iris-dataset

September 12, 2023

Import Libraries

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

[2]:
```
iris =pd.read_csv(r'D:\DatSets\iris.csv')
iris
```

[2]:
```
      Id  SepalLengthCm  SepalWidthCm  PetalLengthCm  PetalWidthCm  \
0      1            5.1           3.5            1.4           0.2
1      2            4.9           3.0            1.4           0.2
2      3            4.7           3.2            1.3           0.2
3      4            4.6           3.1            1.5           0.2
4      5            5.0           3.6            1.4           0.2
..   …              …             …              …             …
145  146            6.7           3.0            5.2           2.3
146  147            6.3           2.5            5.0           1.9
147  148            6.5           3.0            5.2           2.0
148  149            6.2           3.4            5.4           2.3
149  150            5.9           3.0            5.1           1.8

            Species
0       Iris-setosa
1       Iris-setosa
2       Iris-setosa
3       Iris-setosa
4       Iris-setosa
..              …
145  Iris-virginica
146  Iris-virginica
147  Iris-virginica
148  Iris-virginica
149  Iris-virginica
```

```
[150 rows x 6 columns]
```

[3]:
```
#We dont require the ID Columns
iris.drop('Id',axis=1, inplace =True)
```

[4]:
```
iris.head()
```

[4]:

	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	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

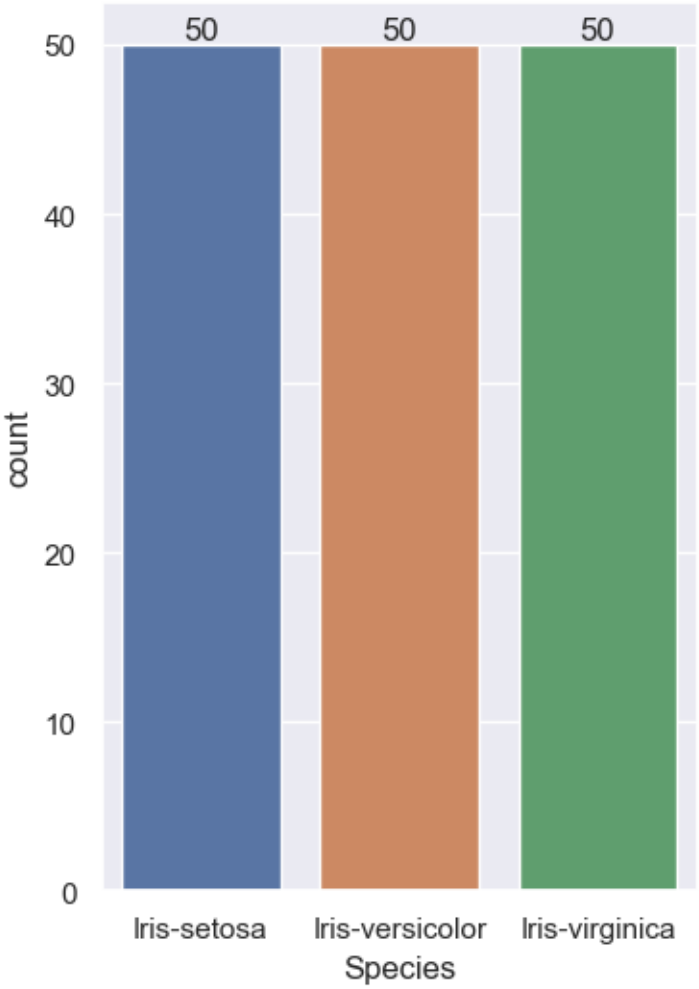
[5]:
```
iris.info()
```

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

[6]:
```
iris['Species'].value_counts()
```

[6]:
```
Iris-setosa        50
Iris-versicolor    50
Iris-virginica     50
Name: Species, dtype: int64
```

[14]:
```
aa =plt.subplots(figsize=(4,6))
aa=sns.countplot(x='Species', data =iris)
for bars in aa.containers :
    aa.bar_label(bars)
```



We can see that there are 50 samples each of all the Iris Species in the data set.

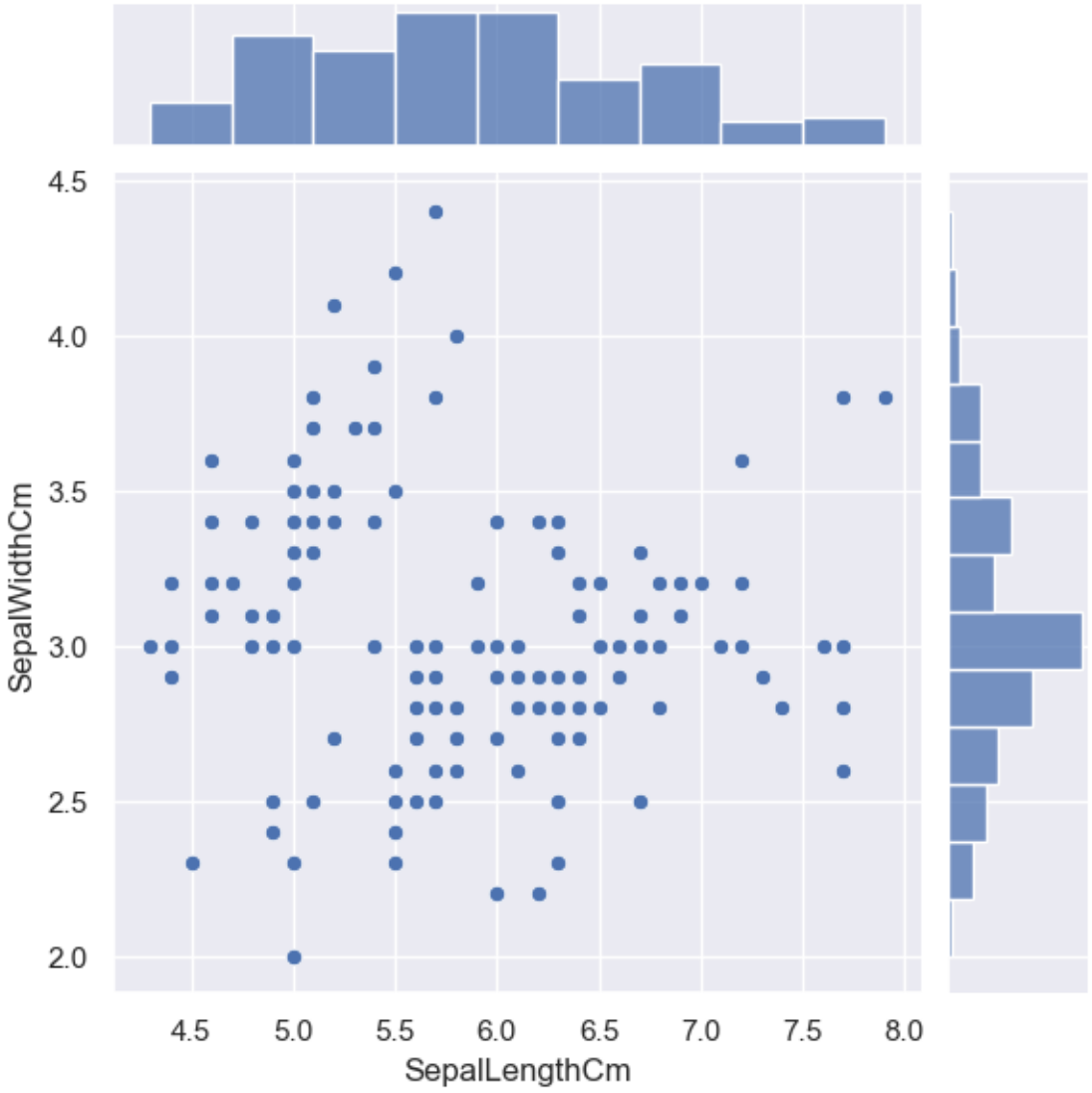
0.0.1 JointPlot

[15]:
```
iris.columns
```

[15]:
```
Index(['SepalLengthCm', 'SepalWidthCm', 'PetalLengthCm', 'PetalWidthCm',
       'Species'],
      dtype='object')
```

