MODEL LIFECYCLE

MÉRITO

DIEGO RODRIGUES DSC

INFNET

MODEL LIFECYCLE : MÉRITO

PARTE 1 : TEORIA

- EVALUATION
  - MÉTRICAS PARA CLASSIFICAÇÃO
  - MÉTRICAS PARA REGRESSÃO

Produzir Ação

CICLO DE VIDA DO MODELO

Baseado em Dados

AMBIENTE PYTHON

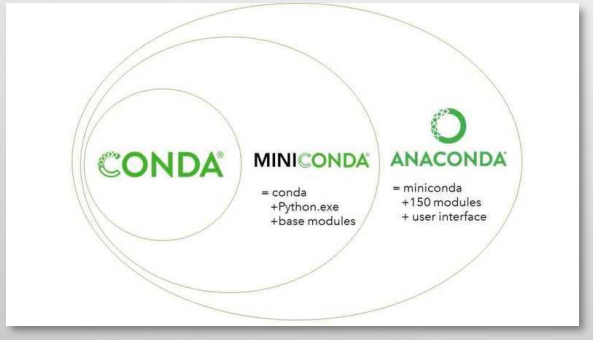
5. Visualização

6. Estimação e Inferência

7. Machine Learning

4. Variáveis Aleatórias

1. Editor de Código



2. Gestor de Ambiente

3. Ambiente Python do Projeto

3. Notebook Dinâmico

Cross Industry Standard Process for Data Mining - IBM

1) Requerimentos e Análise de Negócio

Entendimento do problema decisório, dados relacionados & revisão bibliográfica.

2) Preparação dos Dados

Entendimento das fontes de dados, dos tipos e elaboração da representação.

3) Modelagem

Análise Exploratória, Seleção de atributos e treinamento.

4) Avaliação

Seleção do melhor modelo.

