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S. No.	Date	Title	Marks Page No.	Teacher's Sign / Remarks
١	21-04-2024	Import & export	10	W.
2	28-03-2020	End- to- End MI Begint	100	3 3 3 3 3 3
3		1	9	3-221
3.34	04-04-2024	Linear Regression		Gode W
ч	18-08-2024	Decision Irec	10	18/4/4
``	18-08-2014	License -		Ch
5	25-04-2024	Logistic Regression	10	25/4
6	09-05-20 24	KNN and STM	111	14/
				197
7	09-05-20 24	5 VM	10	UL.
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8	23-05-2024	7115		
9 · a	23-05-2024	Random Forest	410	215/24
a ·b	23-05-2024	dda Boost	J	23/2/
10	30-0-5-2024	K-Means	10	Oc.
И	30-05-1020	PCA	10) ₀
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Importing and Emporting

lloing URL

Url = "https://archive. KS. UCI edu/ml/machine-luraing
datalases/iris/iris data"

col-names = ["sepal-length-in-con", "sepal-width-ii-u", "betal-length ii - con", "betal-width-in-con", "class"]

iris-data : pd read-csv(ul, marries: col-names)

iris-data . head()

OUTPUT

sepal-leigh in on sepal-width-in on fetal-light-incom

5.1 3.5 14

Betal-wich in-in class

0.2 Tris-setissa

to enford

of. to- ser ('cleared - iris - data . usu')

einfort without Url

db = pd. read - sev (" (: / Usero / Edmin / Downloads / Teis co",

named sepal - length - in - cm ", "sepal with - in - cm",

"Betal - length - in cm", " Betal - width - in - cm", " class"])

OUTPUT

sepal legte in un sefal width in un Betal legte is -ce

Betal-widt-war class solosa h

ly 18/14

28.03-2024 lond. to. End I lacking Learning Project

1. Frame the problem, select the performance measure - Root mean square ever

2. left the Data # download data

imports pandas as fold data-path = as. fath join (housing-fach, "housing sou") for read-esu (data-fall)

checking data structure

housing head ()

housing infol # gives information of each attribule about

all are numerical except for ocean- proximing.

* housing describe()

gives information like mean, roud, dd. etc for attributes with numerical values

weate histogram

impod matiplotlib. Byflet as ple impod sealin as as

housing. hist (lins =50, figsize = (20,15))
Plt. show () # gives in form of graphs.

splitting train test data

from sklearn model-selection import train-test-split

80% - train set, 20% test set.

train-set, test, set = train-test-split (houseg, test-size:01, random_state = 42)

train - so . strake; jest - set . shepe

3. Disrover & visualing the Data to gain Insights
Visualing geographical Date:
housing. Blot (kind = "scaller", of latitudes", a: 'longitude')

Blt. show ()

If to estimate denotice, set alpha = 0.1

housing. Blot (bid : 'shaller", a = "language", y = 'latitus;
alpha = 0.1)

correlate. using scatter matrix.

from pandas platting infat scatter-matrix

attributes: ['median house. value', 'median-incom',

'total-rooms', 'heusing-mediang')

scatter-matrix (frame: housing (stributes), ligain=(12,3))

plt. show()

4. Brepar data for machine leaving algorithe.

Date eleaving.

from sklean impute import stimple Impute.

imputes = Simple Imputer (strategy : "median")

Hardling tent & Categorial attribus.

from sklear . preprocessing import - Ordinal Emoder ordinal - encoder = Ordinal Emoder !

housing - cat - encoded = ordinal ecoder bit teansform (housing - cat - encoded : shape

one attribute is I if calgey is equal to < IHOCOIN

from skleam beforessing import On Hot Emour. one-hot-encoder = One Hot Emoder ()

```
housing - est- 1 har = our-had- encode fit- leaufoulhousy- est en
# gives 1 or 0
  Feature Bealing
   It there is Min. More stilling and dandardization
   It that is done using emodernation fufetices
     from sklean Bepeline ionpore Pepelus
     from selean preprocessy import obtandardobales
     run- pipelise : Pipeluel (
       ('infile ', Dionple Songula ( strategy: media')),
       1 ' stries - adder', Combined detricus delder ),
        ( 'sld-scaler', astandard Scale())
  5. Delect & Train a Model
   from sklear linear - model import Lineartynessis.
    lin-reg = Linear Regressen L)
lin-reg · lit(X = housing- Brepared, y = housing- soluts)
     from sklam tree impor Decisia to degresson
        tree- rey = Decisio Ire (Egressal)
      # bass validation
        from sklear midel-seletet import was well score
       Score = was-val-score (estimator = true reg X: hour proper
                           y : housing -lable, siony: heg - me squed to;
       # using random forest for latteres ersemble leaving.
    6. File - June
      # guid dearch
      from sklean anodel - seleder import griddenter
      fram-grid = [ { 'n-estionala : [3,10, 30], 'non-Galus'
                                              · 6 [8, d, 4, c]
         { lookstrat': [Fall ], 'a- colisier': [3,10], 'max-get
```