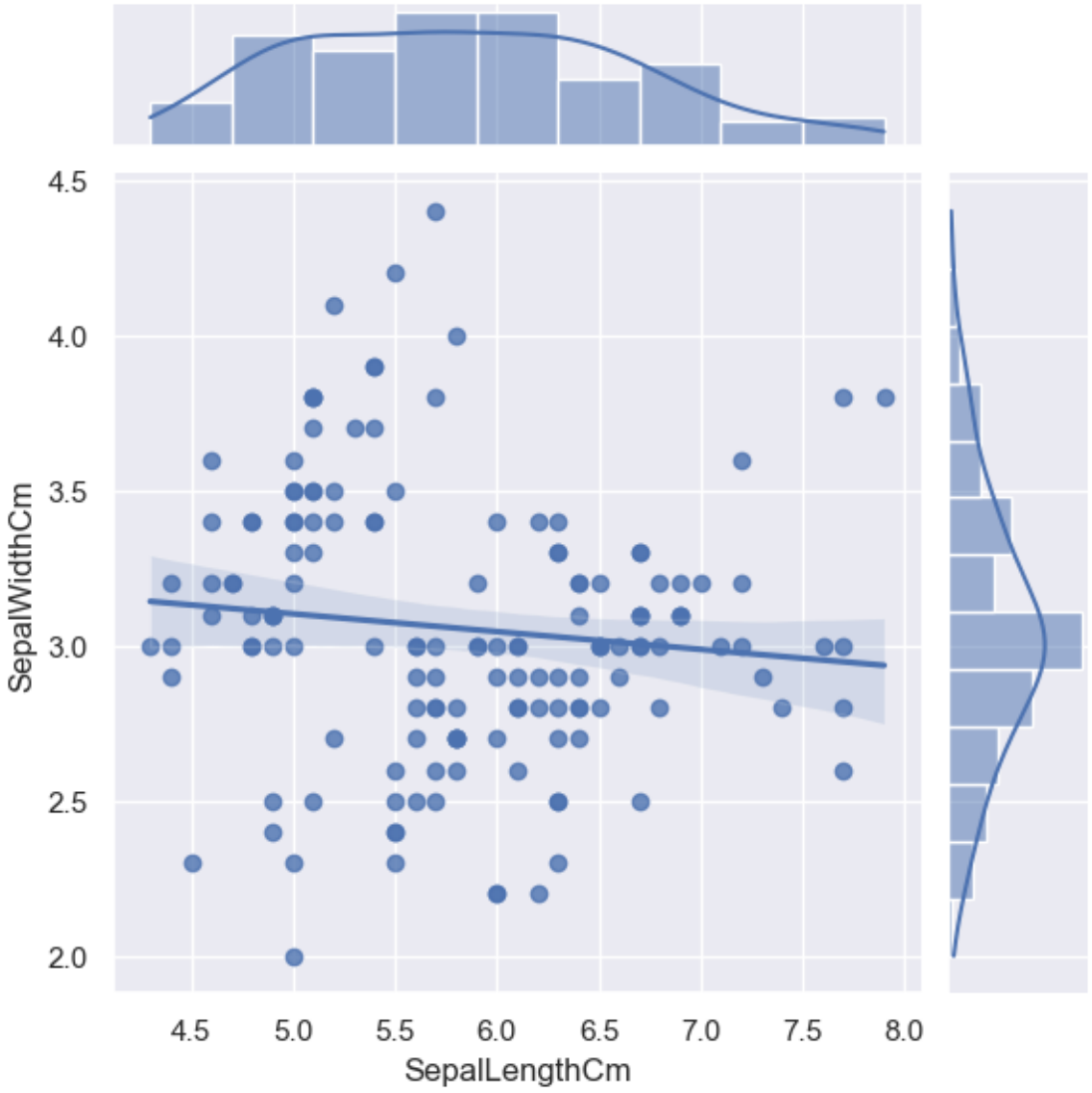
[20]:
```
sns.jointplot(x='SepalLengthCm',y='SepalWidthCm',data=iris)
```

[20]:
```
<seaborn.axisgrid.JointGrid at 0x29e12525c00>
```



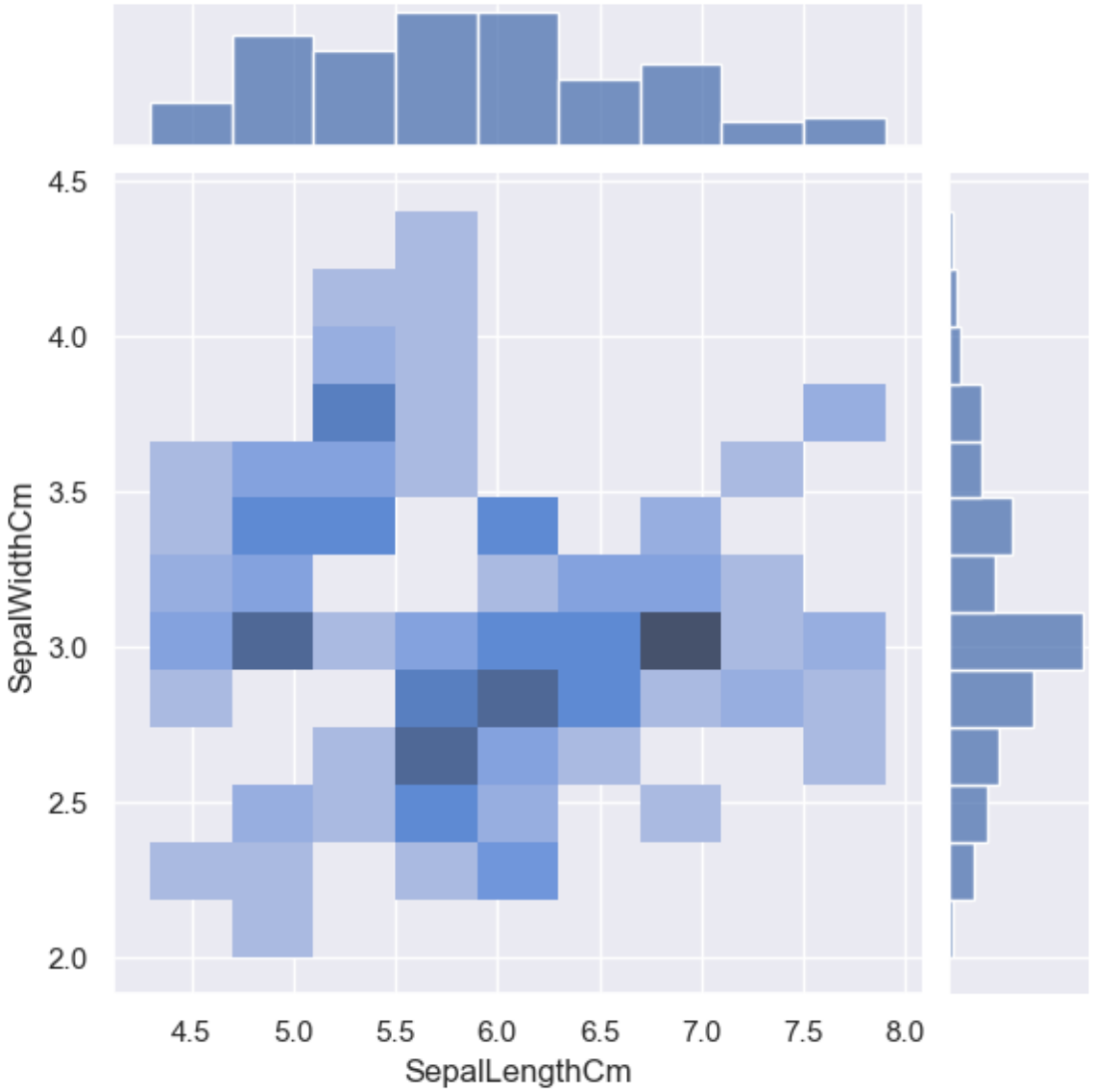
[21]:
```
sns.jointplot(x='SepalLengthCm',y='SepalWidthCm',data=iris, kind='reg')
#kind : { "scatter" | "kde" | "hist" | "hex" | "reg" | "resid" }
```