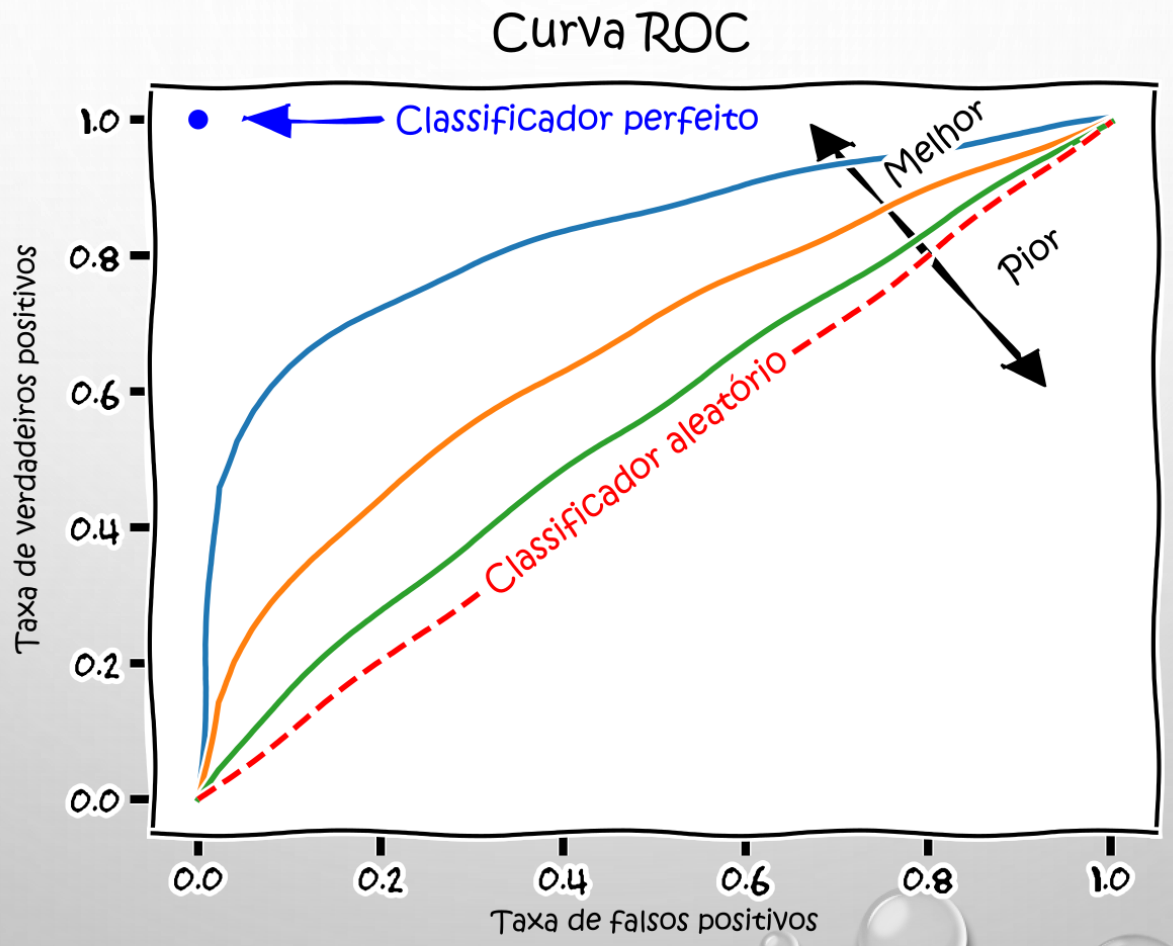
5) Liberação

Liberação do modelo no ambiente de produção.