grid-search = grid Bush (estimata = foct-rey, from- gred = param-grid, seeing = 'tog - trear squard - ctar', longer have made any the made on more made on the said there were began an every own to be a first - margaret respect to the same service of the at grant the go with a sec the transfer of the state of th med with the and the se The state you - grant - 2-I see you have get to

Direct numby as of import matflotlib. Byflot as fll

def testimate not inpod Bandas as pol

import sealor as ses

from pandas core common infort random slate from sklear linear-model import dinear kegressin

df-sal=fd. read ise ("/ notitent/ Baluny-Data: (sv')
df-sal. head()

dralyze

do - sal describe ()

plt. title ('Salary Distribution Plot')
sno. distplot (olf-sal ['Salary'])
plt. show()

plt. scatter de-sal ['years beforene'], de-sal idalary], volor = 'light word')

plt title ('Salary is Experience')

Blt alalde (years of experience)

per. yeald ('Salary')

plet, lon (Falu)

plt · show ()

split data

X = df - sal. ilocl: ,:1]

y = df - sal·ilor [1,1:]

```
X_ train, X - test, y- train, y- test = train_test_split (X, y, test - size = 0.2, random - state = 0)
# trais model
   regressor - Linear Regressie ()
  regressor. lit ( X train, y-train)
# Bredist
 y-pred-test: regressor. Bredict (X-train)
y-pred-train - regressor. Bredict (X-train)
  plt. scatter (X-train, y-train, color: 'lightrord')
  plt. plot ( X-train, y-pred-train, ablor: 'firebrish')
  plt. title ( Dalary os Preferience ( Irainy Set))
  plt ochell ( 'years of reference')
  pt. ylable ('Dalay')
  plt. legent (['X-train/Bred (y-trd', 'X-tri/y-leavi'],
     title: 'Dal/ 26', loc = 'lst', facecolor= 'white')
     Blt box (False)
   plt. show ()
flt. scatter (X-tust, y-test, color = 'lightroral')
 plt. plot (x - train, y - pred - train, color : 'firebrish')
 plt tite ( Selvy us Experies ( Training set) )
 plr. schalel ('years of verberien ')
  get ylable ('Dalary')
   plt · legend ( ( ' X - trail Bred (y-tot) ), 'X-train by-tai)
    title = 'dal / rxf ', lor = blot', facecolor = 'whole')
    plt. lox (False)
  Blt. show ()
  print ( & Coefficient
                         { regressor- rolf-3')
   Brist ( & E ' Groldsupe
                           ¿ regress. interupe, ?')
```

Multiple Tirear Regression

import bandas as pl import numby as of infore matphotlib. Byplot as ple import sealour as sons from sklean molel selective import train-test split. from sklean compose import boluma Tearsforme from skleam Brefrocessing import Andollowody from Sklean linear-madel import Linear Regression

of start = pd. read resil '/ wortest (50 - startips csv') df-stone. head()

all-start. desure()

plt. title ('Profit Distribution Blot') sns. distiplot (df- start ('Profit'))

plt show ()

Blt. scatter (df. start ['R&D''dspend'], df. dard ['frobit'], color = 'lightcorel')

plt. title (Profit vs R&D @Bend')

plt. relabel [:R&D Spend')

ple yealed (Brole")

plt los (False) plt. show ()

X = df - start. ilor (: 1,:-1) . values

= df-start. ilac (:,-1]. valus

ct = Column Transformer (transformers = [('encoder', Onethotemath), [3])], remainde: 'pasothrag')

= np. arroy (ct. fit-transfor(X))

X- train, X-test, y- train, y- test = train-test-spec(X,y, test-size = 0.2, random-state = 0)

regressor. Linear Regressia () regressor. lit (x. train, y. train) y- fred = regressa. Bresid (x-las) np. set- frint options (precise = 2) result = np. ioneateral ((y - fred relife (luly-fred), 1), y-ted. restrage (levery-tot), 1)), 1) and the special of the same - will for the of the last was a passed of the shade of the make presenting a fine of the same guerral adaption of a see I ask solved as a guerral as of the same of the making on the same of the same of the same The first property of the same of there men with miles were men - our y per men prom . In " was processed to be a sure of second of second desired

desired of the comment of

West-4 Duisia Iree

import morpy as up import mathlot lik . pyflot as fill

import sealorn as one

from sklean model selection import train-test-spot from sklean import dataset

iris = datasets. load_ iris()

iris_df = pol. Doda France (dth = iris.data, column = iris. feature_names)

iris-de ['species']: iris. target
iris-de ['species']: iris - E'species']. map ({0: 'setosa', 1: 'species')
2: 'reiginire' 3)

X = iris - de · deof ('apecies', ariu=1)

y = ino - of ["species"]

X-train, X-test, y-train, y-two = train-test. effect (X, y, test-size = 0.33, random - state = 42)

from slearn. Lee & import Decision Classifier

model = Decisia Tra Classifier (criteriae = 'giii',
oranda - state = 100, max - depte = 5, mia - sanfer leg = 2)
model. fit (x trai , y - trais)

from selecumetries import recardy-seon y-fred = model . Brodiek (X-tot)

prist l'decuracy of Decisia Iru: , nevery- scody-ped,

OUTPUT :

decursey of Decision Ine: 0.98

from selecur true import flor - me. Alt · figure (figsing = (8,1)) plat- tree (model , feature nave : [Befal Lenge cm', Sepal Widle Em', Betaldingte (m', Betal Widt a'). class - names = ['setora', 'vertides ', virgine'], billed = Ieue, erounded. Isu) model 2 = Decisio Tru Classifin() model 2. fit (x_ train, y - train) y-pred = model 2. predict (x-text) decuray: 0.98 Osepal lughto X = 99.5 gui =0.665 sample = 105 talu = [36,32,31) class = Iris - virginica Petal Widt Ca L = 26 gici = 0.0 qui = 0.498 samples = 37 sample = 68 valu : [0,0,37] calue = (36,32,0) class: Iris - virginia class: Eis-sctosa perdected ! gini = 0.0 gine =0.0 barbs = 32 sample = 36 value = (0, 32,0) value (36.0,0) clas: verinder class: Ini - selos

Justa 1 24

Week-5 Logistic Regression

ionfort fandas as fol
from matplotlit ionfort pyplot as for

! matplotlit inline
from sklearn metric ionfort accuracy - score

of: fol = . read - csu ("I context I insurame data · csu ")

of . head()

plotting froins

blt · scatter (df · age , df · lrought - insurano , marker: '+', cola :

'red')

splitting
from sklearn · molel - seletion ionfort train - text - split

splitting
from skleam mobel-selection import train_test_split
X-train, X-test, y-train, y-test = train_test_split
df [['age']], df laught-insurans, train-size = 0.6,
random-state = 0)

X_test

Brid (scursy)

0.818181

from skleam linear-model import Sogistic Regression

fitting

model = Logistic Regressio ()

model · fit (X - train , y - train)

y - predicted = model · predict (X - test)

model · predicted

oreay ([1,1,1,1,0,0,0,0,0])

accuracy = accuracy - store (y-predicted, y-test)

```
# with sigmoid fundes
import math
 del sigmoid (x)
      netur 1/(1+ math-enb(-x1)
  dels prediction functial age):
          Z = 0. 042 & agr - 1.53
          y = sigmoid (z)
          return y
  age = 35
  predictio- function ( age )
   0.48 5 DD
  age = 86
   frediction - function (rage)
    6 .8891
Camp Brown and could a morting week of
                      I sugar I that large !
                      per glaver I deput to see !
         I ca ( Boutle wind of Prime in - s
```

Jal- 6 K Nearest Neighbors and

It importing module.

impoil ofrandas as pd

from matplotlil import pyplot so ple il mafealib inline

from sklears. Indrice import securary- sion

from sklearn model-selection import train test after from sklean reighlors import Kneighlow Classifier from shear sum import SVC

getting datasu

db = pd. read-csv ("/ contest / Iris · csv") of head ()

seperating independent and dependent variable. X = df. drop ("Species", anis = 1") y = of ("obseries")

If plotting scatterplot for variables.

felt. figsige (figsige = (10,6))

sons : scatterplot (data : of , x = df ["Betallength (on .

y = df (Depal Widtl Em"], legt = Fals, hu = df ("opinis)

plt. xlabel (Betal Length)

plt. ylalel ('Sepal Width')

plt. title ('Scatter Blot of Petal lengt vs Sepal

wide)

plt. show ()

```
# splitting to train and text
  X- train, X-test, y-train, y-test = train-tent-split
             (X, y, train-size = 0.6, random-state = 0)
  # KNN model
   neigh = KNeighbors blassifier (n-neighbors = 2)
neigh bit LX, y)
   y- Bredicted = neigh. Bredid (X test)

accuracy = accuracy - Nove (y-Bredicted, y - tut)

print (accuracy)
  Frogram - 7
# SVM model
     model: SVCL)
      model. fit (X, y)
     y- predicted: mod. predict (x-ted)
      accuracy = scuracy - fore ( y - predicted, y - ted)
      Brist ( accuracy)
                               I retite a result - the real
         Summer and it is you have a continued to the
                       you may write you . when
             and the same of the same of the same
4.5-11
                                             Ti bre you get
                         in a child to a fill and the
                        in develope we ingress of held
                               reference To 1 - 1
                                   when I we would show the
                         marge = up do ( x, whi)
                              him thought and
```

Week-1

(Artificial Neural Network)

import numby as at

X = np. array (((2,97,(1,5],(3,67), obtype = flood))

Y = np. array (((92], [86], (89]), obtype = flood)

X = X / np. array (X, axis = 0)

Y = y/100

initialize variable

epoch = 5000

ln = 0.1

infut layer neuros = 2

hidden layer neuros = 3

output neuros = 1

weight and lias

wh = mp. randon wrifor (size = (input lazer-neuros. hidder e lazer - neuros)

th = nf:rardom unifor (sing = (1, hiddenlager neuros))

nout = nf. random unifor (sing = (hiddenlager neuros)

outfut - neuros))

lout = nf. random uniform (sing = (1, vertfut - neuros))

def signoid (a):

netur 1/(1 + nf.enf(-n))

def derivatible-signoid (a):

netur (x* (1-n)

for i in range (epop):

himp 1 = orb · det(X, wh)

himp = himp 1 + bh

```
hlayer - act = sigmaid (hink)
   out inf 1 = np. dot (Rlayer- act, word)
  outing = outing 1 + lost
  output = sigmoid (outing)
   EO: y-output
   outglad = derivatives - sigmoid (output)
   d- output = i0 & outgrad
   EH = d- output. dot ( wort. T )
   hiddengrad: derivatios - sigmoid (layer - act)
   dhiddelayu = E H & hiddengrad
want + = hlayer and . I dot (d-output) & la
wh + * × · T. dot (d. Riddehlayn) & h
 Brist ("Input: \n"+ str (x))
Brist (" Actual Dutput: \n + str (y))
 Brist (" Predicted Output : \" . output )
 Input:
  66.0.66
    10.33
               0.55)
    [1.
              0.6 677
Actual Butfut:
 ((0.92)
    [086]
     (0.897)
Predicted Dutput:
   (10.8455]
      (0.8406)
       (0.846 3)
```

from skleam ersemble import Random Forest Blaning import bandas as fol from skleam metrics import accuracy - son from skleam metrics import accuracy - son de = pd read resu ("/sontent/drice/My Drice/mult-diteres melloure data = aff dest na (rasio = 0)

y = melloure - data Price
melloure - feature = ('Rosen', Bathrapa', Latitule')

X = melloure - data (melloure - feature)

from sklean. model-selection import train-test. split

X-teain, X-test, y-train, y-kest: train-test-split(N, y,

train-size = 0.8, random-state = 0)

model: kandom Fored Blassifin()
model: fix (x y)

y-predicted: model. predict (x_test)
accuracy: accuracy. sion (fy-predicted, y_test)
0.9135

Freezeway Freezeway) (dungsou)

```
of = pd. read(ov (" / sortest / drive / My Drive / Gris. cso")
X = of · drop ("OBelies", anis = 1)
 y = df ( "ospenies" )
y - train, X - test, y - train. y - tet = train - te splet
    (X, y, train-size = 0.8, random-state = 0)
 from sklear ensemble impod Ada Boost Classifice
 model: da Boost Classifier (n-estimator : 50)
  model ( bit ( x , y )
 y - fredited = molel. predia (x _ test)
  accuracy = accuracy - sione ( y - predicted .y. test )
 # With logistic regressive.
 from sklear linear-model import Logistic Regression
  leg = Logistic Cegussia()
ada = Ada Borost Classifier (n-estinator = 150, lase. estinator
leg,
                  learning _ nate =1)
  model = ada fit (x, y)
 y-Bred = model . Bredict (X-test)
 Brist ("docuray!", saway- store (y-test, y- fred))
 Accuracy: 1.0
                                         pin her t
                       The world is a world in the
                        23/5/24
                              ple wis . him
```

and what is true to be

House lasts. I have be

infut matplottie byplot as por from sklearn import datasets from skleam . Muster import KMus import pandas as por import numby as of

iris = datasets · load_iris()

X = pd. Data Franc (iris. data)

X- columns = ['Ospal_Lengel', 'Ospal-Width', 'Petal Lego'; 'Fetal-Widte')

y = Bd. Data Frame (inis, taget) y. solums = (' Targets')

model = K Mears (n- clusters = 3) model · fit (X)

Blt . figure (figsing = (14,14)) colormap = np. array (['red', 'limi; 'black'])

plt supplex (2,2,1)

Blt scatter (X. Betal Length , X. Betal-Width , C: wolon maply Dagos J, 5=40)

ple . xille (" led Cluder")

Blt. Glabl (* Betal Wide !)

Blt. Englabel (Betal Lengle)

pu. lite 1 5

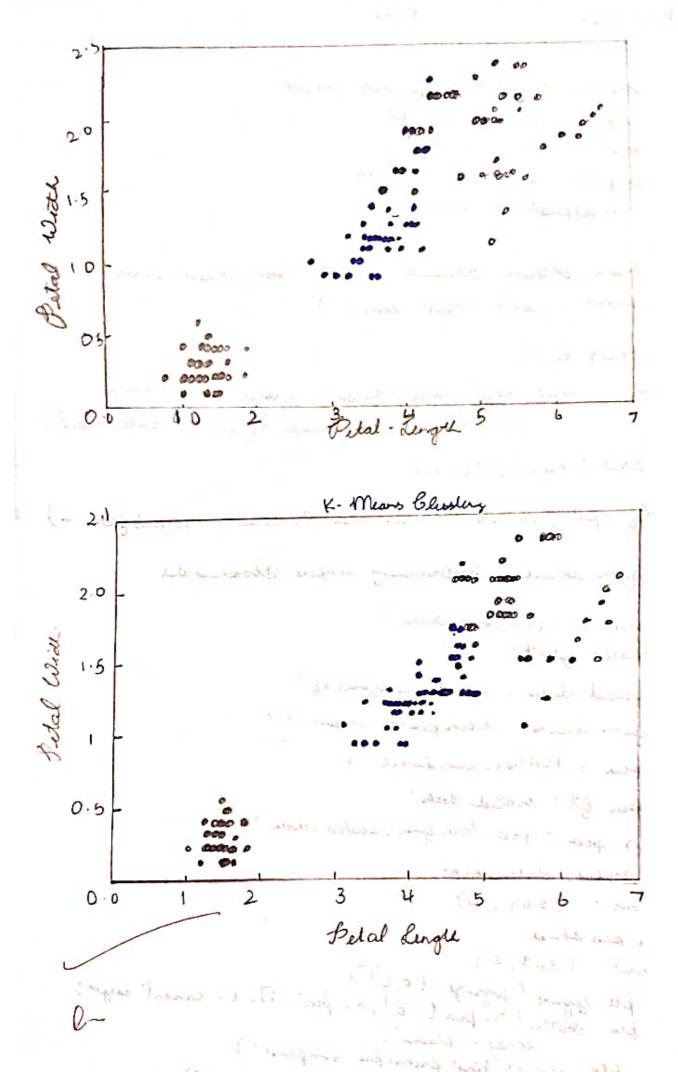
ple - suble (2,2,2)

Blt . scatter (X. Petal - Length . X. Betal - Widdle, C = rolours [model. liabel _], 5:40)

plt. title ('KMeans Clustery')

get ochall (Petal Leige)

plt yeard ("Petal Widte")



" beganning browned " who had a

import matheolile byfled as for import pandas as for import numbry as mos import seaborn as us "marphotlit inline

from sklewn. datasets impat load-breast-comer came = load-breast-came ()

career ly ()

DE SCR', 'Geature-mane', 'filenan', 'data-malid')

print (samus (DESCR')

Af : pd. Data Frans (carner ('data '), column : carous ('featur-i)

from skleam: preprocessing import standard such.

scaler = Ostandard Oscale()
scaler (jt (of))

scald-data: scales: transform(dg)

from sklearn. decomposition impat PCA

fra = PCA(n-component = 2)

Bra. fit (sealed data)

n-fea = fea. transform (scaled.dass)

Scaled - date shape

out: (569,30)

x-bea. Shafe

out: (569,2)

fle . figure (figsize = (E,6))

ple . seatter (26-fica (:,0], x-fica (:,1], c: cancel days;

conas = blame;)

felt . relabel ('firs primifal compone')

plt yearl (Gerand Principal component)