[21]: <seaborn.axisgrid.JointGrid at 0x29e1312de40>



[22]:
```
sns.jointplot(x='SepalLengthCm',y='SepalWidthCm',data=iris, kind='hist')
```

[22]:
```
<seaborn.axisgrid.JointGrid at 0x29e13b357e0>
```



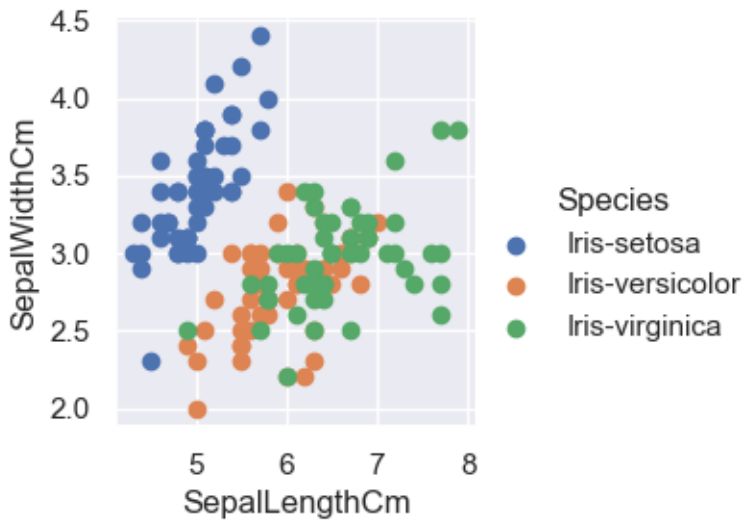
0.0.2 Facegrid Plot

[25]:
```
iris.columns
```

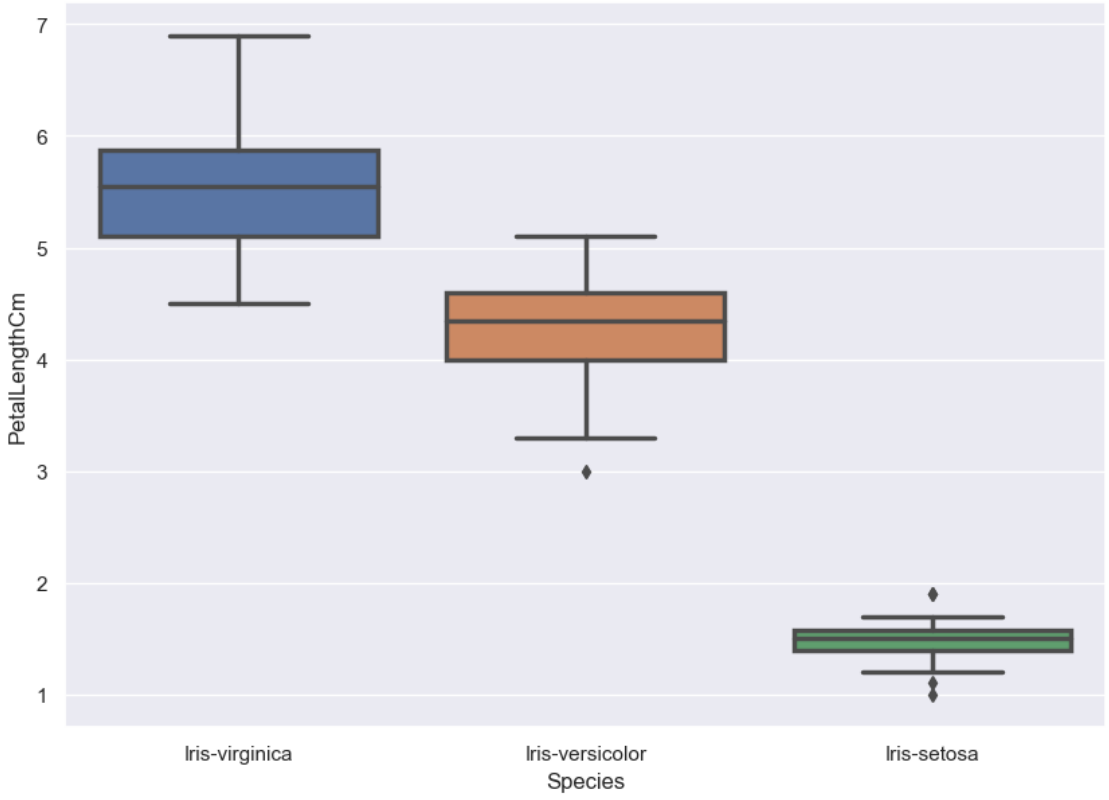
[25]:
```
Index(['SepalLengthCm', 'SepalWidthCm', 'PetalLengthCm', 'PetalWidthCm',
       'Species'],
      dtype='object')
```

[26]:
```
sns.FacetGrid(iris,hue= 'Species').map(plt.
↪scatter,'SepalLengthCm','SepalWidthCm').add_legend()
```

[26]:
```
<seaborn.axisgrid.FacetGrid at 0x29e1305bd00>
```

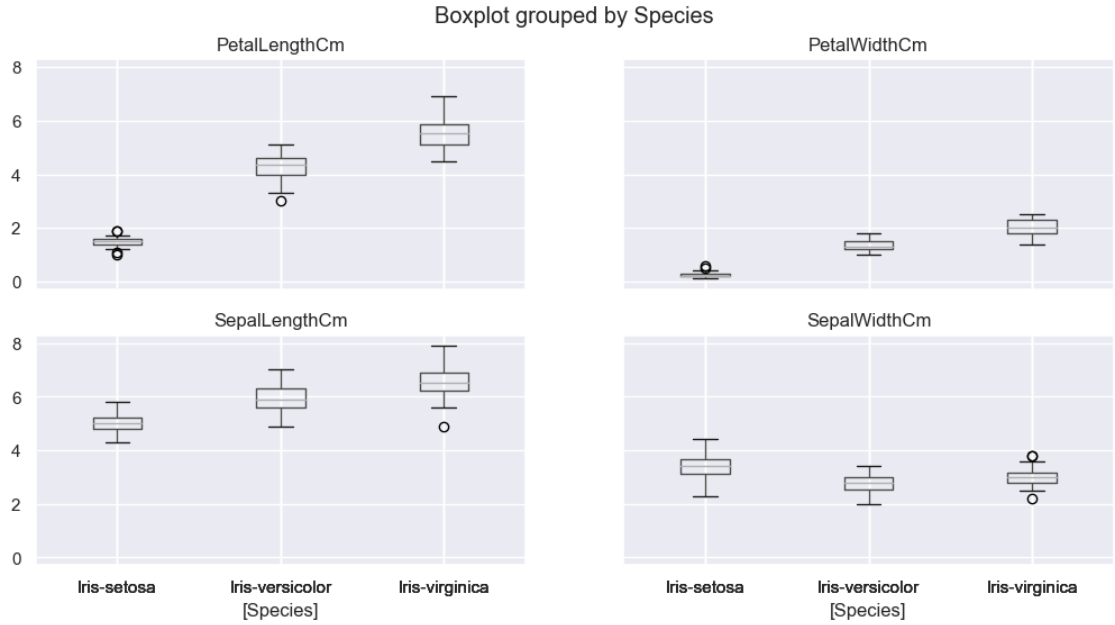


[27]:
```
fig=plt.gcf()
fig.set_size_inches(10,7)
fig=sns.
 ↪boxplot(x='Species',y='PetalLengthCm',data=iris,order=['Iris-virginica','Iris-versicolor','
 ↪5,orient='v',dodge=False)
```



