

```

1 !pip install lazypredict

Collecting lazypredict
  Downloading https://files.pythonhosted.org/packages/97/38/cadb2b79268c7f82f6b027bf0b2f68750aafc5c70b6e1bc46b357386e07b/lazypredict-0.2.9-py2.py3-none-any.whl
Collecting scikit-learn==0.23.1
  Downloading https://files.pythonhosted.org/packages/b8/7e/74e707b66490d4eb05f702966ad0990881127acecf9d5dcdf3c95ec6c16/scikit_learn-0.23.1-cp37-cp37m-manylinux1_x86_64.whl (6.8MB)
    |#####| 6.8MB 7.1MB/s
Collecting joblib==1.0.0
  Downloading https://files.pythonhosted.org/packages/34/5b/bd0f0fb5564183884d8e35b81d06d7ec06a20d1a8c8b4c407f1554691dce/joblib-1.0.0-py3-none-any.whl (302kB)
    |#####| 307kB 32.5MB/s
Requirement already satisfied: click==7.1.2 in /usr/local/lib/python3.7/dist-packages (from lazypredict) (7.1.2)
Collecting lightgbm==2.3.1
  Downloading https://files.pythonhosted.org/packages/0b/9d/ddcb2f43aca194987f1a99e27edf41cf9b3c9ea750c3371c2a62698c509a/lightgbm-2.3.1-py2.py3-none-manylinux1_x86_64.whl (1.2MB)
    |#####| 1.2MB 35.8MB/s
Collecting pytest==5.4.3
  Downloading https://files.pythonhosted.org/packages/9f/f3/0a83558da436a081344aac8b85ea5b5f05071214106036ce341b7769b0b/pytest-5.4.3-py3-none-any.whl (248kB)
    |#####| 256kB 36.8MB/s
Collecting PyYAML==5.3.1
  Downloading https://files.pythonhosted.org/packages/64/c2/b80047c7ac2478f9501676c988a5411ed5572f35d1beff9cae07d321512c/PyYAML-5.3.1.tar.gz (269kB)
    |#####| 276kB 34.1MB/s
Collecting tqdm==4.56.0
  Downloading https://files.pythonhosted.org/packages/80/02/8f8880a4fd6625461833abc6f79d4c12a4c76f9925f92bf212bb6cefaad/tqdm-4.56.0-py2.py3-none-any.whl (72kB)
    |#####| 81kB 7.4MB/s
Collecting pandas==1.0.5
  Downloading https://files.pythonhosted.org/packages/af/f3/683bf2547a3eaec15b39cef86f61e921b3b187f250fcd2b5c5fb486369/pandas-1.0.5-cp37-cp37m-manylinux1_x86_64.whl (10.1MB)
    |#####| 10.1MB 39.5MB/s
Collecting scipy==1.5.4
  Downloading https://files.pythonhosted.org/packages/dc/7e/8f6a79b102ca1ea928bae8998b05f5dc24a90571db13cd119f275ba8252/scipy-1.5.4-cp37-cp37m-manylinux1_x86_64.whl (25.9MB)
    |#####| 25.9MB 1.7MB/s
Collecting xgboost==1.1.1
  Downloading https://files.pythonhosted.org/packages/7c/32/a11befbb003e0e6b7e062a77f010dfcc0ec3589be537b02d2eb2ff93b9a/xgboost-1.1.1-py3-none-manylinux2010_x86_64.whl (127.6MB)
    |#####| 127.6MB 81kB/s
Collecting numpy==1.19.1
  Downloading https://files.pythonhosted.org/packages/50/8f/29d5688614f9bba59931683d5d35d738d4a3007833219ee19c455732753/numpy-1.19.1-cp37-cp37m-manylinux2010_x86_64.whl (14.5MB)
    |#####| 14.5MB 27.7MB/s
Requirement already satisfied: six==1.15.0 in /usr/local/lib/python3.7/dist-packages (from lazypredict) (1.15.0)
Collecting threadpoolctl>=2.0.0
  Downloading https://files.pythonhosted.org/packages/f7/12/ec3f2e203afa394a149911729357aa48affc59c20e2c1c8297a60f33f133/threadpoolctl-2.1.0-py3-none-any.whl
Requirement already satisfied: py>=1.5.0 in /usr/local/lib/python3.7/dist-packages (from pytest==5.4.3->lazypredict) (1.10.0)
Collecting pluggy<1.0,>=0.12
  Downloading https://files.pythonhosted.org/packages/a0/28/85c7aa31b80d150b772f7be4a229487bc6644da9cc7e427dd8cc6b08a62/pluggy-0.13.1-py2.py3-none-any.whl
Requirement already satisfied: more-itertools>=4.0.0 in /usr/local/lib/python3.7/dist-packages (from pytest==5.4.3->lazypredict) (8.8.0)
Requirement already satisfied: wcwidth in /usr/local/lib/python3.7/dist-packages (from pytest==5.4.3->lazypredict) (0.2.5)
Requirement already satisfied: attrs>=17.4.0 in /usr/local/lib/python3.7/dist-packages (from pytest==5.4.3->lazypredict) (21.2.0)
Requirement already satisfied: importlib-metadata>=0.12; python_version < "3.8" in /usr/local/lib/python3.7/dist-packages (from pytest==5.4.3->lazypredict) (4.5.0)
