IX SimBGf INTERAÇÃO UNIVERSIDADE INDÚSTRIA
Curitiba, 4 a 6 de outubro de 2022
Universidade Federal do Paraná - Centro Politécnico

Machine Learning Aplicado à Cartografia Geológica

Evaluation Metrics

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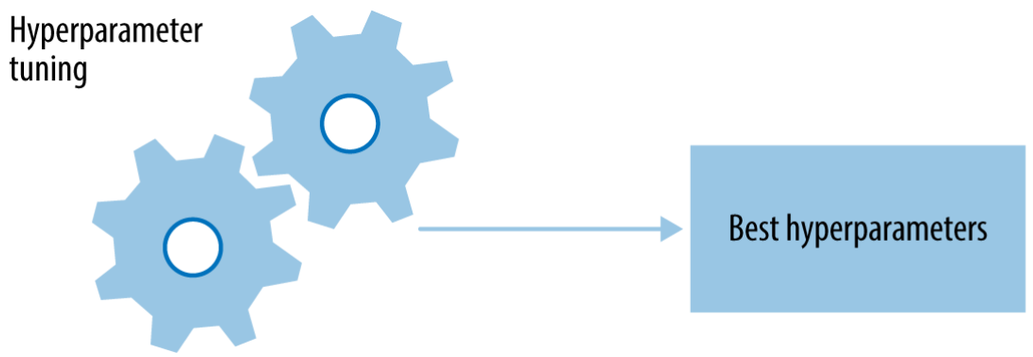
IX SimBGf