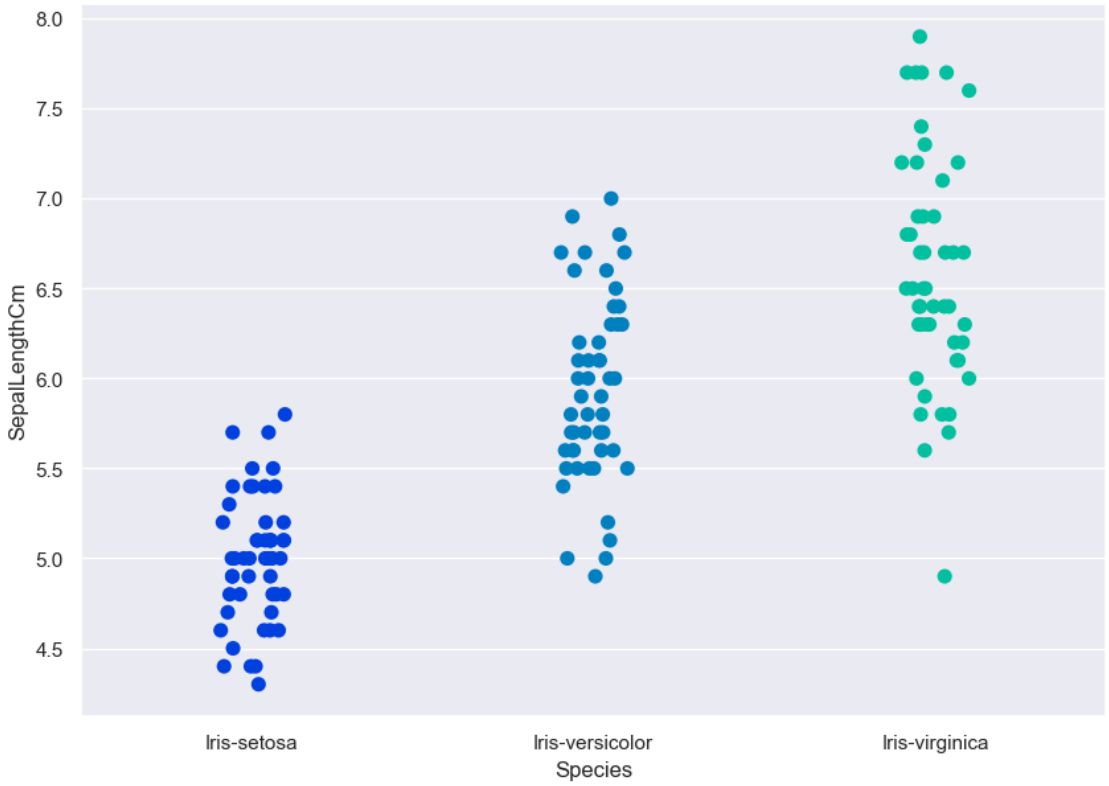
[28]:
```
iris.boxplot(by="Species", figsize=(12, 6))
```

[28]:
```
array([[<Axes: title={'center': 'PetalLengthCm'}, xlabel='[Species]'>,
        <Axes: title={'center': 'PetalWidthCm'}, xlabel='[Species]'>],
       [<Axes: title={'center': 'SepalLengthCm'}, xlabel='[Species]'>,
        <Axes: title={'center': 'SepalWidthCm'}, xlabel='[Species]'>]],
      dtype=object)
```



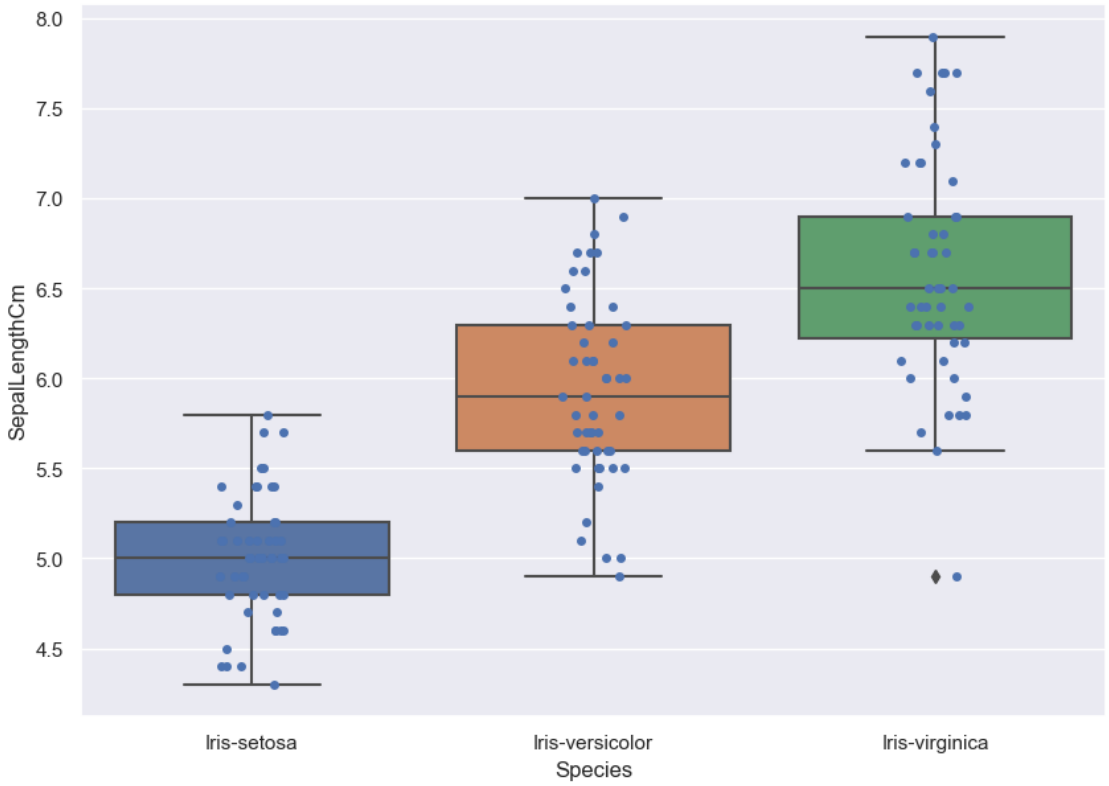
0.1 Strip Plot

[29]:
```
fig=plt.gcf()
fig.set_size_inches(10,7)
fig=sns.
 ↪stripplot(x='Species',y='SepalLengthCm',data=iris,jitter=True,edgecolor='gray',size=8,palet
```



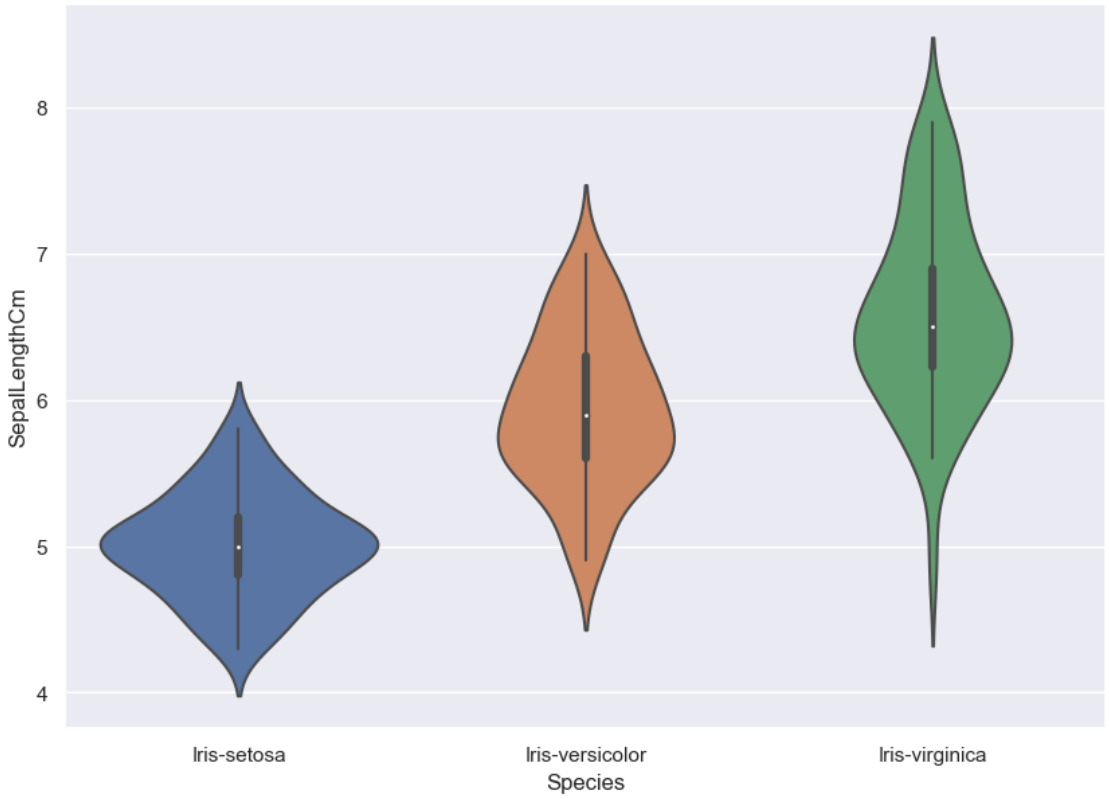
0.1.1 Combining Box and Strip Plots

[30]:
```
fig=plt.gcf()
fig.set_size_inches(10,7)
fig=sns.boxplot(x='Species',y='SepalLengthCm',data=iris)
fig=sns.
  ↪stripplot(x='Species',y='SepalLengthCm',data=iris,jitter=True,edgecolor='gray')
```