Requirement already satisfied: packaging in /usr/local/lib/python3.7/dist-packages (from pytest==5.4.3->lazypredict) (20.9)
Requirement already satisfied: pytz>=2017.2 in /usr/local/lib/python3.7/dist-packages (from pandas==1.0.5->lazypredict) (2018.9)
Requirement already satisfied: python-dateutil>=2.6.1 in /usr/local/lib/python3.7/dist-packages (from pandas==1.0.5->lazypredict) (2.8.1)
Requirement already satisfied: zipp>=0.5 in /usr/local/lib/python3.7/dist-packages (from importlib-metadata>=0.12; python_version < "3.8"->pytest==5.4.3->lazypredict) (3.4.1)
Requirement already satisfied: typing-extensions>=3.6.4; python_version < "3.8" in /usr/local/lib/python3.7/dist-packages (from importlib-metadata>=0.12; python_version < "3.8"->pytest==5.4.3->lazypredict) (3.7.4)
Requirement already satisfied: pyparsing>=2.0.2 in /usr/local/lib/python3.7/dist-packages (from packaging->pytest==5.4.3->lazypredict) (2.4.7)
Building wheels for collected packages: PyYAML
  Building wheel for PyYAML (setup.py) ... done
  Created wheel for PyYAML: filename=PyYAML-5.3.1-cp37-cp37m-linux_x86_64.whl size=44636 sha256=3540c61c0d5d7f2c337fb226bbc50b85d6867a333d01a4ed555268ebb80a723f
  Stored in directory: /root/.cache/pip/wheels/a7/c1/ea/cf5bd31012e735dc1dfea313a2d5eae978b251083d6247bd
Successfully built PyYAML
ERROR: tensorflow 2.5.0 has requirement numpy==1.19.2, but you'll have numpy 1.19.1 which is incompatible.
ERROR: google-colab 1.0.0 has requirement pandas==1.1.0; python_version >= "3.0", but you'll have pandas 1.0.5 which is incompatible.
ERROR: datascience 0.10.6 has requirement folium==0.2.1, but you'll have folium 0.8.3 which is incompatible.
ERROR: albumations 0.1.12 has requirement imgaug<0.2.7,>=0.2.5, but you'll have imgaug 0.2.9 which is incompatible.
Installing collected packages: numpy, scipy, threadpoolctl, joblib, scikit-learn, lightgbm, pluggy, pytest, PyYAML, tqdm, pandas, xgboost, lazypredict
  Found existing installation: numpy 1.19.5
    Uninstalling numpy-1.19.5:
      Successfully uninstalled numpy-1.19.5
  Found existing installation: scipy 1.4.1
    Uninstalling scipy-1.4.1:
      Successfully uninstalled scipy-1.4.1
  Found existing installation: joblib 1.0.1
    Uninstalling joblib-1.0.1:
      Successfully uninstalled joblib-1.0.1
  Found existing installation: scikit-learn 0.22.2.post1
    Uninstalling scikit-learn-0.22.2.post1:
      Successfully uninstalled scikit-learn-0.22.2.post1
  Found existing installation: lightgbm 2.2.3
    Uninstalling lightgbm-2.2.3:
      Successfully uninstalled lightgbm-2.2.3
  Found existing installation: pluggy 0.7.1
    Uninstalling pluggy-0.7.1:
      Successfully uninstalled pluggy-0.7.1
  Found existing installation: pytest 3.6.4
    Uninstalling pytest-3.6.4:
      Successfully uninstalled pytest-3.6.4
  Found existing installation: PyYAML 3.13
    Uninstalling PyYAML-3.13:
      Successfully uninstalled PyYAML-3.13
  Found existing installation: tqdm 4.41.1
    Uninstalling tqdm-4.41.1:
      Successfully uninstalled tqdm-4.41.1
  Found existing installation: pandas 1.1.5
    Uninstalling pandas-1.1.5:
      Successfully uninstalled pandas-1.1.5
  Found existing installation: xgboost 0.90
    Uninstalling xgboost-0.90:
      Successfully uninstalled xgboost-0.90
Successfully installed PyYAML-5.3.1 joblib-1.0.0 lazypredict-0.2.9 lightgbm-2.3.1 numpy-1.19.1 pandas-1.0.5 pluggy-0.13.1 pytest-5.4.3 scikit-learn-0.23.1 scipy-1.5.4 threadpoolctl-2.1.0 tqdm-4.56.0 xgboos
WARNING: The following packages were previously imported in this runtime:
[numpy,pandas]
You must restart the runtime in order to use newly installed versions.

