iris–knn

February 6, 2023

[1]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import warnings
warnings.filterwarnings('ignore')
```

[11]:
```
df=pd.read_table('https://archive.ics.uci.edu/ml/machine-learning-databases/
↪iris/iris.data',header=None,sep=',',names=['sepal length','sepal␣
↪width','petal length','petal width','class'])
```

[12]:
```
df.head()
```

[12]:

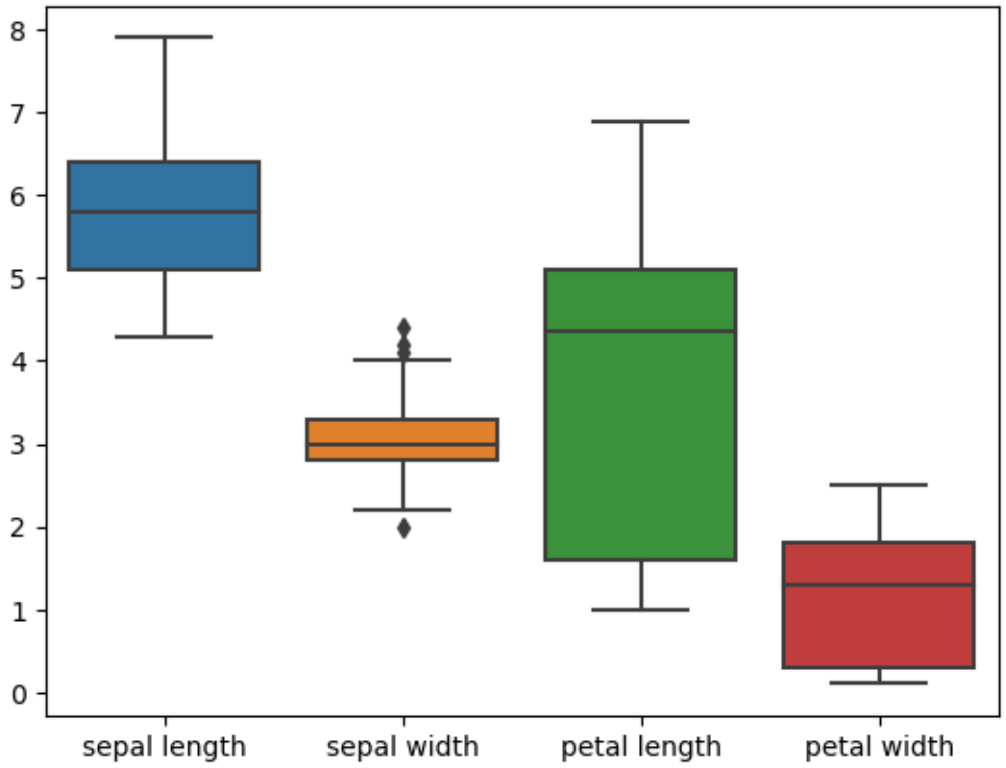
	sepal length	sepal width	petal length	petal width	class
0	5.1	3.5	1.4	0.2	Iris-setosa
1	4.9	3.0	1.4	0.2	Iris-setosa
2	4.7	3.2	1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa

[13]:
```
df.isna().sum()
```

[13]:
```
sepal length    0
sepal width     0
petal length    0
petal width     0
class           0
dtype: int64
```

[14]:
```
sns.boxplot(data=df)
```

[14]:
```
<AxesSubplot:>
```



[15]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 150 entries, 0 to 149
Data columns (total 5 columns):
 #   Column        Non-Null Count  Dtype  
---  ------        --------------  -----  
 0   sepal length  150 non-null    float64
 1   sepal width   150 non-null    float64
 2   petal length  150 non-null    float64
 3   petal width   150 non-null    float64
 4   class         150 non-null    object 
dtypes: float64(4), object(1)
memory usage: 6.0+ KB
```

[16]:
```
colname=df.select_dtypes('float64').columns
```

[17]:
```
df[colname]
```

[17]:

	sepal length	sepal width	petal length	petal width
0	5.1	3.5	1.4	0.2
1	4.9	3.0	1.4	0.2

