	2- Calcule o desempenho do modelo de classificação utilizando pelo menos três métricas; Importação das libs
In [65]:	<pre>import pandas as pd import sweetviz as sv</pre>
	<pre>import numpy as np import sklearn as sk import matplotlib.pyplot as plt</pre>
In [66]:	Chamando o arquivo do excel df = pd.read excel('teste smarkio Lbs.xls', 'Análise ML')
	Consultando valores nulo dentro do dataframe
In [67]:	di.ishuii().sum()
Out[67]:	Pred_class 0 probabilidade 0 status 0 True_class 462
	dtype: int64 Tratando os dados da coluna True_class(Todos que o true_class for NaN, considerar o valor da coluna Pred_class)
In [68]:	
In [69]:	<pre>df.fillna(value=values,inplace = True)</pre>
To [70].	Verificando quantas linhas tem dado nulo(depois de rodar o comando para tratar os dados)
	Pred_class 0
	probabilidade 0 status 0 True_class 0 dtype: int64
In [71]:	Drop na coluna status, pois não é possivel utilizar no modelo.
	<pre>drop_status = df.drop(columns=['status']) status = df['status'] Train and teste split(separando a base para considerar o que é treino e o que e teste)</pre>
In [72]:	
In [73]:	<pre>x_train, x_test, y_train, y_test = train_test_split(drop_status, status, test_size=0.5</pre>
In [74]:	Regressão Logistica:
In [75]:	rrom skiearn.linear_model import Logistickegression
In [76]:	
Out[76]:	LogisticRegression(random_state=663, solver='liblinear')
In [77]:	x_train.shape
Out[77]: In [78]:	(321, 3) x test.shape
	x_test.shape (322, 3)
In [79]:	Acurácia do modelo: from sklearn.metrics import accuracy score
In [80]:	rrom sklearn.metrics import accuracy_score
In [81]:	accuracy_ir_train = round(accuracy_score(y_train, ir.predict(x_train))*100,3)
In [82]:	<pre>print('Acuracia do treino', accuracy_lr_train)</pre>
	print('Acuracia do teste:', accuracy_lr_test) Acuracia do treino 95.016 Acuracia do teste: 91.615
In [83]:	
Tn [9/]•	Classificação Treino
III [04].	<pre>print(classification_report(y_train, lr.predict(x_train)))</pre>
	approved 0.95 1.00 0.97 305 revision 0.00 0.00 16
	accuracy 0.95 321 macro avg 0.48 0.50 0.49 321 weighted avg 0.90 0.95 0.93 321
In [85]:	Classificação teste: print(classification report(y test, lr.predict(x test)))
	precision recall f1-score support
	approved 0.92 1.00 0.96 295
	revision 0.00 0.00 0.00 27 accuracy 0.92 322
In [86]:	accuracy 0.92 322 macro avg 0.46 0.50 0.48 322 weighted avg 0.84 0.92 0.88 322 DecisionTree
In [86]: In [87]:	accuracy 0.92 322 macro avg 0.46 0.50 0.48 322 weighted avg 0.84 0.92 0.88 322 DecisionTree from sklearn.tree import DecisionTreeClassifier
	accuracy
	<pre>accuracy</pre>
In [87]:	<pre>accuracy</pre>
In [87]: In [89]:	<pre>accuracy macro avg</pre>
In [87]: In [89]: In [90]:	<pre>accuracy macro avg 0.46 0.50 0.48 322 weighted avg 0.84 0.92 0.88 322 DecisionTree from sklearn.tree import DecisionTreeClassifier dt2 = DecisionTreeClassifier(criterion='gini',random_state = 123, max_depth=15, max_dt2.fit(x_train,y_train) accuracy_dtc_train = round(accuracy_score(y_train, dt2.predict(x_train)) *100, 2) accuracy_dtc_test = round(accuracy_score(y_test, dt2.predict(x_test)) *100, 2) print('Acuracia de treino da arvore de decisao',accuracy_dtc_train)</pre>
In [87]: In [89]: In [90]:	accuracy macro avg 0.46 0.50 0.48 322 weighted avg 0.84 0.92 0.88 322 DecisionTree from sklearn.tree import DecisionTreeClassifier dt2 = DecisionTreeClassifier(criterion='gini',random_state = 123, max_depth=15, max_dt2.fit(x_train,y_train) accuracy_dtc_train = round(accuracy_score(y_train, dt2.predict(x_train)) *100, 2) accuracy_dtc_test = round(accuracy_score(y_test, dt2.predict(x_test)) *100, 2) print('Acuracia de treino da arvore de decisao', accuracy_dtc_train) print('Acuracia de treino da arvore de decisao', accuracy_dtc_test) Acuracia de treino da arvore de decisao 98.13 Acuracia de teste da arvore de decisao 90.99 Accuracy Treino Decision Tree
In [87]: In [89]: In [90]:	<pre>accuracy</pre>
In [87]: In [89]: In [90]:	accuracy
In [87]: In [89]: In [90]:	accuracy macro avg 0.46 0.50 0.48 322 weighted avg 0.84 0.92 0.88 322 DecisionTree from sklearn.tree import DecisionTreeClassifier dt2 = DecisionTreeClassifier(criterion='gini',random_state = 123, max_depth=15, max_dt2.fit(x_train,y_train) accuracy_dtc_train = round(accuracy_score(y_train, dt2.predict(x_train)) *100, 2) print('Acuracia de treino da arvore de decisao', accuracy_dtc_train) print('Acuracia de teste da arvore de decisao', accuracy_dtc_test) Acuracia de treino da arvore de decisao 98.13 Acuracia de teste da arvore de decisao 90.99 Accuracy_Treino Decision Tree print(classification_report(y_train, dt2.predict(x_train))) precision recall f1-score support approved 0.98 1.00 0.99 305 revision 1.00 0.62 0.77 16 accuracy 0.98 321
In [65]: In [66]: In [67]: In [67]: In [68]: In [69]: In [70]: In [70]: In [71]: In [72]: In [76]: In [77]: In [76]: In [77]: In [76]: In [77]: In [77	accuracy macro avg 0.46 0.50 0.48 322 weighted avg 0.84 0.92 0.88 322 DecisionTree from sklearn.tree import DecisionTreeClassifier dt2 = DecisionTreeClassifier(criterion='gini',random_state = 123, max_depth=15, max_dt2.fit(x_train,y_train) accuracy_dtc_train = round(accuracy_score(y_train, dt2.predict(x_train)) *100, 2) print('Acuracia de treino da arvore de decisao',accuracy_dtc_train) print('Acuracia de treino da arvore de decisao', accuracy_dtc_train) print('Acuracia de treino da arvore de decisao 98.13 Acuracia de treino da arvore de decisao 90.99 Accuracy_Treino Decision Tree print(classification_report(y_train, dt2.predict(x_train))) precision recall f1-score support approved 0.98 1.00 0.99 305 revision 1.00 0.62 0.77 16 accuracy 0.98 321 macro avg 0.99 0.81 0.88 321 macro avg 0.99 0.81 0.88 321 weighted avg 0.98 0.98 0.98 321 Accuracy_Teste Decision Tree print(classification_report(y_test, dt2.predict(x_test)))
In [87]: In [89]: In [90]:	accuracy macro avg 0.46 0.50 0.48 322 weighted avg 0.84 0.92 0.88 322 DecisionTree from sklearn.tree import DecisionTreeClassifier dt2 = DecisionTreeClassifier(criterion='gini',random_state = 123, max_depth=15, max_dt2.fit(x_train,y_train) accuracy_dtc_train = round(accuracy_score(y_train, dt2.predict(x_train)) *100, 2) print('Acuracia de treino da arvore de decisao',accuracy_dtc_train) print('Acuracia de treino da arvore de decisao', accuracy_dtc_train) print('Acuracia de treino da arvore de decisao', accuracy_dtc_train) print('Acuracia de treino da arvore de decisao', accuracy_dtc_train) Acuracia de treino da arvore de decisao 90.99 Accuracy Treino Decision Tree print(classification_report(y_train, dt2.predict(x_train))) precision recall f1-score support approved 0.98 1.00 0.99 305 revision 1.00 0.62 0.77 16 accuracy 0.98 321 macro avg 0.99 0.81 0.88 321 macro avg 0.99 0.81 0.88 321 weighted avg 0.98 0.98 0.98 321 Accuracy Teste Decision Tree
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<pre>In [87]: In [89]: In [90]: In [91]:</pre>	accuracy
<pre>In [87]: In [89]: In [90]: In [91]:</pre>	accuracy
<pre>In [87]: In [89]: In [90]: In [91]: In [94]:</pre>	accuracy weighted awg 0.46 0.30 0.48 322 weighted awg 0.94 0.92 0.88 322 DecisionTree from sklearn.tree import DecisionTreeClassifier dt2 = DecisionTreeClassifier(criterion='gini', random_state = 123, max_depth=15, max_dt2.fit(x_train, y_train) accuracy_dtc_train = round(accuracy_score(y_train, dt2.predict(x_train)) *100, 2) print('Acuracia de treino da arvore de decisao', accuracy_dtc_test) *100, 2) print('Acuracia de treino da arvore de decisao', accuracy_dtc_test) Acuracia de treino da arvore de decisao', accuracy_dtc_test) Acuracia de treino da arvore de decisao 98.13 Acuracia de treino da arvore de decisao 98.99 Accuracy Treino Decision Tree print(classification_report(y_train, dt2.predict(x_train))) precision recall fl-acore support approved 0.98 1.00 0.99 305 revision 1.00 0.62 0.77 16 accuracy 0.99 0.81 0.88 321 Accuracy Teste Decision Tree print(classification_report(y_test, dt2.predict(x_test))) precision recall fl-score support approved 0.92 0.98 0.98 0.98 321 Accuracy Teste Decision Tree print(classification_report(y_test, dt2.predict(x_test))) precision recall fl-score support approved 0.92 0.99 0.95 295 revision 0.25 0.44 0.66 27 accuracy macro avg 0.53 0.51 0.51 322 weighted avg 0.95 0.95 0.95 295 revision 0.25 0.44 0.66 27 accuracy macro avg 0.58 0.51 0.51 322 weighted avg 0.95 0.95 0.95 322 Random Florest from sklearn_ensemble import RandomForestClassifier rndforest = RandomForestClassifier(criterion='entropy', random_state=123, min_samples
<pre>In [87]: In [89]: In [90]: In [91]: In [94]:</pre>	accuracy weighted avg 0.46 0.50 0.48 322 weighted avg 0.84 0.92 0.88 322 DecisionTree from sklearn.tree import DecisionTreeClassifier dt2 = DecisionTreeClassifier(criterion='gini', random_state = 123, max_depth=15, max_depth=15, max_depth=16, max_dept
<pre>In [87]: In [89]: In [90]: In [91]: In [94]:</pre>	accuracy weighted avg 0.46 0.50 0.48 322 weighted avg 0.84 0.92 0.88 322 DecisionTree from sklearn.tree import DecisionTreeClassifier dt2 = DecisionTreeClassifier(criterion='gini', random_state = 123, max_depth=15, max_depth=15, max_depth=16, max_dept
<pre>In [87]: In [89]: In [90]: In [91]: In [94]:</pre>	accuracy weighted avy 0.46 0.50 0.48 322 DecisionTree from sklearn.tree import DecisionTreeClassifier dt2 = DecisionTreeClassifier(criterion='gini', random state = 123, max_depth=15, max_dt2.fft(train, y_train) accuracy_dtc_train = round(accuracy_score(y_train, dt2.predict(x_train)) *100, 2) print('Acuracia de treino da arvore de decisao', accuracy_dtc_train) Acuracy Teino Decision Tree print(classification_report(y_train, dt2.predict(x_train))) precision recall f1-score support approved 0.98 1.06 0.99 305 revision 1.00 0.62 0.77 16 accuracy 0.99 0.81 0.88 321 macro avg 0.99 0.81 0.88 321 macro avg 0.99 0.81 0.88 321 Accuracy Teste Decision Tree print(classification_report(y_train, dt2.predict(x_test))) precision recall f1-score support. approved 0.82 0.89 0.85 225 revision 0.25 0.04 0.06 27 accuracy macro avg 0.88 0.51 0.83 322 Random Florest from sklearn.ensemble import RandomForeatClassifier redforest.fit(x_train, y_train) RandomForestClassifier(bocsktrop='bool', oritorion='entropy', random_state=123, min_samples_ redforest.fit(x_train, y_train) RandomForestClassifier(bocsktrop='bool', oritorion='entropy', random_state=123) Treino
<pre>In [87]: In [89]: In [90]: In [91]: In [94]: In [97]: In [97]: In [98]:</pre>	acouracy migned any 0.46 0.50 0.68 322 DecisionTree from sklearn.tree import DecisionTreeClassifier dt2 = DecisionTreeClassifier(criterion='gini',random_state = 123, max_depth=15, max_dt2.fit(ktrain,y.train) acouracy_dto_train = round(acouracy_score(y_train, dt2.predict(x_train)) *100, 2) acouracy_dto_train = round(acouracy_score(y_train, dt2.predict(x_train)) *100, 2) print('Acuracia de_train do arvore de_decisao',acouracy_dto_train) *100, 2) print('Acuracia de_train do arvore de_decisao',acouracy_dto_train) Acuracia de_train do arvore in decisao 98.13 Acuracia de_train do arvore in decisao 98.13 Acuracia de train 1.00 0.89 3.05 acouracy approved 0.98 1.00 0.89 321 Acuracy Testo Decision Tree print(classification_report(y_train, dt2.predict(x_train))) precision recall fi-score support approved 0.92 0.99 0.98 0.98 321 Acuracy Testo Decision Tree print(classification_report(y_test, dt2.predict(x_test))) precision recall fi-score support approved 0.92 0.99 0.98 322 Acuracy Testo Decision Tree print(classification_report(y_test, dt2.predict(x_test))) precision recall fi-score support approved 0.92 0.99 0.98 322 Acuracy Testo Decision Tree print(classification_report(y_test, dt2.predict(x_test))) precision recall fi-score support approved 0.92 0.98 0.98 322 Acuracy Testo Decision Tree print(classification_report(y_testo, dt2.predict(x_testo)) accuracy accu
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<pre>In [87]: In [89]: In [90]: In [91]: In [94]: In [97]: In [97]: In [98]:</pre>	### According to 1.46
<pre>In [87]: In [89]: In [90]: In [91]: In [94]: In [97]: In [97]: In [98]:</pre>	accuracy according 0.46 0.30 0.43 322 wetched ong 0.46 0.30 0.43 322 DecisionTree from sklearn.tree import DecisionTreeClassifier dh2 = DominionTreeClassifier (orthorion='gini', random_noto = 123, max_deprh=15, max_deprh=15, max_deprh=15, max_deprh=15, max_deprh=15, max_deprh=15, max_deprh=15, max_deprh=15, max_deprh=16, max_deprh=16