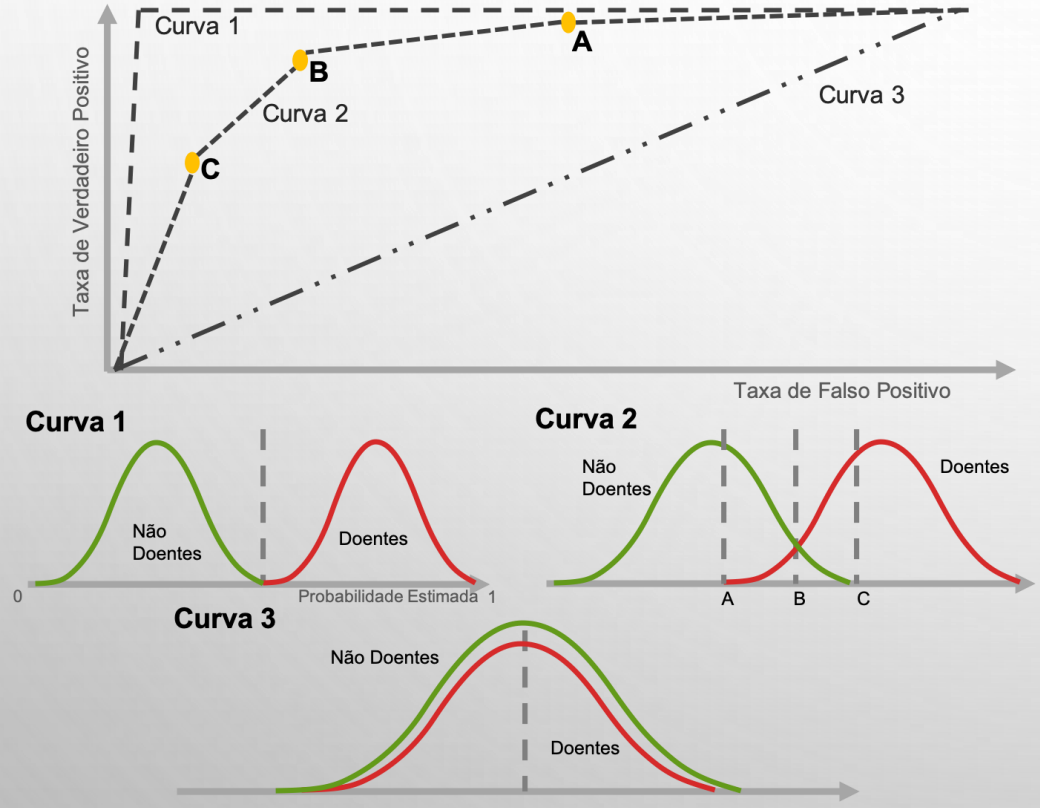
EVALUATION

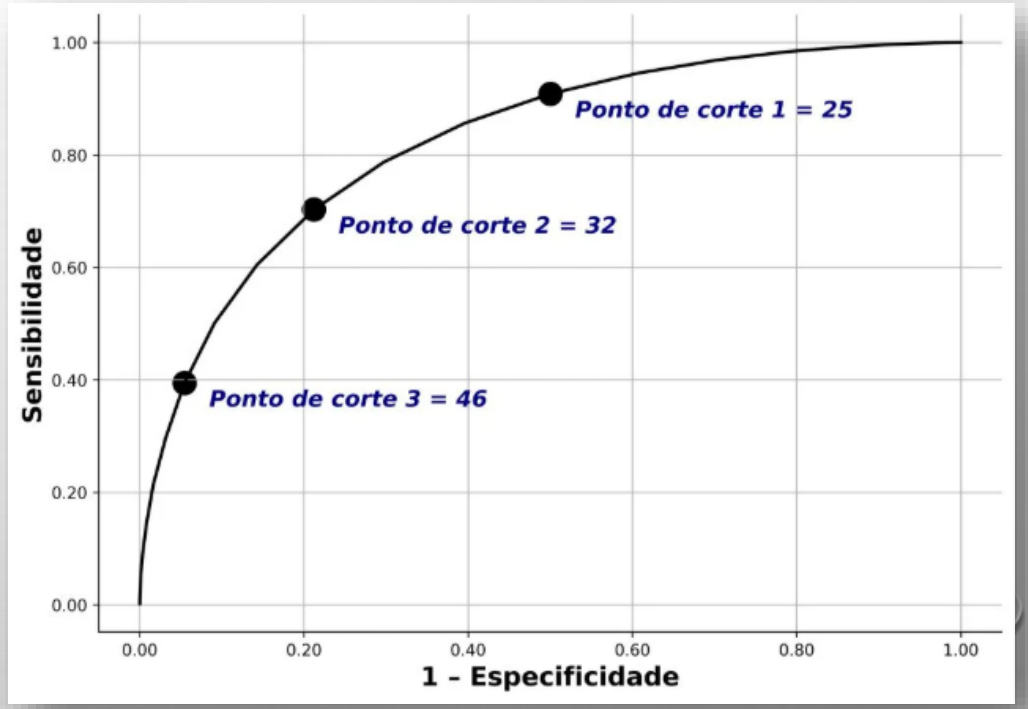
CLASSIFICAÇÃO

CURVA ROC – RECEIVER OPERATING CHARACTERISTICS

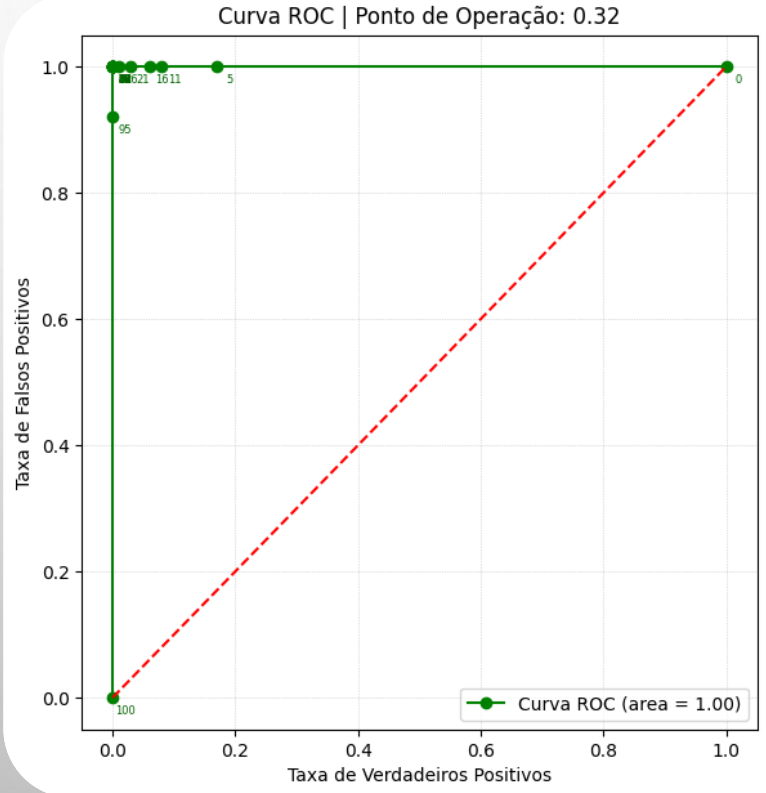


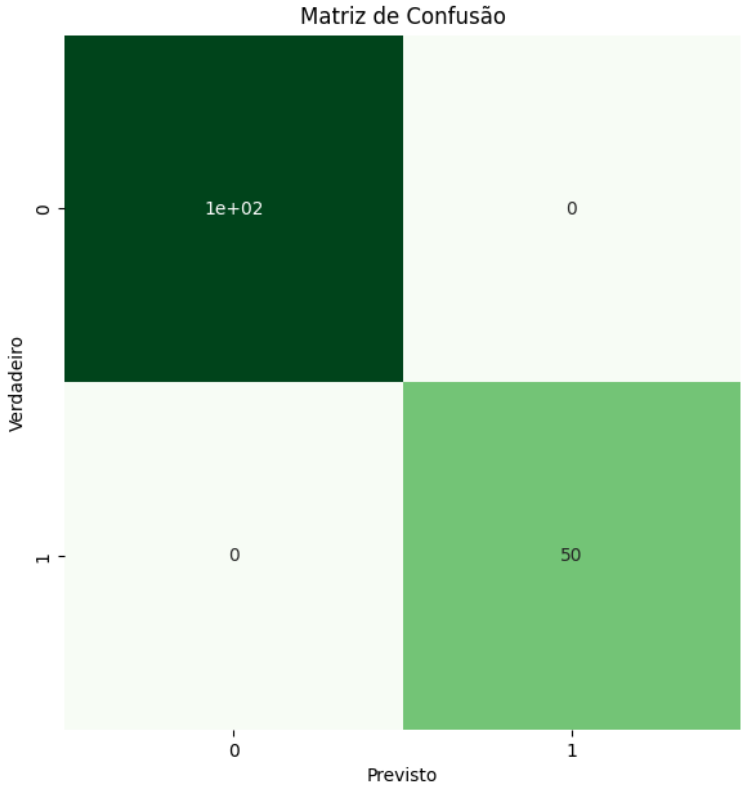
CURVA ROC – RECEIVER OPERATING CHARACTERISTICS

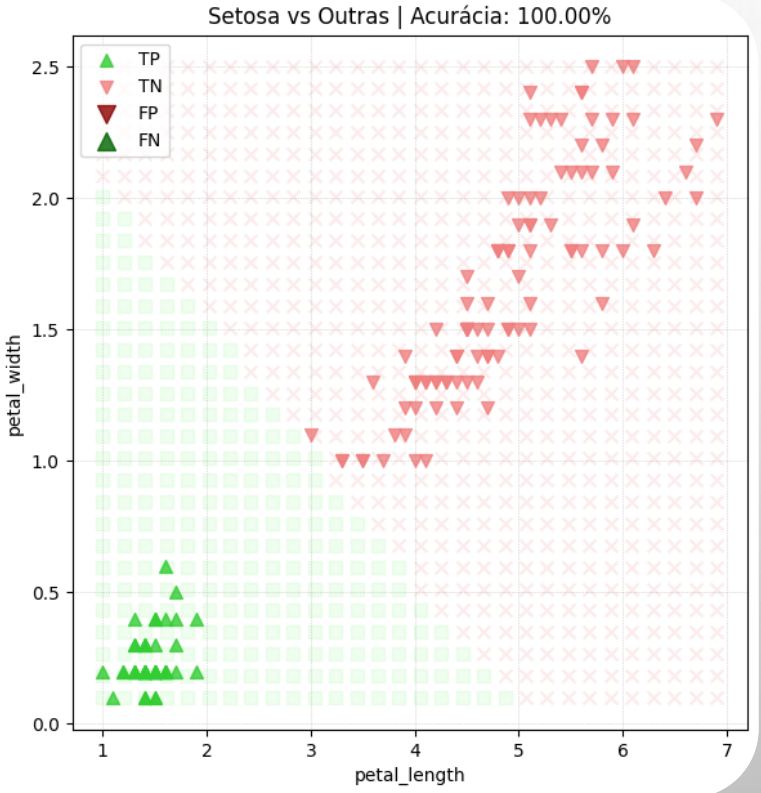




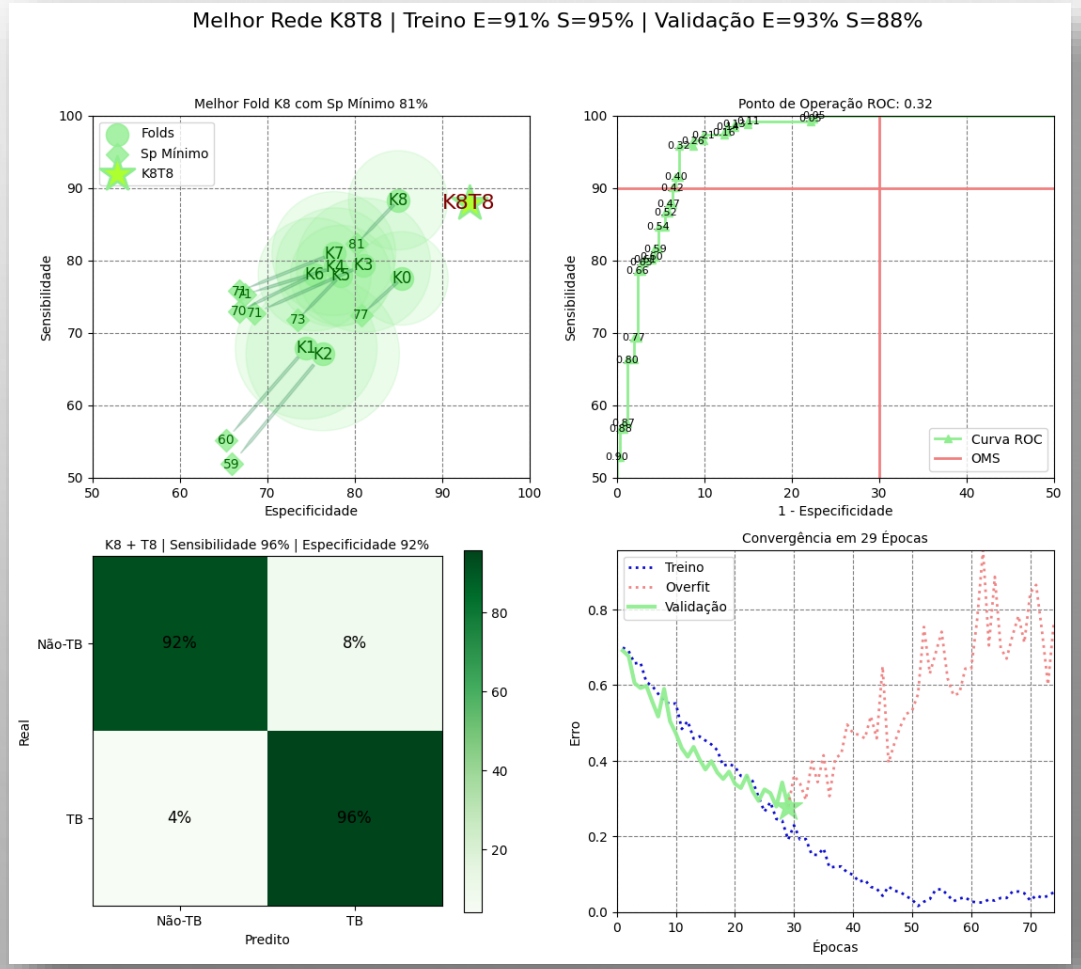
PONTO DE OPERAÇÃO EXEMPLO 1

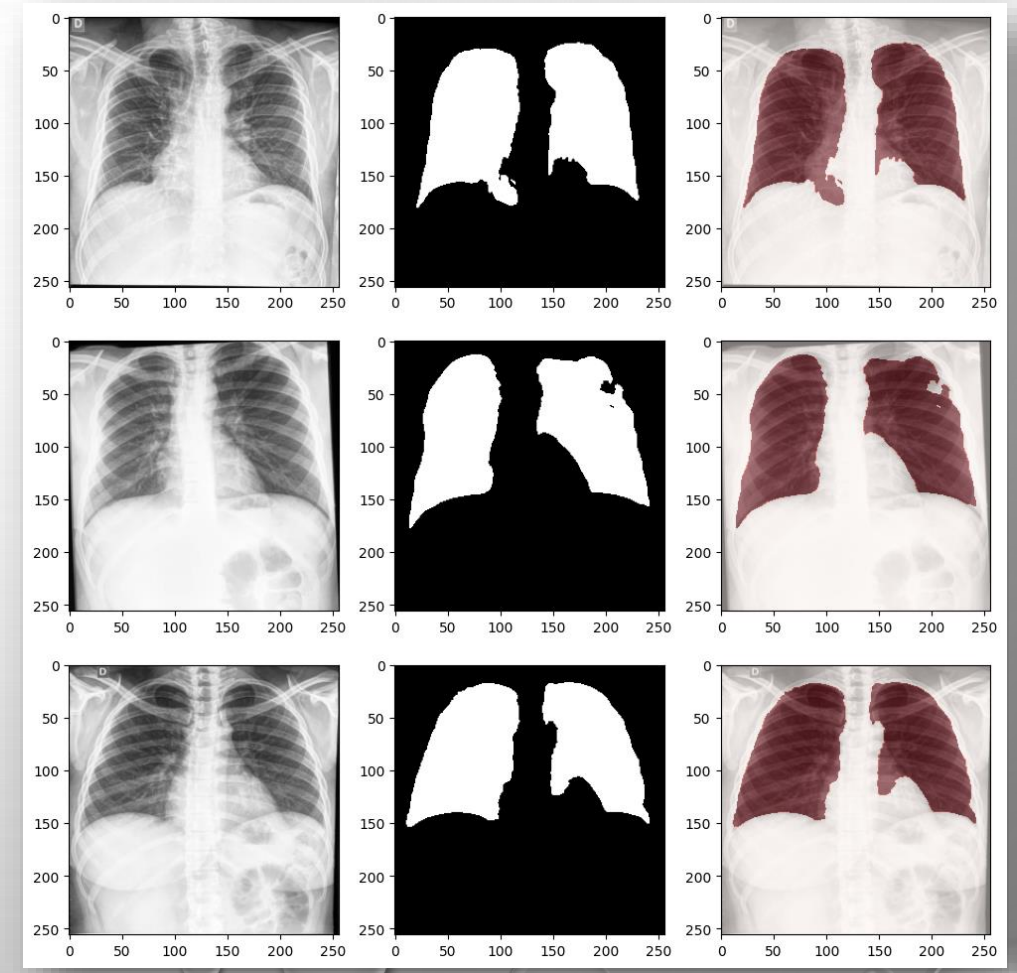




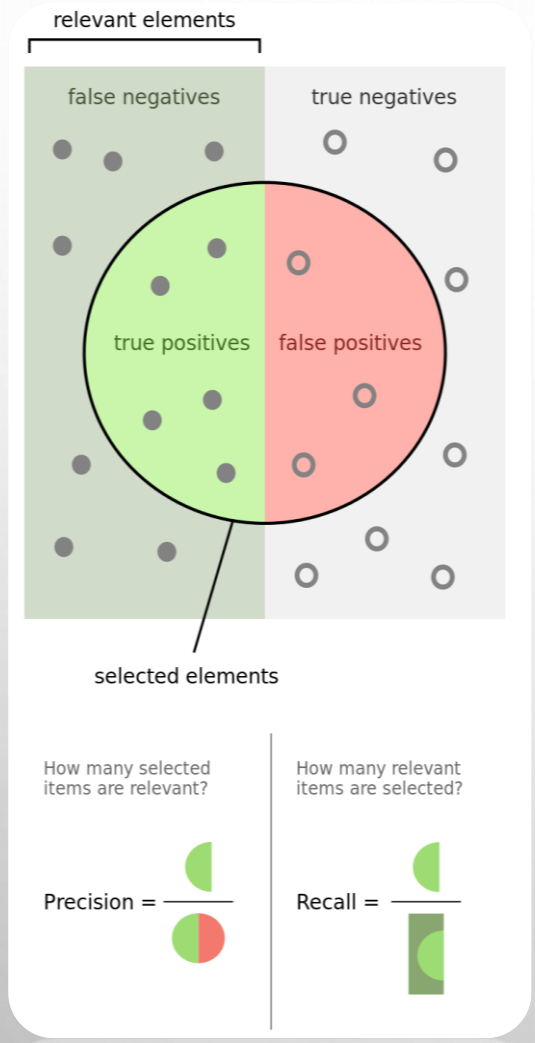


PONTO DE OPERAÇÃO EXEMPLO 2





FIGURAS DE MÉRITO CLASSIFICAÇÃO