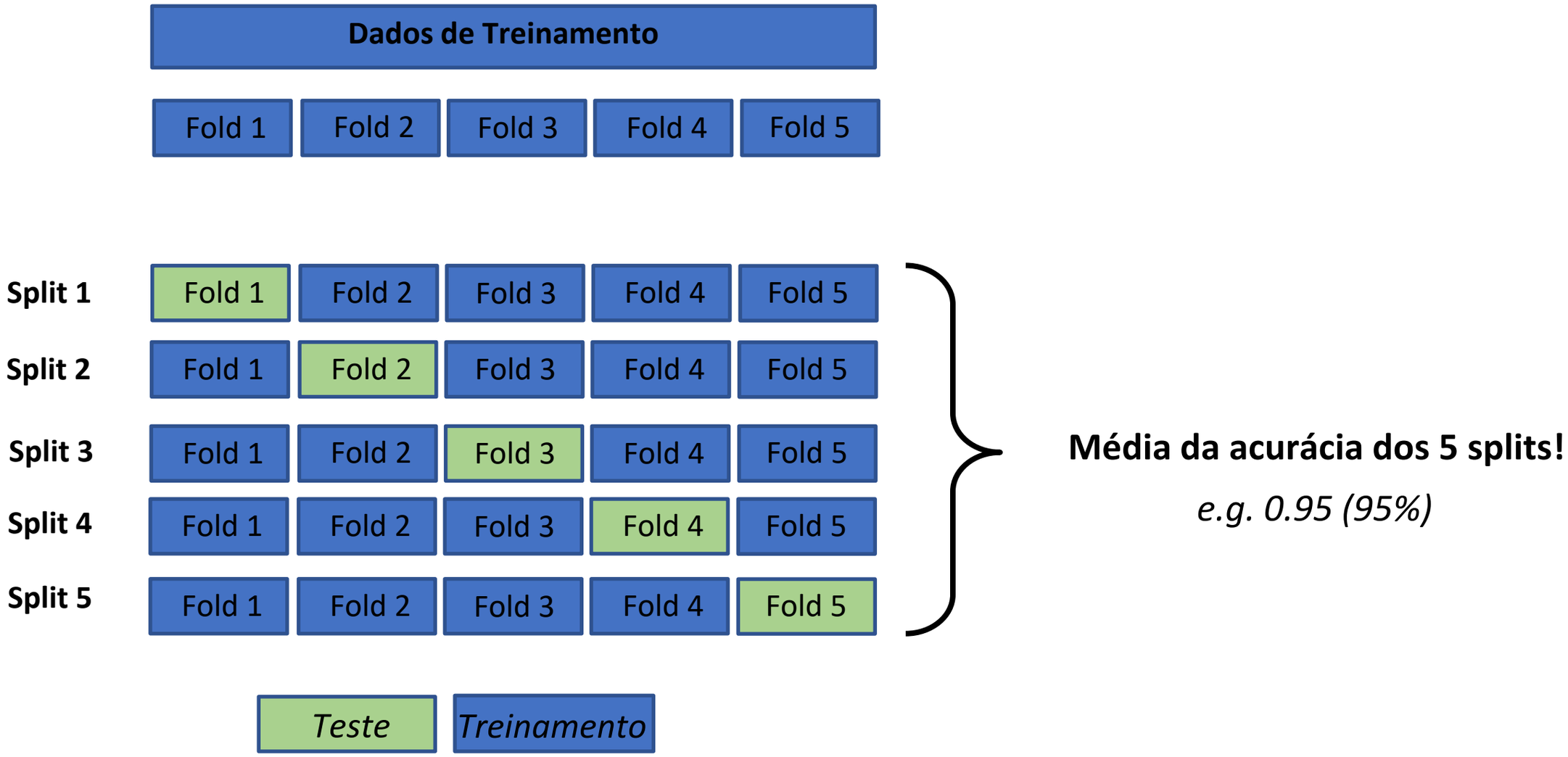
4 de outubro de 2022

Afinando o Modelo

Model Tuning



Cross-validation Accuracy



Classification Accuracy (CA)

		Predicted class: +	**Predicted** class: -
Actual class	+	**TP** True Positives	**FN** False Negatives Type II error
	-	**FP** False Positives Type I error	**TN** True Negatives

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n = 165

		Predicted class: +	**Predicted** class: -
Actual class	+	**TP** **100**	**FN** **10**
	-	**FP** **5**	**TN** **50**

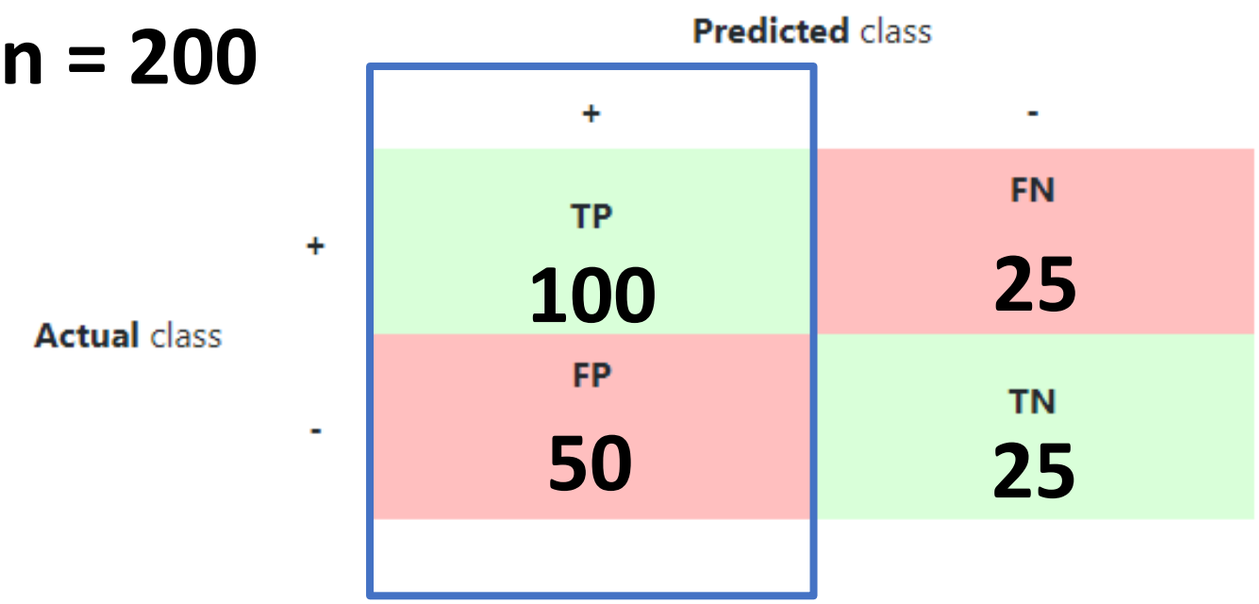
Accuracy = (TP + TN) / (TP + TN + FP + FN)

