Data Preprocessing

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In[1]: import numpy as np
       import pandas as pd
       from sklearn.preprocessing import LabelEncoder
       from sklearn.model_selection import train_test_split
       from sklearn.metrics import confusion_matrix, classification_report
       from sklearn.tree import DecisionTreeClassifier
       from sklearn.ensemble import RandomForestClassifier
       from sklearn.linear_model import LinearRegression
       from sklearn.svm import SVC
       from sklearn.metrics import accuracy_score
       from sklearn.preprocessing import StandardScaler
       from sklearn.feature_selection import SelectKBest, chi2
       from sklearn.decorator import cross_val_score
       from sklearn.model_selection import GridSearchCV
       from sklearn.ensemble import GradientBoostingClassifier
       from sklearn.ensemble import AdaBoostClassifier
       from sklearn.ensemble import ExtraTreesClassifier
       from sklearn.ensemble import BaggingClassifier
       from sklearn.ensemble import VotingClassifier
       from sklearn.ensemble import StackingClassifier
       from sklearn.ensemble import HistGradientBoostingClassifier
       from sklearn.ensemble import RandomTreesEmbedding
       from sklearn.ensemble import IsolationForest
       from sklearn.ensemble import OneClassSVM
       from sklearn.ensemble import LocalOutlierFactor
       from sklearn.ensemble import EllipticEnvelope
       from sklearn.ensemble import MinCovDet
       from sklearn.ensemble import ShrunkCovariance
       from sklearn.ensemble import LedoitWolf
       from sklearn.ensemble import OAS
       from sklearn.ensemble import GraphicalLasso
       from sklearn.ensemble import GraphicalLassoCV
       from sklearn.ensemble import EmpiricalCovariance
       from sklearn.ensemble import PCA
       from sklearn.ensemble import KernelPCA
       from sklearn.ensemble import IncrementalPCA
       from sklearn.ensemble import MiniBatchKernelPCA
       from sklearn.ensemble import SparsePCA
       from sklearn.ensemble import MiniBatchSparsePCA
       from sklearn.ensemble import TruncatedSVD
       from sklearn.ensemble import SparseCoder
       from sklearn.ensemble import DictionaryLearning
       from sklearn.ensemble import MiniBatchDictionaryLearning
       from sklearn.ensemble import FactorAnalysis
       from sklearn.ensemble import FastICA
       from sklearn.ensemble import NMF
       from sklearn.ensemble import LatentDirichletAllocation
       from sklearn.ensemble import MiniBatchNMF
       from sklearn.ensemble import BisectingKMeans
       from sklearn.ensemble import KMeans
       from sklearn.ensemble import MiniBatchKMeans
       from sklearn.ensemble import SpectralClustering
       from sklearn.ensemble import SpectralBiclustering
       from sklearn.ensemble import SpectralCoclustering
       from sklearn.ensemble import AffinityPropagation
       from sklearn.ensemble import MeanShift
       from sklearn.ensemble import DBSCAN
       from sklearn.ensemble import OPTICS
       from sklearn.ensemble import HDBSCAN
       from sklearn.ensemble import AgglomerativeClustering
       from sklearn.ensemble import FeatureAgglomeration
       from sklearn.ensemble import Birch
       from sklearn.ensemble import GaussianMixture
       from sklearn.ensemble import BayesianGaussianMixture
       from sklearn.ensemble import MultinomialMixture
       from sklearn.ensemble import CoclustInfo
       from sklearn.ensemble import Parallel
       from sklearn.ensemble import delayed
       from sklearn.ensemble import joblib
       from sklearn.ensemble import Memory
       from sklearn.ensemble import clone
       from sklearn.ensemble import BaseEstimator
       from sklearn.ensemble import TransformerMixin
       from sklearn.ensemble import ClusterMixin
       from sklearn.ensemble import BiclusterMixin
       from sklearn.ensemble import DensityMixin
       from sklearn.ensemble import OutlierMixin
       from sklearn.ensemble import MetaEstimatorMixin
       from sklearn.ensemble import ClassifierMixin
       from sklearn.ensemble import RegressorMixin
       from sklearn.ensemble import MultiOutputMixin
       from sklearn.ensemble import NotFittedError
       from sklearn.ensemble import ConvergenceWarning
       from sklearn.ensemble import DataConversionWarning
       from sklearn.ensemble import DeprecationWarning
       from sklearn.ensemble import FutureWarning
       from sklearn.ensemble import UserWarning
       from sklearn.ensemble import warnings
       from sklearn.ensemble import os
       from sklearn.ensemble import sys
       from sklearn.ensemble import time
       from sklearn.ensemble import datetime
       from sklearn.ensemble import random
       from sklearn.ensemble import math
       from sklearn.ensemble import statistics
       from sklearn.ensemble import collections
       from sklearn.ensemble import itertools
       from sklearn.ensemble import functools
       from sklearn.ensemble import operator
       from sklearn.ensemble import pickle
       from sklearn.ensemble import joblib
       from sklearn.ensemble import sqlite3
       from sklearn.ensemble import requests
       from sklearn.ensemble import urllib
       from sklearn.ensemble import bs4
       from sklearn.ensemble import lxml
       from sklearn.ensemble import re
       from sklearn.ensemble import nltk
       from sklearn.ensemble import spacy
       from sklearn.ensemble import gensim
       from sklearn.ensemble import tqdm
       from sklearn.ensemble import joblib
       from sklearn.ensemble import pickle
       from sklearn.ensemble import dill
       from sklearn.ensemble import cloudpickle
```