Acurácia

- (TP+TN)/(P+N)

Taxa de Erro

- 1-Acurácia

Sensibilidade (Recall)

- TP/(TP+FN)

F1 Score

- 2*TP/(2*TP+FP+FN)

Especificidade

- TN/(TN+FP)

Precisão

- TP/(TP+FP)

Produto Sp

- SQRT[SQRT(R1*R2) * (R1 + R2)/2]

MÉTRICAS PARA CLASSIFICAÇÃO

accuracy_score	Accuracy classification score.
auc	Compute Area Under the Curve (AUC) using the trapezoidal rule.
average_precision_score	Compute average precision (AP) from prediction scores.
balanced_accuracy_score	Compute the balanced accuracy.
brier_score_loss	Compute the Brier score loss.
class_likelihood_ratios	Compute binary classification positive and negative likelihood ratios.
classification_report	Build a text report showing the main classification metrics.
cohen_kappa_score	Compute Cohen's kappa: a statistic that measures inter-annotator agreement.
confusion_matrix	Compute confusion matrix to evaluate the accuracy of a classification.
d2_log_loss_score	D^2 score function, fraction of log loss explained.
dcg_score	Compute Discounted Cumulative Gain.
det_curve	Compute error rates for different probability thresholds.
f1_score	Compute the F1 score, also known as balanced F-score or F-measure.
fbeta_score	Compute the F-beta score.
hamming_loss	Compute the average Hamming loss.
hinge_loss	Average hinge loss (non-regularized).
jaccard_score	Jaccard similarity coefficient score.
log_loss	Log loss, aka logistic loss or cross-entropy loss.
matthews_corrcoef	Compute the Matthews correlation coefficient (MCC).
multilabel_confusion_matrix	Compute a confusion matrix for each class or sample.
ndcg_score	Compute Normalized Discounted Cumulative Gain.
precision_recall_curve	Compute precision-recall pairs for different probability thresholds.
precision_recall_fscore_support	Compute precision, recall, F-measure and support for each class.
precision_score	Compute the precision.
recall_score	Compute the recall.
roc_auc_score	Compute Area Under the Receiver Operating Characteristic Curve (ROC AUC) from prediction scores.
roc_curve	Compute Receiver operating characteristic (ROC).
top_k_accuracy_score	Top-k Accuracy classification score.
zero_one_loss	Zero-one classification loss.