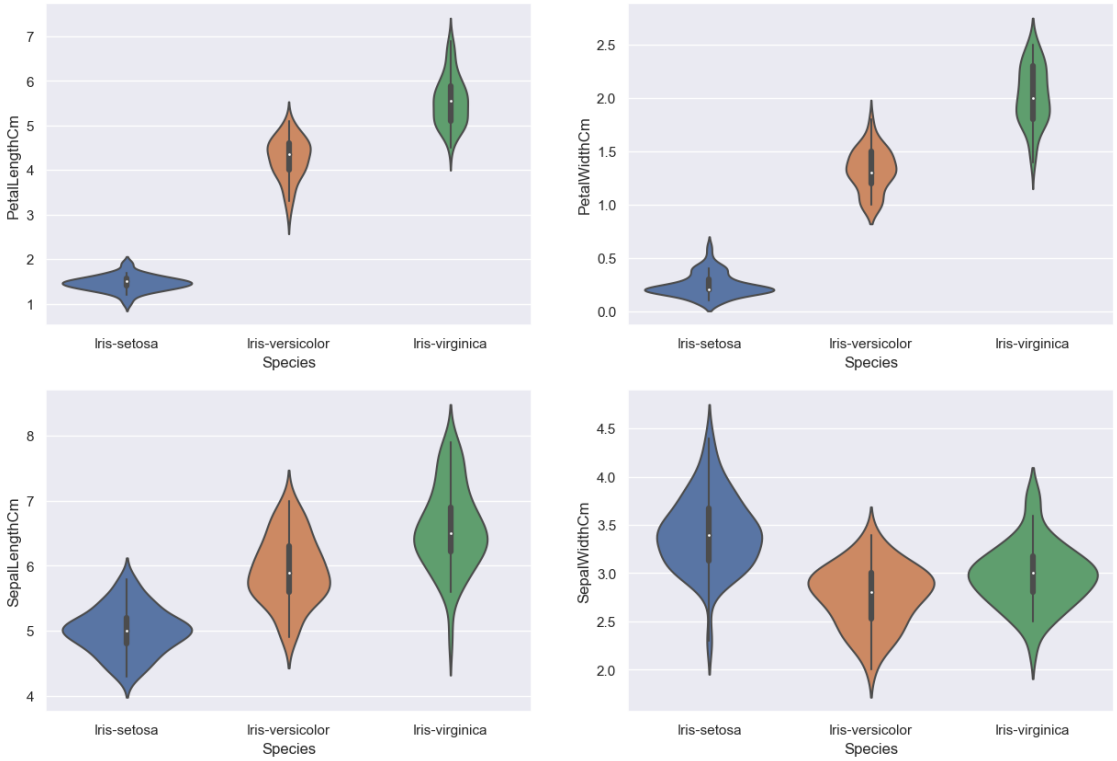
0.2 Violin Plot

[31]:
```
fig=plt.gcf()
fig.set_size_inches(10,7)
fig=sns.violinplot(x='Species',y='SepalLengthCm',data=iris)
```



[32]:
```
plt.figure(figsize=(15,10))
plt.subplot(2,2,1)
sns.violinplot(x='Species',y='PetalLengthCm',data=iris)
plt.subplot(2,2,2)
sns.violinplot(x='Species',y='PetalWidthCm',data=iris)
plt.subplot(2,2,3)
sns.violinplot(x='Species',y='SepalLengthCm',data=iris)
plt.subplot(2,2,4)
sns.violinplot(x='Species',y='SepalWidthCm',data=iris)
```

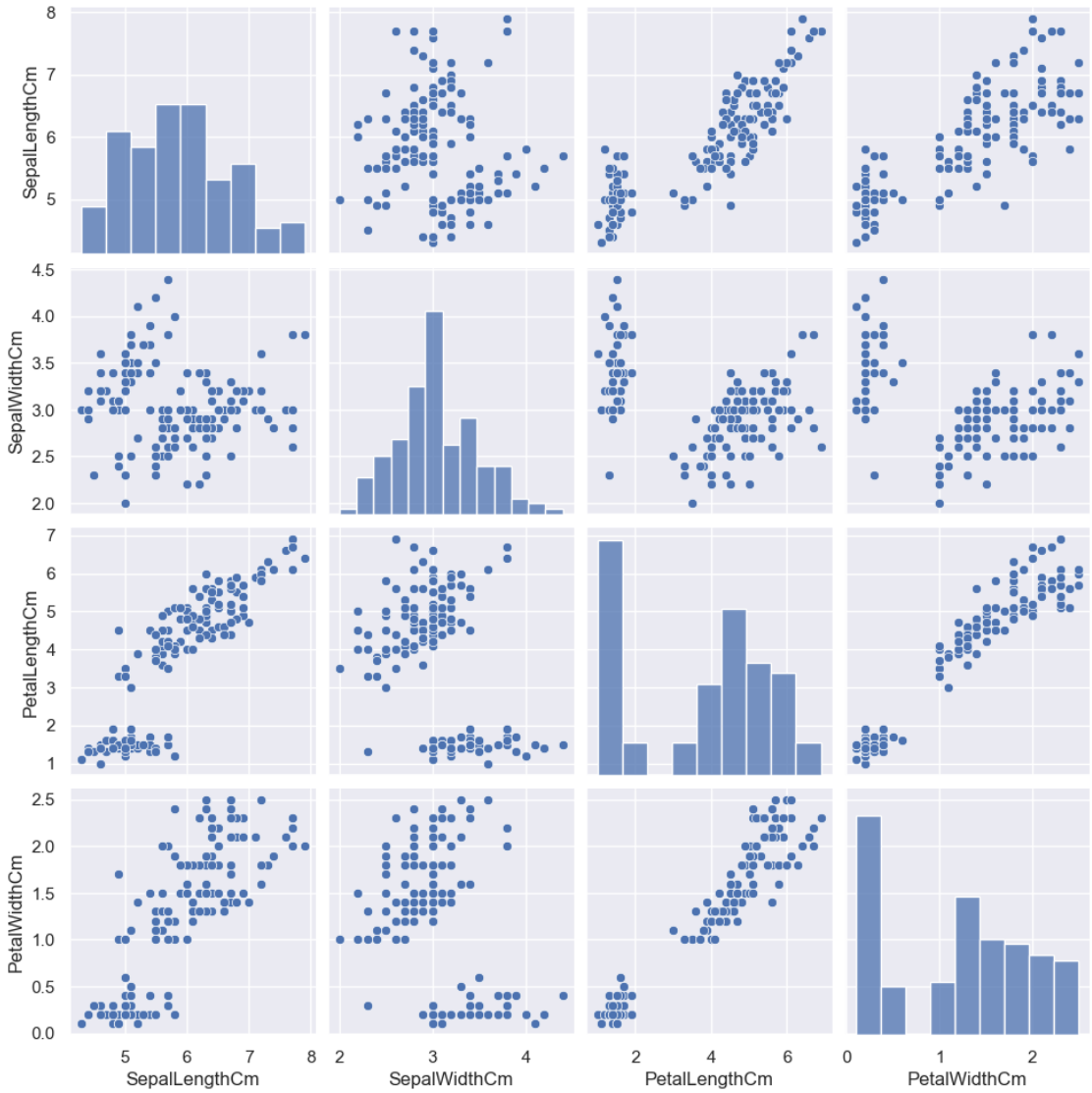
[32]:
```
<Axes: xlabel='Species', ylabel='SepalWidthCm'>
```