```

RESTART RUNTIME

Lazypredict (Classifier)

```

1 ### importing lazypredict library
2 import lazypredict
3 ### importing LazyClassifier for classification problem
4 from lazypredict.Supervised import LazyClassifier
5 ### importing LazyClassifier for classification problem because here we are solving Classification use case.
6 from lazypredict.Supervised import LazyClassifier
7 ### importing breast Cancer Dataset from sklearn
8 from sklearn.datasets import load_breast_cancer
9 ### splitting dataset into training and testing part
10 from sklearn.model_selection import train_test_split

/usr/local/lib/python3.7/dist-packages/sklearn/utils/deprecation.py:143: FutureWarning: The sklearn.utils.testing module is deprecated in version 0.22 and will be removed in version 0.24. The correspondin
warnings.warn(message, FutureWarning)

```

```

1  ### storing dataset in data variable
2  data = load_breast_cancer()

1  ### separating dataset into dependent and independent features
2  X = data.data
3  y = data.target

1  ### splitting dataset into training and testing part(50% training and 50% testing)
2  X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=.5, random_state =123)
3  #Let's create an object of LazyClassifier class:
4  clf = LazyClassifier(verbose=0, ignore_warnings=True, custom_metric = None)

1  ### fitting data in LazyClassifier
2  models,predictions = clf.fit(X_train, X_test, y_train, y_test)
3  ### Lets check which model did better on Breast Cancer Dataset
4  print(models)

100%|██████████| 29/29 [00:01<00:00, 20.85it/s] Accuracy ... Time Taken
Model ...
LinearSVC 0.99 ... 0.02
Perceptron 0.99 ... 0.02
LogisticRegression 0.99 ... 0.03
SVC 0.98 ... 0.03
XGBClassifier 0.98 ... 0.18
LabelPropagation 0.98 ... 0.03
LabelSpreading 0.98 ... 0.03
BaggingClassifier 0.97 ... 0.05
PassiveAggressiveClassifier 0.98 ... 0.02
SGDClassifier 0.98 ... 0.02
RandomForestClassifier 0.97 ... 0.20
CalibratedClassifierCV 0.98 ... 0.04
QuadraticDiscriminantAnalysis 0.96 ... 0.01
ExtraTreesClassifier 0.97 ... 0.16
RidgeClassifierCV 0.97 ... 0.03
LGBMClassifier 0.96 ... 0.10
RidgeClassifier 0.97 ... 0.02
AdaBoostClassifier 0.96 ... 0.16
KNeighborsClassifier 0.96 ... 0.03
BernoulliNB 0.95 ... 0.01
LinearDiscriminantAnalysis 0.96 ... 0.03
GaussianNB 0.95 ... 0.02
NuSVC 0.95 ... 0.03
ExtraTreeClassifier 0.94 ... 0.02
NearestCentroid 0.95 ... 0.02
DecisionTreeClassifier 0.93 ... 0.02
DummyClassifier 0.53 ... 0.02

[27 rows x 5 columns]