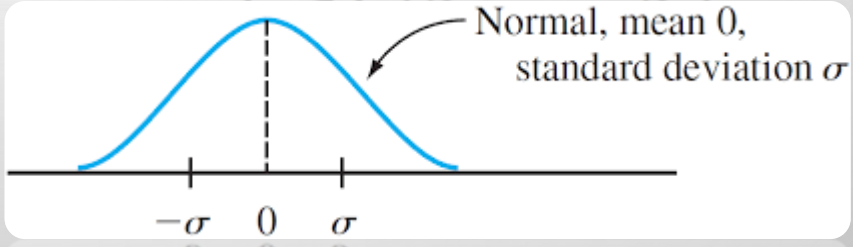
REGRESSÃO

FIGURAS DE MÉRITO - REGRESSÃO

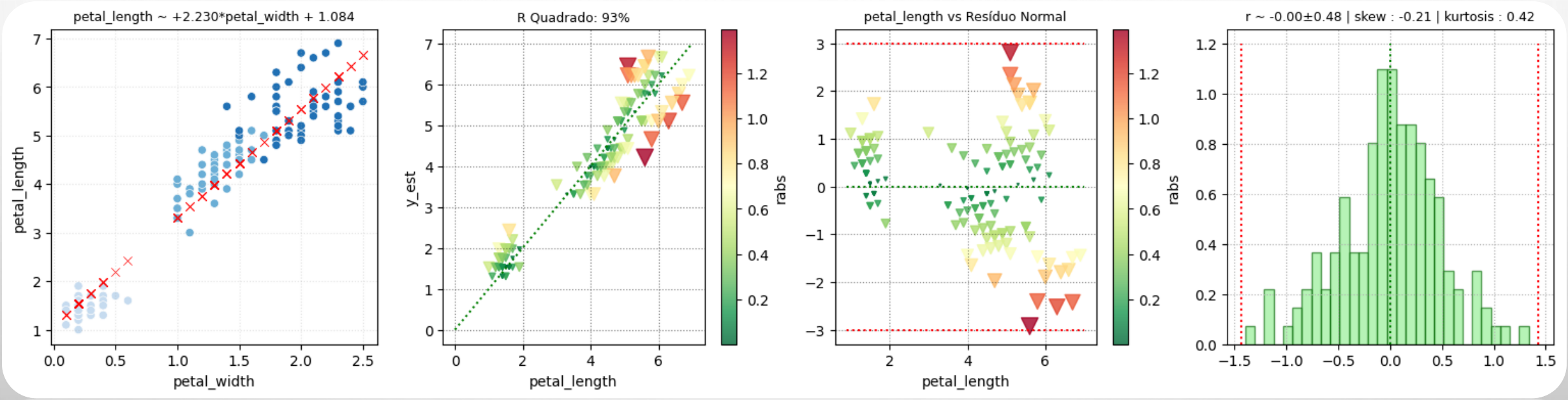
- R QUADRADO

$$R^2 = 1 - \frac{SS_{RES}}{SS_{TOT}} = 1 - \frac{\sum_i (y_i - \hat{y}_i)^2}{\sum_i (y_i - \overline{y})^2}$$

- RESÍDUO NORMAL DE MÉDIA ZERO E VARIÂNCIA CONSTANTE



VALIDAÇÃO : GRÁFICOS DE APOIO



MÉTRICAS PARA REGRESSÃO

`d2_absolute_error_score`	D^2 regression score function, fraction of absolute error explained.
`d2_pinball_score`	D^2 regression score function, fraction of pinball loss explained.
`d2_tweedie_score`	D^2 regression score function, fraction of Tweedie deviance explained.
`explained_variance_score`	Explained variance regression score function.
`max_error`	The max_error metric calculates the maximum residual error.
`mean_absolute_error`	Mean absolute error regression loss.
`mean_absolute_percentage_error`	Mean absolute percentage error (MAPE) regression loss.
`mean_gamma_deviance`	Mean Gamma deviance regression loss.
`mean_pinball_loss`	Pinball loss for quantile regression.
`mean_poisson_deviance`	Mean Poisson deviance regression loss.
`mean_squared_error`	Mean squared error regression loss.
`mean_squared_log_error`	Mean squared logarithmic error regression loss.
`mean_tweedie_deviance`	Mean Tweedie deviance regression loss.
`median_absolute_error`	Median absolute error regression loss.
`r2_score`	R^2 (coefficient of determination) regression score function.
`root_mean_squared_error`	Root mean squared error regression loss.
`root_mean_squared_log_error`	Root mean squared logarithmic error regression loss.