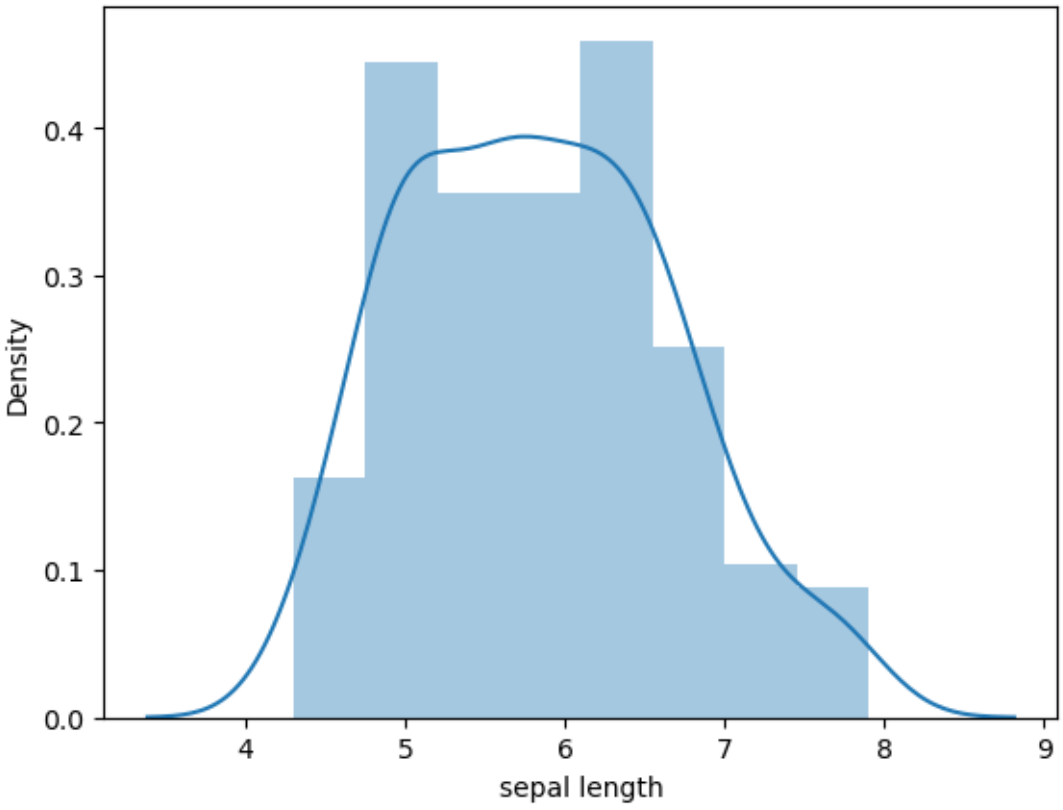
```
2             4.7          3.2           1.3          0.2
3             4.6          3.1           1.5          0.2
4             5.0          3.6           1.4          0.2
..            …            …             …            …
145           6.7          3.0           5.2          2.3
146           6.3          2.5           5.0          1.9
147           6.5          3.0           5.2          2.0
148           6.2          3.4           5.4          2.3
149           5.9          3.0           5.1          1.8

[150 rows x 4 columns]
```

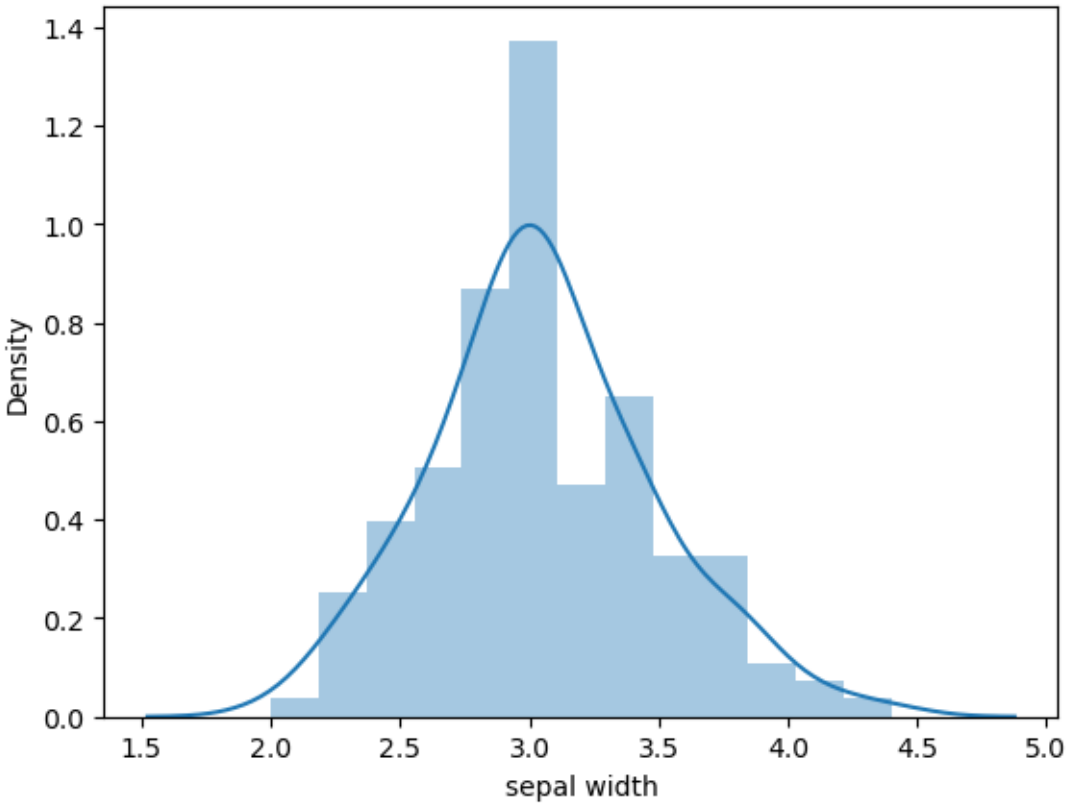
[18]:
```
from scipy.stats import skew
```