```

## Lazypredict(Regression)

```

1  ### Importing LazyRegressor
2  from lazypredict.Supervised import LazyRegressor
3  ### Importing dataset available in sklearn
4  from sklearn import datasets
5  from sklearn.utils import shuffle
6  import numpy as np

1  ### storing the Boston dataset in variable
2  boston = datasets.load_boston()

1  ### loading and shuffling the dataset
2  X, y = shuffle(boston.data, boston.target, random_state=13)
3  offset = int(X.shape[0] * 0.9)

1  ### splitting dataset into training and testing part.
2  X_train, y_train = X[:offset], y[:offset]
3  X_test, y_test = X[offset:], y[offset:]

1  ### fitting data in LazyRegressor because here we are solving Regression use case.
2  reg = LazyRegressor(verbose=0, ignore_warnings=False, custom_metric=None)

1  ### fitting data in LazyClassifier
2  models, predictions = reg.fit(X_train, X_test, y_train, y_test)
3  ### Lets check which model did better on Breast Cancer Dataset
4  print(models)

100%|██████████| 42/42 [00:03<00:00, 11.15it/s] Adjusted R-Squared R-Squared RMSE Time Taken
Model ...
SVR 0.83 0.88 2.62 0.03
BaggingRegressor 0.83 0.88 2.63 0.06
NuSVR 0.82 0.86 2.76 0.03
RandomForestRegressor 0.81 0.86 2.79 0.38
XGBRegressor 0.81 0.86 2.79 0.10
GradientBoostingRegressor 0.81 0.86 2.84 0.17
ExtraTreesRegressor 0.79 0.84 2.98 0.25
HistGradientBoostingRegressor 0.77 0.83 3.06 0.33
AdaBoostRegressor 0.77 0.83 3.06 0.14
PoissonRegressor 0.77 0.83 3.11 0.02
LGBMRegressor 0.77 0.83 3.11 0.08
KNeighborsRegressor 0.77 0.83 3.12 0.01
DecisionTreeRegressor 0.65 0.74 3.79 0.02
MLPRegressor 0.65 0.74 3.80 1.23
HuberRegressor 0.64 0.74 3.84 0.02
GammaRegressor 0.64 0.73 3.88 0.01
LinearSVR 0.62 0.72 3.96 0.01
RidgeCV 0.62 0.72 3.97 0.01
BayesianRidge 0.62 0.72 3.97 0.02
Ridge 0.62 0.72 3.97 0.01
TransformedTargetRegressor 0.62 0.72 3.97 0.01
LinearRegression 0.62 0.72 3.97 0.03
ElasticNetCV 0.62 0.72 3.98 0.09
LassoCV 0.62 0.72 3.98 0.09
LassoLarsIC 0.62 0.72 3.98 0.02
LassoLarsCV 0.62 0.72 3.98 0.04
Lars 0.61 0.72 3.99 0.06
LarsCV 0.61 0.71 4.02 0.06
SGDRegressor 0.60 0.70 4.07 0.02
TweedieRegressor 0.59 0.70 4.12 0.01
GeneralizedLinearRegressor 0.59 0.70 4.12 0.02
ElasticNet 0.58 0.69 4.16 0.02

```

Lasso	0.54	0.66	4.35	0.02
RANSACRegressor	0.53	0.65	4.41	0.08
OrthogonalMatchingPursuitCV	0.45	0.59	4.78	0.02
PassiveAggressiveRegressor	0.37	0.54	5.09	0.02
GaussianProcessRegressor	0.23	0.43	5.65	0.04
OrthogonalMatchingPursuit	0.16	0.38	5.89	0.01
ExtraTreeRegressor	0.08	0.32	6.17	0.01
DummyRegressor	-0.38	-0.02	7.56	0.01
LassoLars	-0.38	-0.02	7.56	0.02
KernelRidge	-11.50	-8.25	22.74	0.07

✓ 3s

completed at 7:40 PM