Accuracy = (50+100)/165 ≈ **0.90**

Precision

Ex: Detecção de Spam

n = 200



Precision = (TP)/ (TP + FP)

Precision = 100/100+150 = **0.40**

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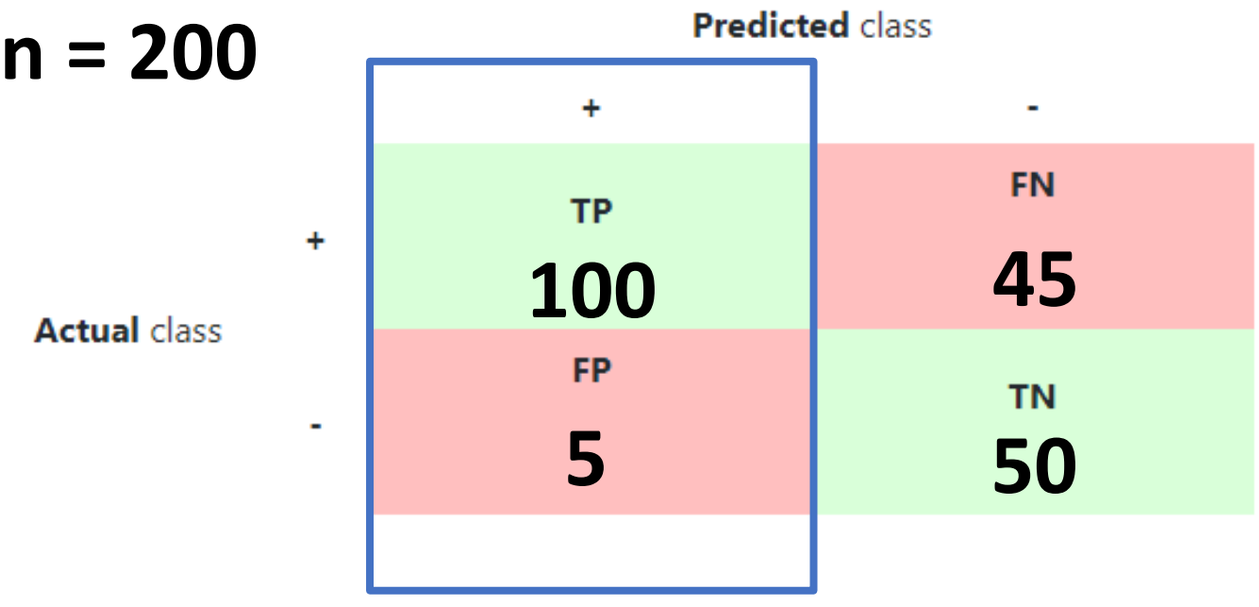
n = 200



Precision = (TP)/ (TP + FP)

Precision = 100/100+5 ≈ **0.95**

Recall

Ex: Detecção de Doenças

n = 200

		Predicted class	
		+	-
Actual class	+	TP **100**	FN **20**
	-	FP **40**	TN **40**

Recall = (TP)/ (TP + FN)

Recall = 100/100+20 ≈ **0.83**

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n = 200

		Predicted class	
		+	-
Actual class	+	TP **100**	FN **5**
	-	FP **45**	TN **50**

Recall = (TP)/ (TP + FN)

Recall = 100/100+5 ≈ **0.95**

F1-score

n = 1003

		Predicted class: +	**Predicted** class: -
Actual class	+	**TP** **1**	**FN** **1**
	-	**FP** **0**	**TN** **1001**

Accuracy = (TP + TN) / (TP + TN + FP + FN)

