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#Purpose : Train simple IRIS machine learning model. Save and load the trainged model using pickle and joblib.

#import packages

#pandas for csv file

from pandas import read\_csv

#split training and test dataset

from sklearn.model\_selection import train\_test\_split

#evaluation metrics

from sklearn.metrics import classification\_report

from sklearn.metrics import confusion\_matrix

from sklearn.metrics import accuracy\_score

#support vector machine algorithms

from sklearn.svm import SVC

#save/load model using pickle

import pickle

#save/load model using joblib

import joblib

#load dataset

url = "https://raw.githubusercontent.com/jbrownlee/Datasets/master/iris.csv";

#dataset column names

names=['sepal-length','sepal-width','petal-length','petal-width','class'];

#load dataset

dataset = read\_csv(url, names=names);

X = dataset.values[:, 0:4];

Y = dataset.values[:, 4];

#split train and test set

x\_train, x\_validation, y\_train, y\_validation = train\_test\_split(X, Y, test\_size=0.3);

model = SVC(gamma='auto');

model.fit(x\_train, y\_train);

predictions = model.predict(x\_validation);

#Evaluate Predictions

print('Accuracy Score : {}'.format( accuracy\_score(y\_validation, predictions)));

print('Confusion Matrix : \n{}'.format(confusion\_matrix(y\_validation, predictions)));

print('Classification Report : \n{} '.format(classification\_report(y\_validation, predictions)));

#pickle file name to store and load the model

pickle\_filename = "Iris\_Classifer.pkl"

#save the model

with open(pickle\_filename, "wb") as file:

pickle.dump(model, file)

#load the model

with open(pickle\_filename, 'rb') as file:

iris\_model\_pickle = pickle.load(file)

print('Prediction result(Pickle model file) for [5.1, 3.5, 1.4, 0.2] : {}'.format(iris\_model\_pickle.predict([[5.1, 3.5, 1.4, 0.2]])[0]));

#joblib file name to store and load the model

joblib\_filename = "Iris\_Classifer.jbl"

joblib.dump(model, joblib\_filename)

#load the model

iris\_model\_joblib = joblib.load(joblib\_filename)

print('Prediction result(Joblib model file) for [5.1, 3.5, 1.4, 0.2] : {}'.format(iris\_model\_joblib.predict([[5.1, 3.5, 1.4, 0.2]])[0]));