[19]:
```
for i in df[colname]:
    print(i)
    print(skew(df[i]))
    sns.distplot(df[i])
    plt.show()
```

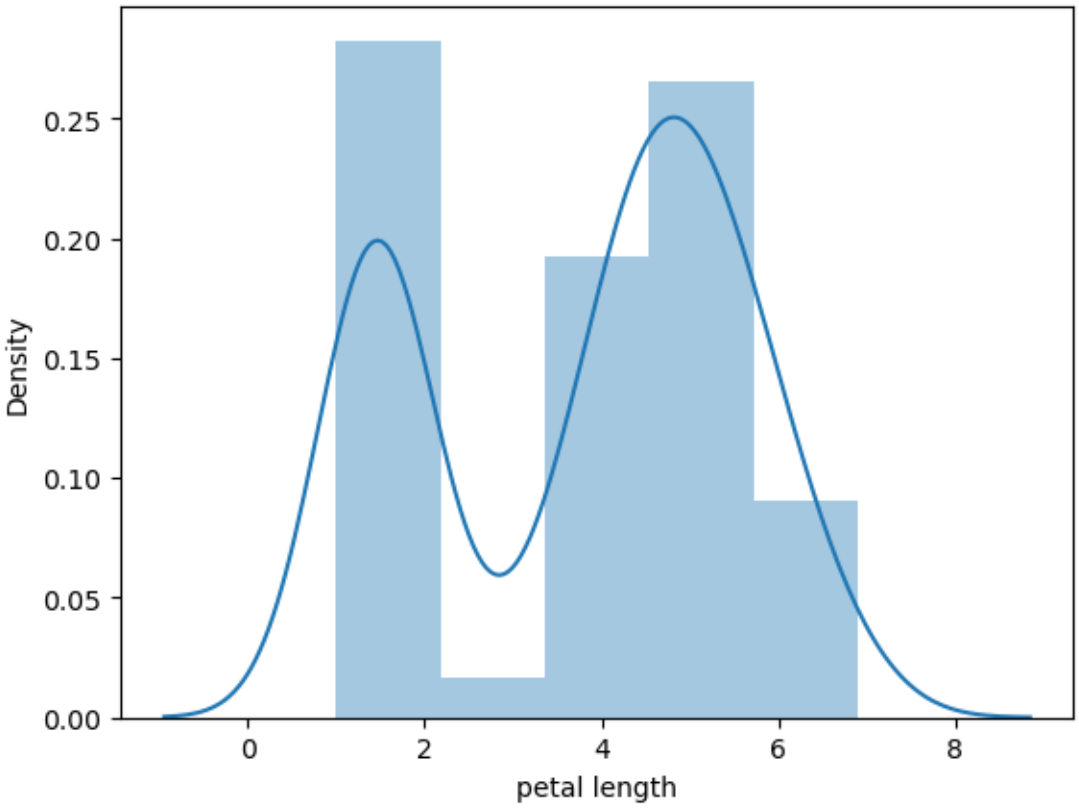
```
sepal length
0.3117530585022963
```



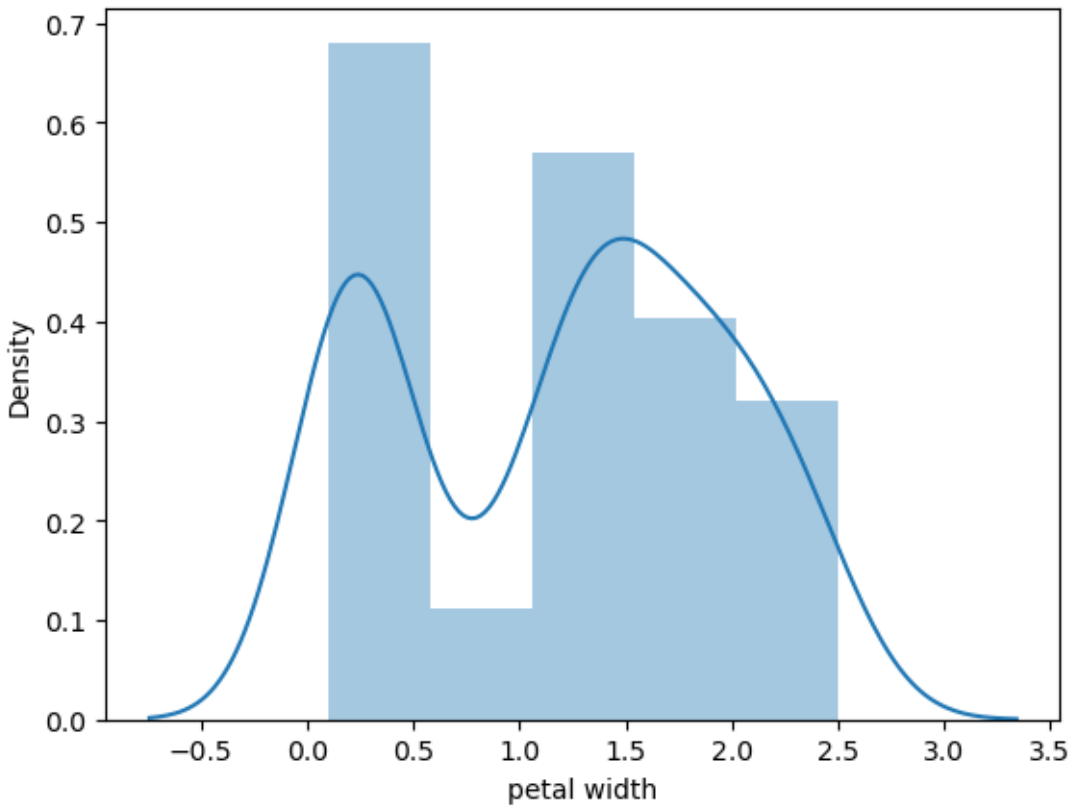
```
sepal width
0.330702812773315
```




```
petal length
-0.2717119501716388
```




```
petal width
-0.10394366626751729
```



[20]:
```
df.corr().style.background_gradient()
```

[20]:
```
<pandas.io.formats.style.Styler at 0x13d00a406a0>
```

[29]:
```
x=df.iloc[:,:-1]
y=df.iloc[:,-1]
```

[30]:
```
x
```

[30]:

	sepal length	sepal width	petal length	petal width
0	5.1	3.5	1.4	0.2
1	4.9	3.0	1.4	0.2
2	4.7	3.2	1.3	0.2
3	4.6	3.1	1.5	0.2
4	5.0	3.6	1.4	0.2
..	…	…	…	…
145	6.7	3.0	5.2	2.3
146	6.3	2.5	5.0	1.9
147	6.5	3.0	5.2	2.0
148	6.2	3.4	5.4	2.3
149	5.9	3.0	5.1	1.8

```
[150 rows x 4 columns]
```

[27]:
```
from sklearn.model_selection import train_test_split
```

[31]:
```
xtrain,xtest,ytrain,ytest=train_test_split(x,y,test_size=0.3,random_state=0)
```

[24]:
```
from sklearn.neighbors import KNeighborsClassifier
```

[26]:
```