<pre>In [87]: In [89]: In [90]: In [91]: In [94]: In [97]: In [97]: In [98]: In [98]:</pre>	accuracy secondary 0.48 0.00 0.87 222 secondary 0.56 0.02 0.88 222 DackionTree from whitmen, there impact DecisionTreeClassifier dt2 = DecisionTreeClassifier(critarion='gini', random_esate = 123, max_dayshmits, max_dd2.ft(X_train, Y_train) accuracy_dtc_train = roundiaccuracy_score(y_train, dt2.predict(x_train)) *100, 2) print('Acuracis de treino de envers de deciseo', accuracy_dtc_train) *100, 2) print('Acuracis de treino de envers de deciseo', accuracy_dtc_train) Acuracis de treino de envers de deciseo 48.13 Acuracis de treino de envers de deciseo 58.33 Acuracis de treino
<pre>In [87]: In [89]: In [90]: In [91]: In [94]: In [97]: In [97]: In [98]: In [98]:</pre>	DecisionTree From skiearn.tree import DecisionTreeClassifier (it2 = DecisionTree import DecisionTreeClassifier (it2 = DecisionTree import DecisionTreeClassifier (it2 = DecisionTreeClassifier oriterion=tquint*, random state = 129, max decis=10, max de
<pre>In [87]: In [89]: In [90]: In [91]: In [94]: In [97]: In [97]: In [98]: In [100</pre>	accuracy n.e. 0.50 0.72 522 monotoney 0.60 0.72 0.20 122 DecisionTree From whitean.tire import DecisionTreeClassifies dtd = DecisionTreeClassifies(criterion="qin.", random_state = 123, max_depoin=15, max_dtf(_trian_y_train) accuracy_dtc_train = round(eccosaty_store(y_train_, dt2.predict(a_train)) *100, 2) annumecy_dte_train = round(eccosaty_store(y_train_, dt2.predict(a_train)) *100, 2) print(fbourgass_dt_train_= round(eccosaty_store(y_train_, dt2.predict(a_train)) *100, 2) print(fbourgass_dt_train_= round(eccosaty_store(y_train_, dt2.predict(a_train)) *100, 2) print(fbourgass_dt_train_a_a_more_c_a_declasa_is_or_aron_y_not_train) print(fbourgass_dt_train_a_a_more_c_a_declasa_is_or_aron_y_not_train) print(fbourgass_dt_train_a_a_more_t_y_train, dt2.predict(a_train))) Print(fbourgass_dt_train_a_more_ty_train, dt2.predict(a_train))) print(fbourgass_dt_train_a_more_ty_train_a_more_trai
<pre>In [87]: In [89]: In [90]: In [91]: In [94]: In [97]: In [97]: In [98]: In [100</pre>	DecisionTree The process of the
<pre>In [87]: In [89]: In [90]: In [91]: In [94]: In [97]: In [97]: In [98]: In [100</pre>	accuracy Deciding any 10.48
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<pre>In [87]: In [89]: In [90]: In [91]: In [97]: In [97]: In [97]: In [98]: In [100 In [101</pre>	DecionTree Exeminations. From Amport Destinor Productional for dot = DecisionTree Exeminations. From Amport Destinor Productional for dot = DecisionTree Destinor Destinor Productional for dot = DecisionTree Destinor Destinor Productional for dot = DecisionTree Destinor Destinor Destinor Productional for dot DecisionTree Destinor De
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<pre>In [87]: In [89]: In [90]: In [91]: In [97]: In [97]: In [97]: In [98]: In [100 In [101</pre>	DecisionTree from whitecast time temporary total 3.50 (3.9) 3.20 pacients over (.96 3.9) 3.50 (3.9) 3.20 pacients over (.97 3.9) 3.50 (3.9) 3.20 pacients over (.97 3.9) 3.50 (3.9) 3.20 pacients over (.98 3.9) 3.20 (3.9)
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<pre>In [87]: In [89]: In [90]: In [91]: In [97]: In [97]: In [97]: In [100 In [101 In [101 In [101</pre>	Decision 2.50
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<pre>In [87]: In [89]: In [90]: In [91]: In [97]: In [97]: In [97]: In [100 In [101 In [101 In [101</pre>	Decision