Iris Flower Classification

Iris flower has three species; setosa, versicolor, and virginica, which differs according to their measurements. Now assume that you have the measurements of the iris flowers according to their species, and here our task is to train a machine learning model that can learn from the measurements of the iris species and classify them.

Iris Flower Classification using Python

I will start the task of Iris flower classification by importing the necessary Python libraries and the dataset that we need for this task:

In [1]:
```
import pandas as pd
import matplotlib.pyplot as plt
import numpy as np
iris = pd.read_csv("IRIS.csv")
```

Now let's have a look at the first five rows of this dataset:

In [2]:
```
iris.head()
```

Out[2]:

	sepal_length	sepal_width	petal_length	petal_width	species
0	5.1	3.5	1.4	0.2	Iris-setosa
1	4.9	3.0	1.4	0.2	Iris-setosa
2	4.7	3.2	1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa

Now let's have a look at the descriptive statistics of this dataset:

In [3]:
```
iris.describe()
```

Out[3]:

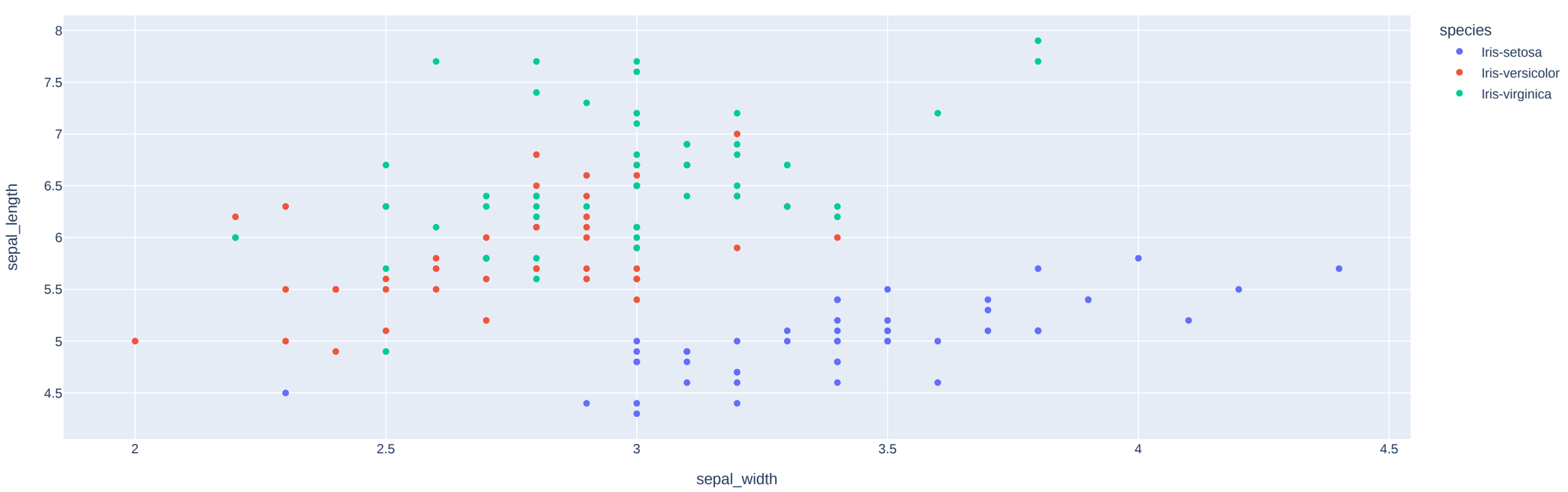
	sepal_length	sepal_width	petal_length	petal_width
count	150.000000	150.000000	150.000000	150.000000
mean	5.843333	3.054000	3.758667	1.198667
std	0.828066	0.433594	1.764420	0.763161
min	4.300000	2.000000	1.000000	0.100000
25%	5.100000	2.800000	1.600000	0.300000
50%	5.800000	3.000000	4.350000	1.300000
75%	6.400000	3.300000	5.100000	1.800000
max	7.900000	4.400000	6.900000	2.500000

In [4]:
```
print("Target Labels", iris["species"].unique())
```

```
Target Labels ['Iris-setosa' 'Iris-versicolor' 'Iris-virginica']
```

Now let's plot the data using a scatter plot which will plot the iris species according to the sepal length and sepal width:

In [5]:
```
import plotly.express as px
fig = px.scatter(iris, x="sepal_width", y="sepal_length", color="species")
fig.show()
```



Iris Classification Model

Now let's train a machine learning model for the task of classifying iris species. Here, I will first split the data into training and test sets, and then I will use the KNN classification algorithm to train the iris classification model:

In [6]:
```
x = iris.drop("species", axis=1)
y = iris["species"]
from sklearn.model_selection import train_test_split
x_train, x_test, y_train, y_test = train_test_split(x, y,
                                                    test_size=0.2,
                                                    random_state=0)

from sklearn.neighbors import KNeighborsClassifier
knn = KNeighborsClassifier(n_neighbors=1)
knn.fit(x_train, y_train)
```

Out[6]:
```
KNeighborsClassifier(n_neighbors=1)
```

Now let's input a set of measurements of the iris flower and use the model to predict the iris species:

In [7]:
```
x_new = np.array([[5, 2.9, 1, 0.2]])
prediction = knn.predict(x_new)
print("Prediction: {}".format(prediction))
```

```
Prediction: ['Iris-setosa']
D:\anaconda\lib\site-packages\sklearn\base.py:450: UserWarning:

X does not have valid feature names, but KNeighborsClassifier was fitted with feature names
```

Summary

So this is how you can train a machine learning model for the task of Iris classification using Python. Iris Classification is one of the most popular case studies among the data science community. Almost every data science newbie has solved this case study once in their life. I hope you liked this article on the task of classifying Iris species with machine learning using Python