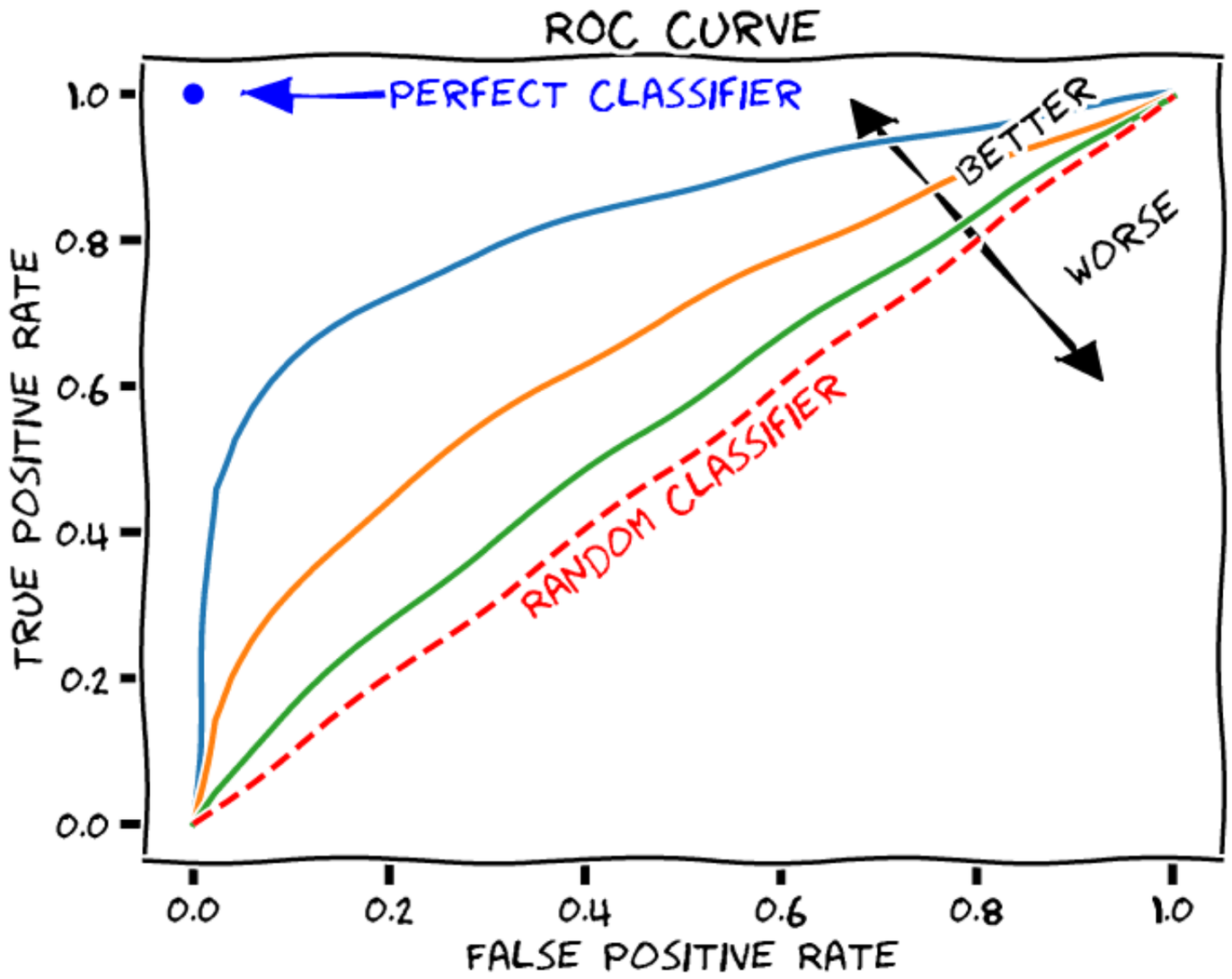
Accuracy = (1+1001)/1003 ≈ **0.99**

F1-score = 2*TP / (2*TP + FP + FN)

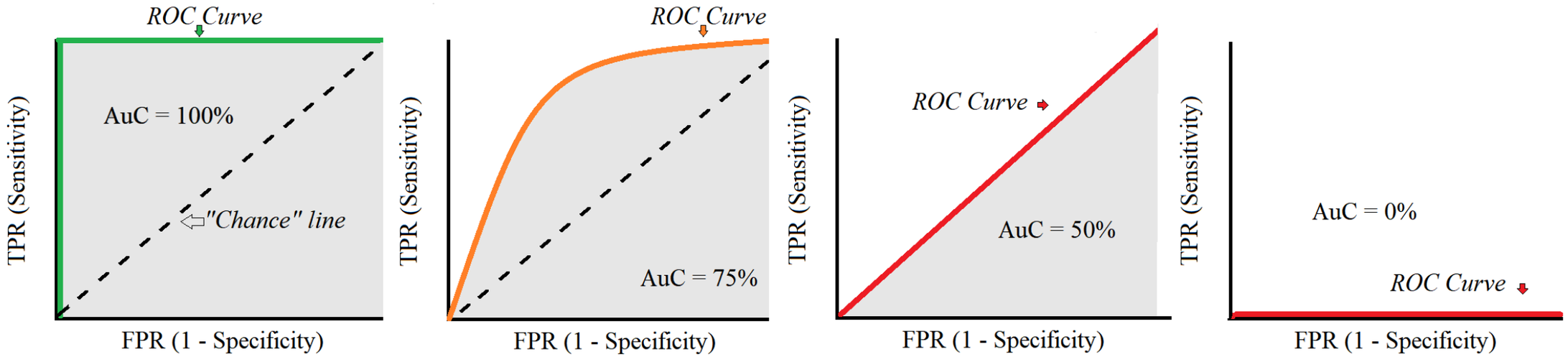
F1-score = 2*1 / (2*1 + 0 + 1) ≈ **0.66**

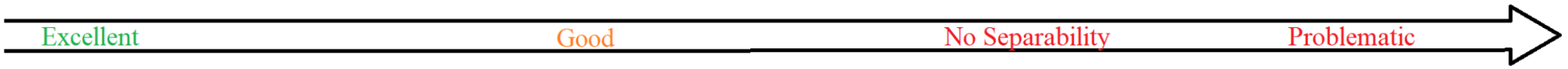
Ótima métrica para classes desbalanceadas!

Receiver Operating Characteristic Curve (ROC Curve)

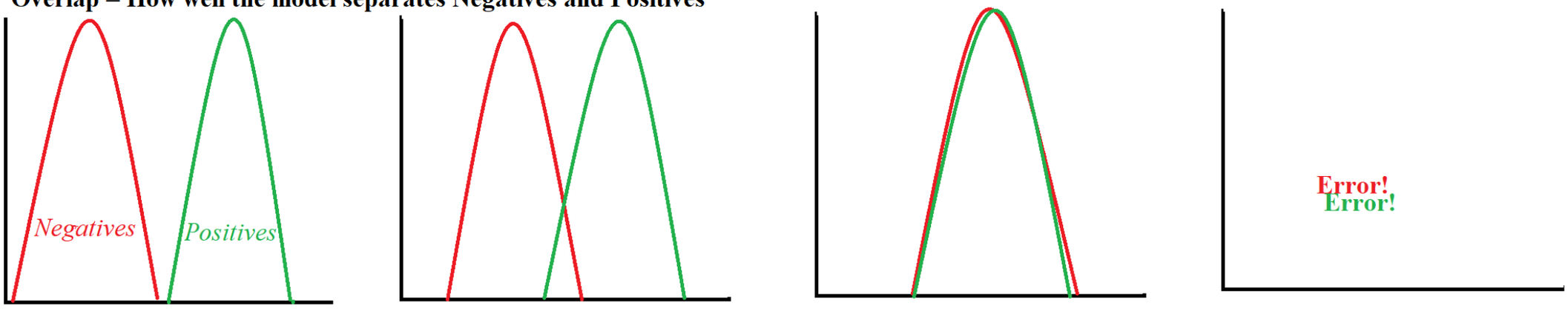


Receiver Operating Characteristic Curve (ROC Curve)





Overlap = How well the model separates Negatives and Positives



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