0.3 Pair Plot

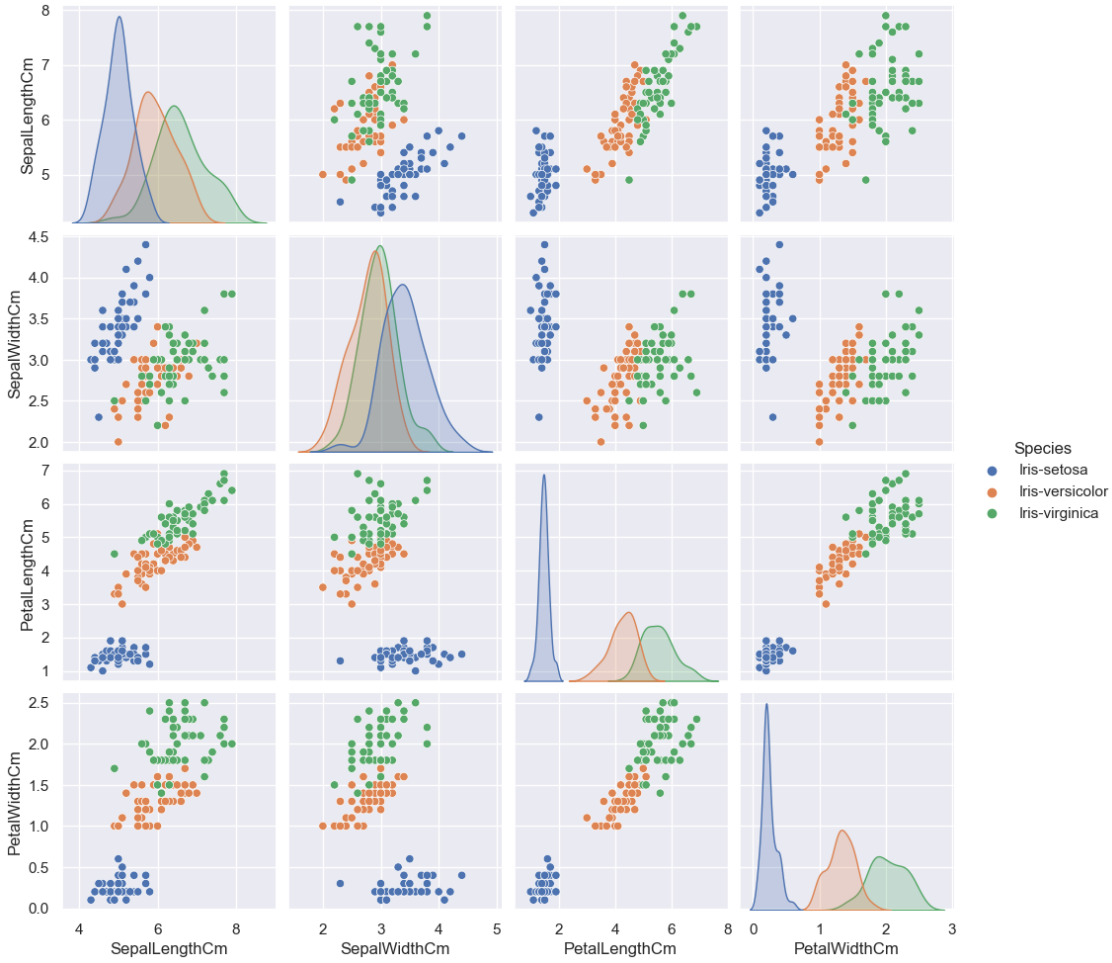
[33]:
```
sns.pairplot(data=iris,kind='scatter')
```

[33]:
```
<seaborn.axisgrid.PairGrid at 0x29e17104d90>
```



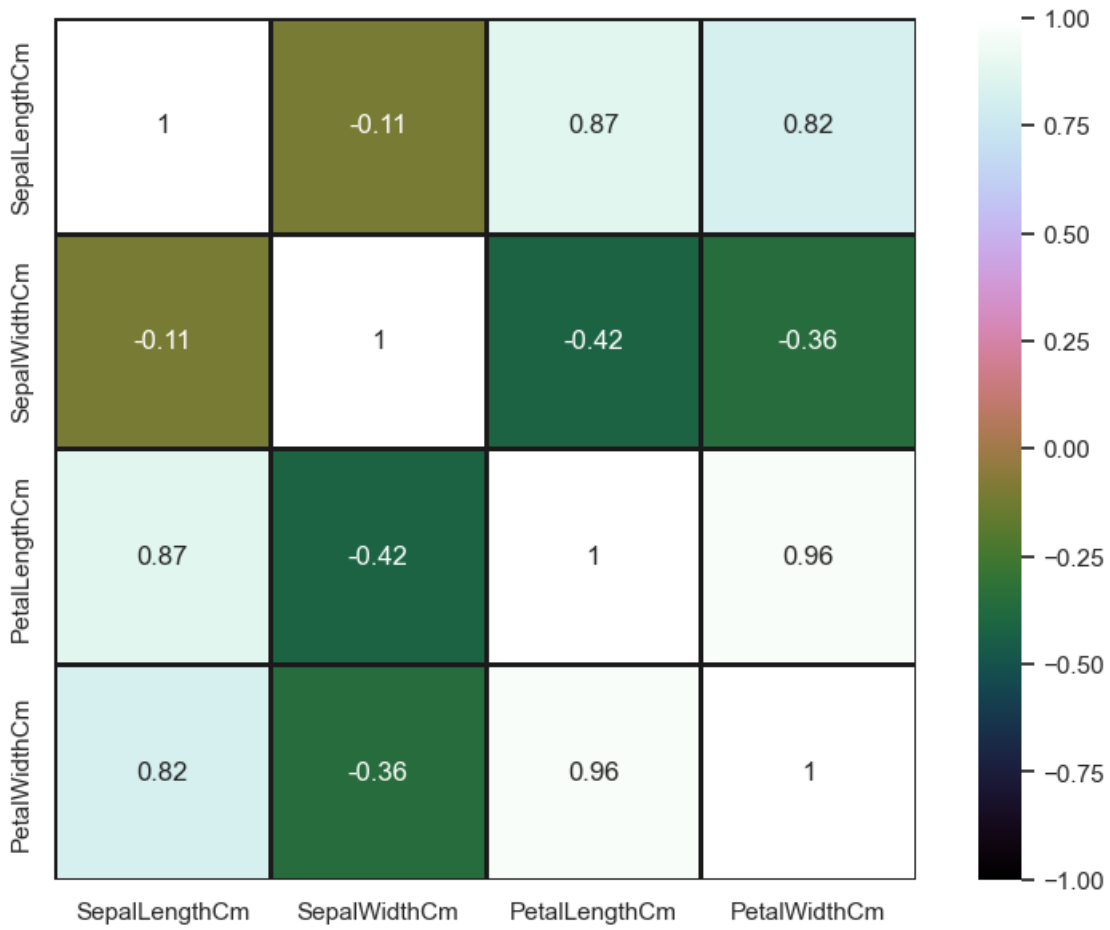
[34]:
```
sns.pairplot(iris,hue='Species')
```