knn=KNeighborsClassifier(n_neighbors=5)
```

[32]:
```
knn.fit(xtrain,ytrain)
```

[32]:
```
KNeighborsClassifier()
```

[33]:
```
ypred=knn.predict(xtest)
```

[34]:
```
ypred
```

[34]:
```
array(['Iris-virginica', 'Iris-versicolor', 'Iris-setosa',
       'Iris-virginica', 'Iris-setosa', 'Iris-virginica', 'Iris-setosa',
       'Iris-versicolor', 'Iris-versicolor', 'Iris-versicolor',
       'Iris-virginica', 'Iris-versicolor', 'Iris-versicolor',
       'Iris-versicolor', 'Iris-versicolor', 'Iris-setosa',
       'Iris-versicolor', 'Iris-versicolor', 'Iris-setosa', 'Iris-setosa',
       'Iris-virginica', 'Iris-versicolor', 'Iris-setosa', 'Iris-setosa',
       'Iris-virginica', 'Iris-setosa', 'Iris-setosa', 'Iris-versicolor',
       'Iris-versicolor', 'Iris-setosa', 'Iris-virginica',
       'Iris-versicolor', 'Iris-setosa', 'Iris-virginica',
       'Iris-virginica', 'Iris-versicolor', 'Iris-setosa',
       'Iris-virginica', 'Iris-versicolor', 'Iris-versicolor',
       'Iris-virginica', 'Iris-setosa', 'Iris-virginica', 'Iris-setosa',
       'Iris-setosa'], dtype=object)
```

[ ]: