Dataset: bank-tr.csv

Experiment: exp_01

DecisionTreeClassifier(random_state=0)

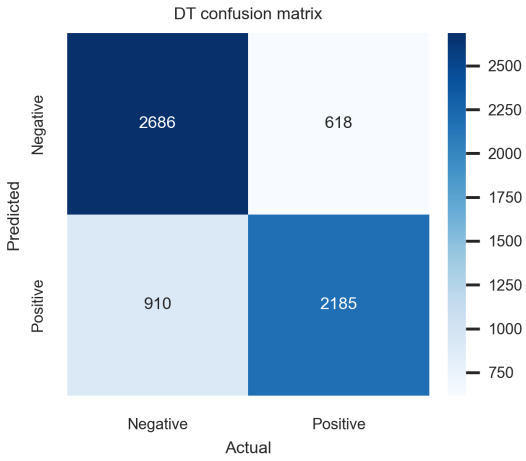
DT experiment best results:

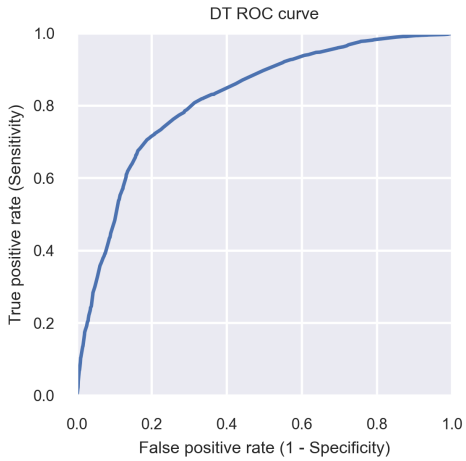
Experiment best score (accuracy): 0.761216

DT cross validation scores:

Accuracy: 0.761216
Precision: 0.780006
Recall: 0.705977
F1: 0.740180
AUC: 0.815799

DT confusion matrix & ROC curve:





Best classifier:

DecisionTreeClassifier(random_state=0)

Best hyperparameters:

ccp_alpha: 0.001
criterion: gini
max_depth: 9
max_features: sqrt

Grid search hyperparameters:

ccp_alpha: [0.1, 0.01, 0.001]
criterion: ['gini', 'entropy']
max_depth: [5, 6, 7, 8, 9]
max_features: ['sqrt', 'log2']

Dataset: bank-tr.csv

Experiment: exp_01

DecisionTreeClassifier(random_state=0)

Experiment parameters:

n_splits: 5
scoring: accuracy
target: made_deposit
categorical columns:
country
job
married
education
defaulted?
housing
has_loan
last_contact
cc_tr
last_contact_month
poutcome
feature selection:
accountID: False
town: False
country: True
age: True
job: True
married: True
education: True
defaulted?: True
current_balance: True
housing: True
has_loan: True
last_contact: True
cc_tr: True
last_contact_day: True
last_contact_month: True
last_contact_duration_s: True
campaign: True
days_since_last_contact: True
previous: True
poutcome: True
made_deposit: True

Dataset: bank-tr.csv

Experiment: exp_01

MLPClassifier(max_iter=5000, random_state=0)

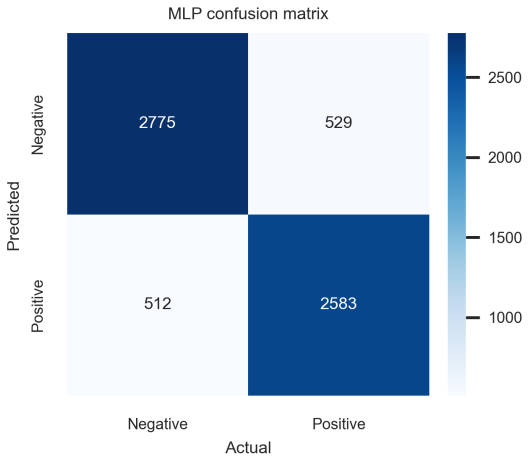
MLP experiment best results:

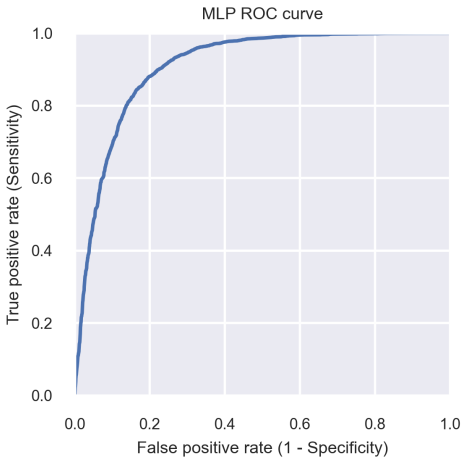
Experiment best score (accuracy): 0.837320