[34]: <seaborn.axisgrid.PairGrid at 0x29e17d68af0>



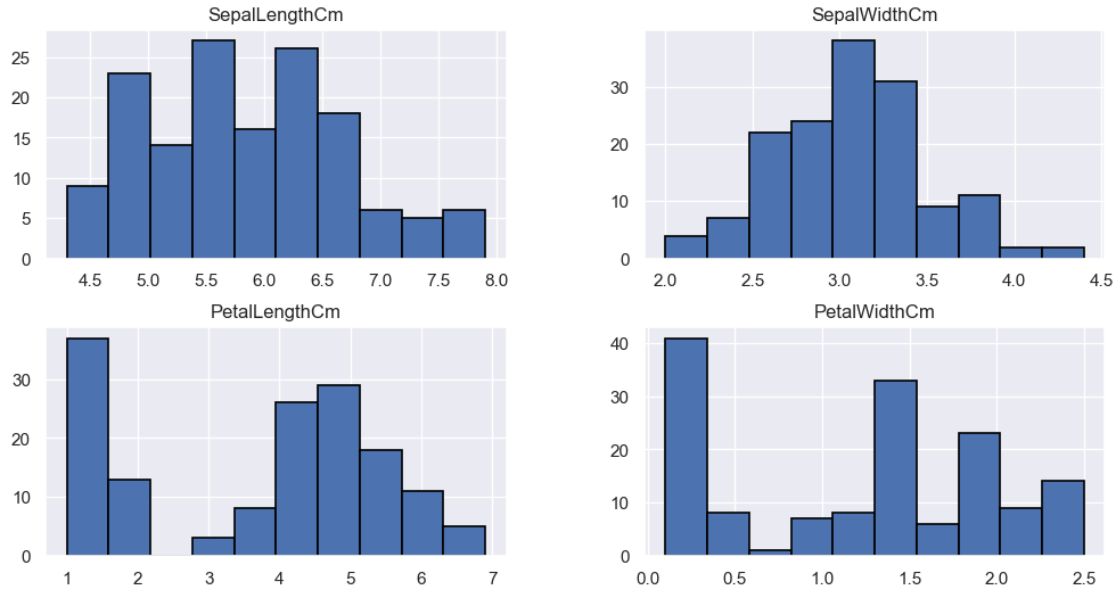
0.3.1 Heat map

[35]:
```
fig=plt.gcf()
fig.set_size_inches(10,7)
fig=sns.heatmap(iris.
 ↪corr(),annot=True,cmap='cubehelix',linewidths=1,linecolor='k',square=True,mask=False,␣
 ↪vmin=-1, vmax=1,cbar_kws={"orientation": "vertical"},cbar=True)
```



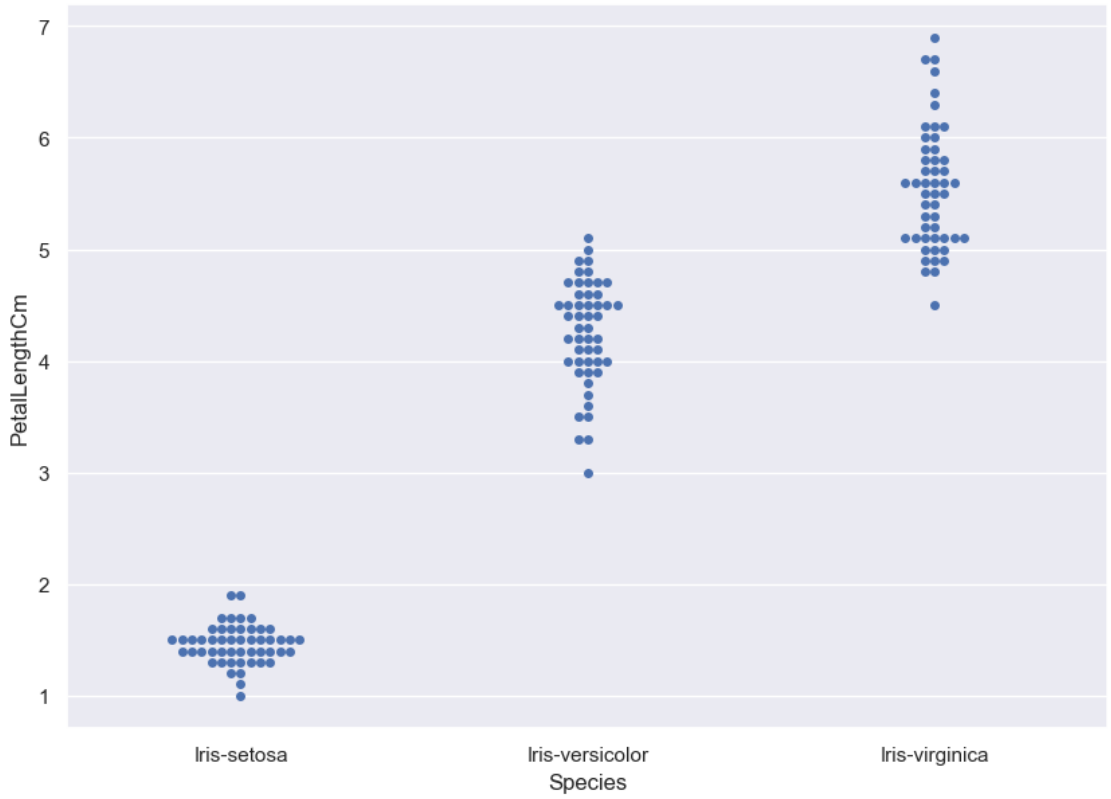
0.4 Distribution plot:

[36]:
```
iris.hist(edgecolor='black', linewidth=1.2)
fig=plt.gcf()
fig.set_size_inches(12,6)
```

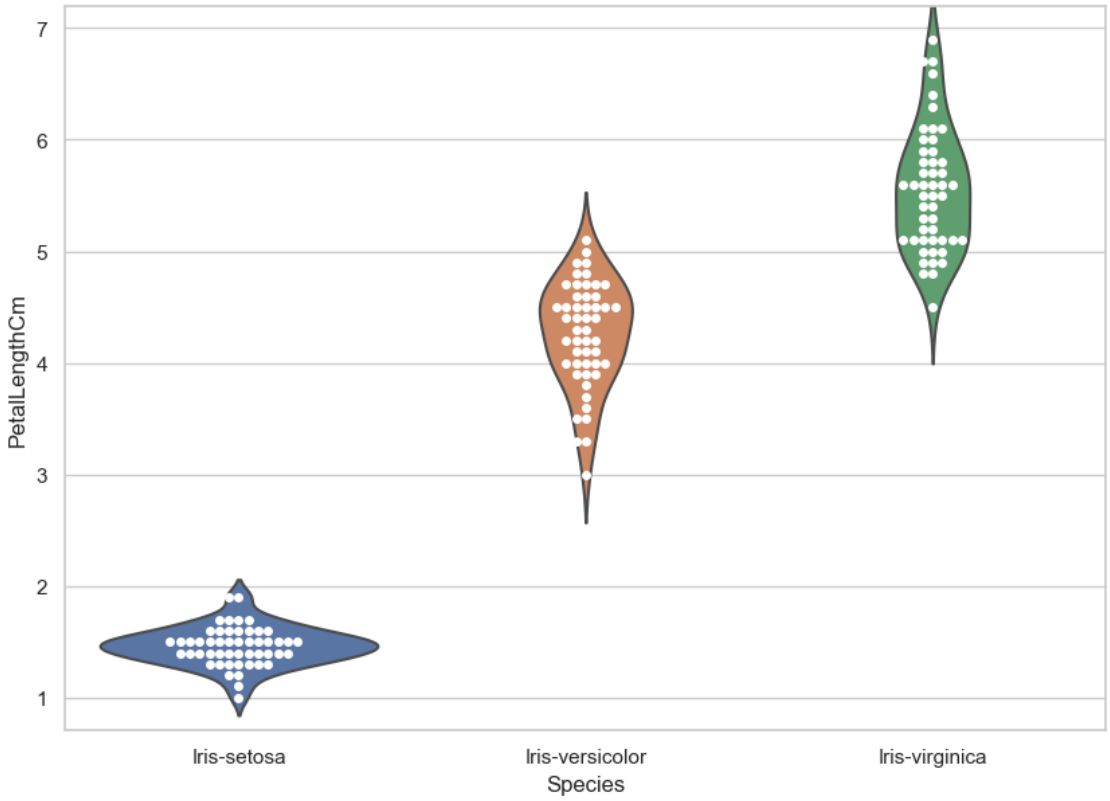


0.5 Swarm plot

[37]:
```
sns.set(style="darkgrid")
fig=plt.gcf()
fig.set_size_inches(10,7)
fig = sns.swarmplot(x="Species", y="PetalLengthCm", data=iris)
```

