p>	 <p>Etichetta True</p> <table><tr><td>normal</td><td>100%</td><td>-</td></tr><tr><td>pneumonia</td><td>-</td><td>100%</td></tr></table> <p>Etichetta prevista</p> <p>normal pneumonia</p> <p>Same as above 100% positive Normal and Pnumonia 100 true negatives both are 100% Predictive</p>	normal	100%	-	pneumonia	-	100%
normal	100%	-					
pneumonia	-	100%					
<h3>Precision & Recall</h3> <p>How have the model's precision and recall been affected by the unbalanced data? (Report the values for a score threshold of 0.5.)</p>	 <p>Precision</p> <p>Richiamo</p> <p>Confidence</p> <p>Richiamo Precisi...</p>						
<h3>Unbalanced Classes</h3> <p>From what you've observed, how do unbalanced classes affect a machine learning model?</p>	<p>there is no difference as the picture show between balance data and unbalanced</p>						


Binary Classifier with Dirty/Balanced Data

Confusion Matrix How has the confusion matrix been affected by the dirty data? Include a screenshot of the new confusion matrix.	100 images scenario is run, 50 dirty pneumonia 50 dirty normal 90 images are used for training and 10 images are used for testing As you see from the confusion matrix, the model total
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Etichetta True \ Etichetta prevista

	normal	pneumonia
normal	100%	-
pneumonia	20%	80%

confuses in predicting and performs really bad.

<p>Precision & Recall</p> <p>How have the model's precision and recall been affected by the dirty data? (Report the values for a score threshold of 0.5.) Of the binary classifiers, which has the highest precision? Which has the highest recall?</p>	<p>Both precision and recall has been decreased to 90% since not all predictions were correct and match with the actual labels. The balanced data having most of the correct predictions gives highest precision and recall value (=1) since model can learn all the correct labels and was able to identify all labels correctly</p> 
<p>Dirty Data</p> <p>From what you've observed, how do dirty data affect a machine learning model?</p>	<p>I notice each time we add x dirty data the accuracy drop of 10% plus theres is random labeling is the substitution of training data labels with random labels drawn from the marginal of data labels.</p>

3-Class Model

<p>Confusion Matrix</p> <p>Summarize the 3-class confusion matrix. What classes are the model most likely to confuse? What class(es) is the model most likely to get right? What might you do to try to remedy the model's "confusion"? Include a screenshot of the new confusion matrix.</p>	<p>Model is most likely to confuse with normal class. It also confuses a little bit about virus label. Model will not confuse about bacteria class as can be seen from confusion matrix. We can add more images to each class as there only 100 images for each class now.</p> 
<p>Precision & Recall</p> <p>What are the model's precision and recall? How are these values calculated? (Report the values for a score threshold of 0.5.)</p>	<p>Precision and recall are calculated foreach class individually and by taking an average of them you get precision and recall values for whole model. Precision for normal, virus and bacteria classes are 82.4%, 90.9%, 100%. Similarly for recall divide the value of TP by sum of the column. Hence precision and recall values for whole model are 91.7%(((82.4+90.9+100)/298)*100.0) and 89.2% respectively.</p>
<p>F1 Score</p> <p>What is this model's F1 score?</p>	<p>The model's F1 score is 0.903.</p>