MLP cross validation scores:

Accuracy: 0.837320
Precision: 0.829937
Recall: 0.834572
F1: 0.832225
AUC: 0.909335

MLP confusion matrix & ROC curve:





Best classifier:

MLPClassifier(max_iter=5000, random_state=0)

Best hyperparameters:

activation: tanh
alpha: 0.05
hidden_layer_sizes: (10,)
learning_rate: constant
max_iter: 10000
solver: adam

Grid search hyperparameters:

hidden_layer_sizes: [(10,), (20,)]
activation: ['tanh', 'relu']
solver: ['sgd', 'adam']
alpha: [0.0001, 0.05]
learning_rate: ['constant', 'adaptive']
max_iter: [10000]

Dataset: bank-tr.csv

Experiment: exp_01

MLPClassifier(max_iter=5000, random_state=0)

Experiment parameters:

n_splits: 5
scoring: accuracy
target: made_deposit
categorical columns:
country
job
married
education
defaulted?
housing
has_loan
last_contact
cc_tr
last_contact_month
poutcome
feature selection:
accountID: False
town: False
country: True
age: True
job: True
married: True
education: True
defaulted?: True
current_balance: True
housing: True
has_loan: True
last_contact: True
cc_tr: True
last_contact_day: True
last_contact_month: True
last_contact_duration_s: True
campaign: True
days_since_last_contact: True
previous: True
poutcome: True
made_deposit: True

Dataset: bank-tr.csv

Experiment: exp_01

LogisticRegression(max_iter=1000, random_state=0)

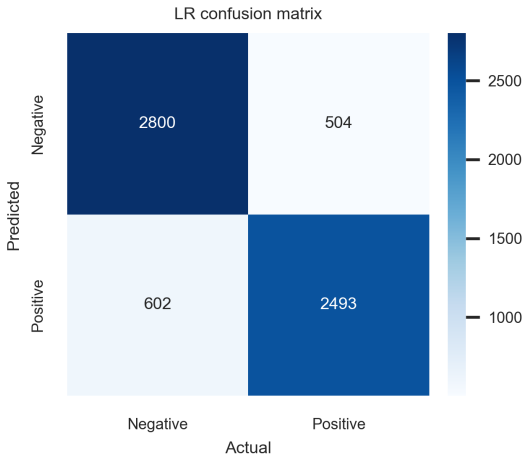
LR experiment best results:

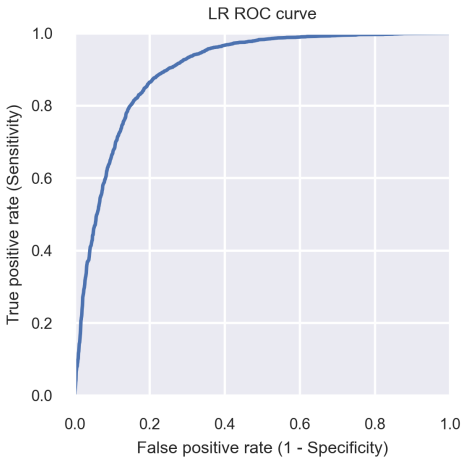
Experiment best score (accuracy): 0.827162

LR cross validation scores:

Accuracy: 0.827162
Precision: 0.831832
Recall: 0.805493
F1: 0.818340
AUC: 0.900852

LR confusion matrix & ROC curve:





Best classifier:

LogisticRegression(max_iter=1000, random_state=0)

Best hyperparameters:

C: 10
penalty: l1
solver: liblinear

Grid search hyperparameters:

penalty: ['l1', 'l2']
C: [1.0, 0.1, 10]
solver: ['liblinear', 'saga']

Dataset: bank-tr.csv

Experiment: exp_01

LogisticRegression(max_iter=1000, random_state=0)

Experiment parameters:

n_splits: 5
scoring: accuracy
target: made_deposit
categorical columns:
country
job
married
education
defaulted?
housing
has_loan
last_contact
cc_tr
last_contact_month
poutcome
feature selection:
accountID: False
town: False
country: True
age: True
job: True
married: True
education: True
defaulted?: True
current_balance: True
housing: True
has_loan: True
last_contact: True
cc_tr: True
last_contact_day: True
last_contact_month: True
last_contact_duration_s: True
campaign: True
days_since_last_contact: True
previous: True
poutcome: True
made_deposit: True