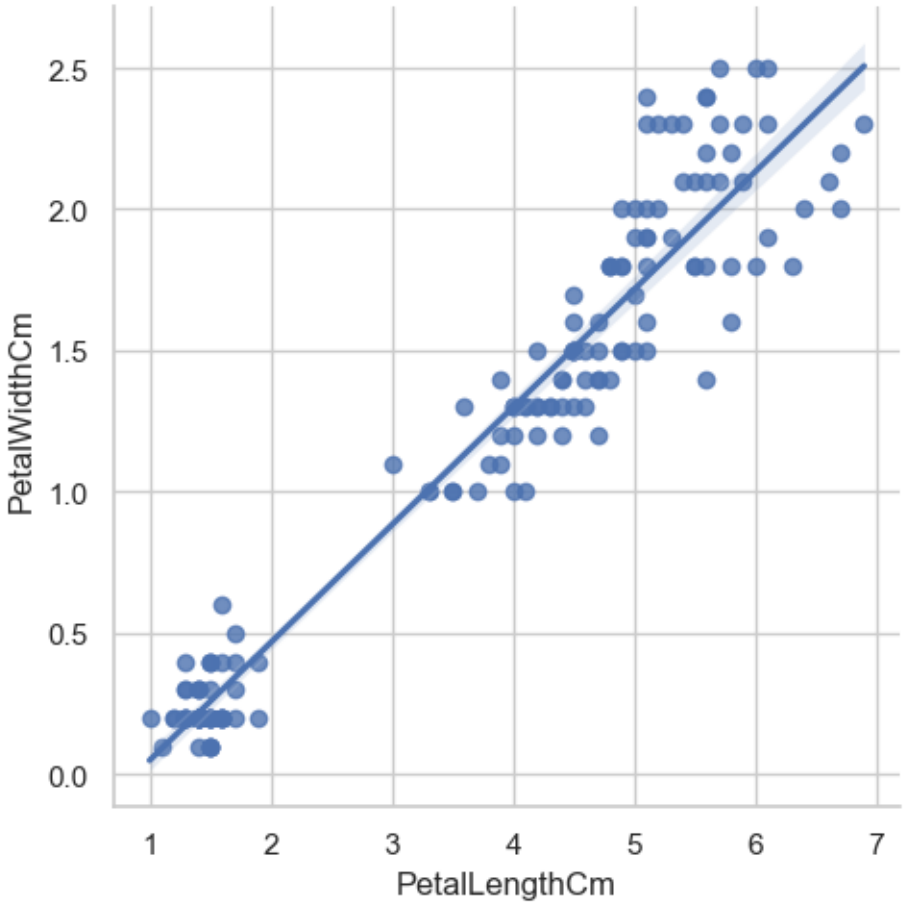


[38]:
```
sns.set(style="whitegrid")
fig=plt.gcf()
fig.set_size_inches(10,7)
ax = sns.violinplot(x="Species", y="PetalLengthCm", data=iris, inner=None)
ax = sns.swarmplot(x="Species", y="PetalLengthCm", data=iris,color="white",␣
↪edgecolor="black")
```



0.6 LM Plot

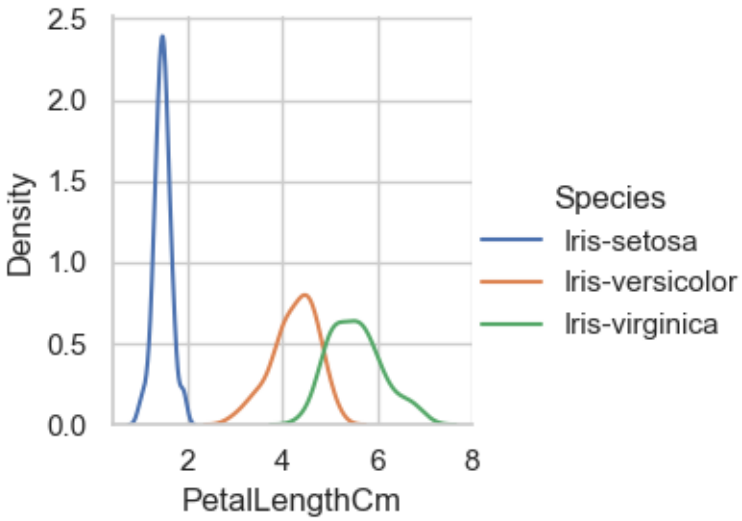
[39]:
```
fig=sns.lmplot(x="PetalLengthCm", y="PetalWidthCm",data=iris)
```



0.7 Facegrid

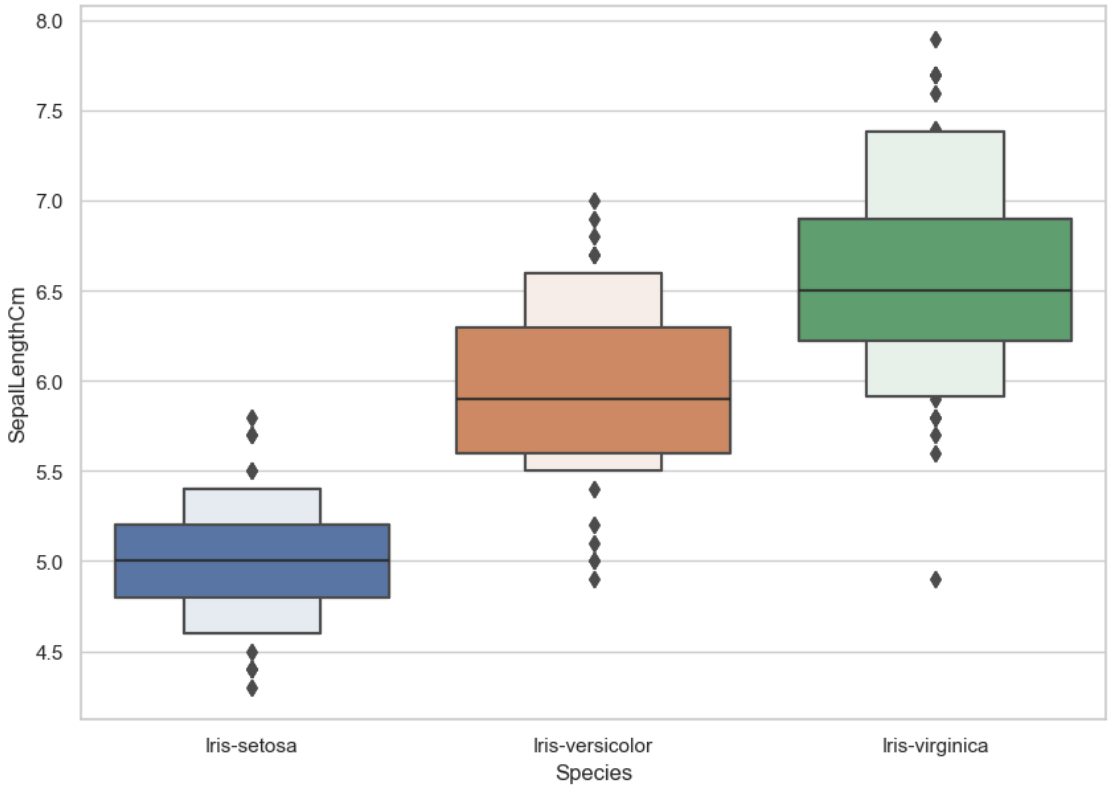
[41]:
```
sns.FacetGrid(iris, hue="Species").map(sns.kdeplot, "PetalLengthCm").
↪add_legend()
plt.ioff()
```

[41]:
```
<contextlib.ExitStack at 0x29e17aaaa70>
```



0.8 Boxen Plot

[46]:
```
fig=plt.gcf()
fig.set_size_inches(10,7)
fig=sns.boxenplot(x='Species',y='SepalLengthCm',data=iris)
plt.show()
```



0.9 Area Plot:

[53]:
```
iris.plot.
  ↪area(y=['SepalLengthCm','SepalWidthCm','PetalLengthCm','PetalWidthCm'],alpha=0.
  ↪4,figsize=(12, 6));
plt.show()
```