Untitled16 (4) (4)

September 17, 2024

[ ]:
```
import matplotlib.pyplot as plt
```

[ ]:
```
import seaborn as sns
```

[ ]:
```
iris=sns.load_dataset('iris')
```

[23]:
```
# Get descriptive statistics for each numerical column in the dataset
print(iris.describe())
```

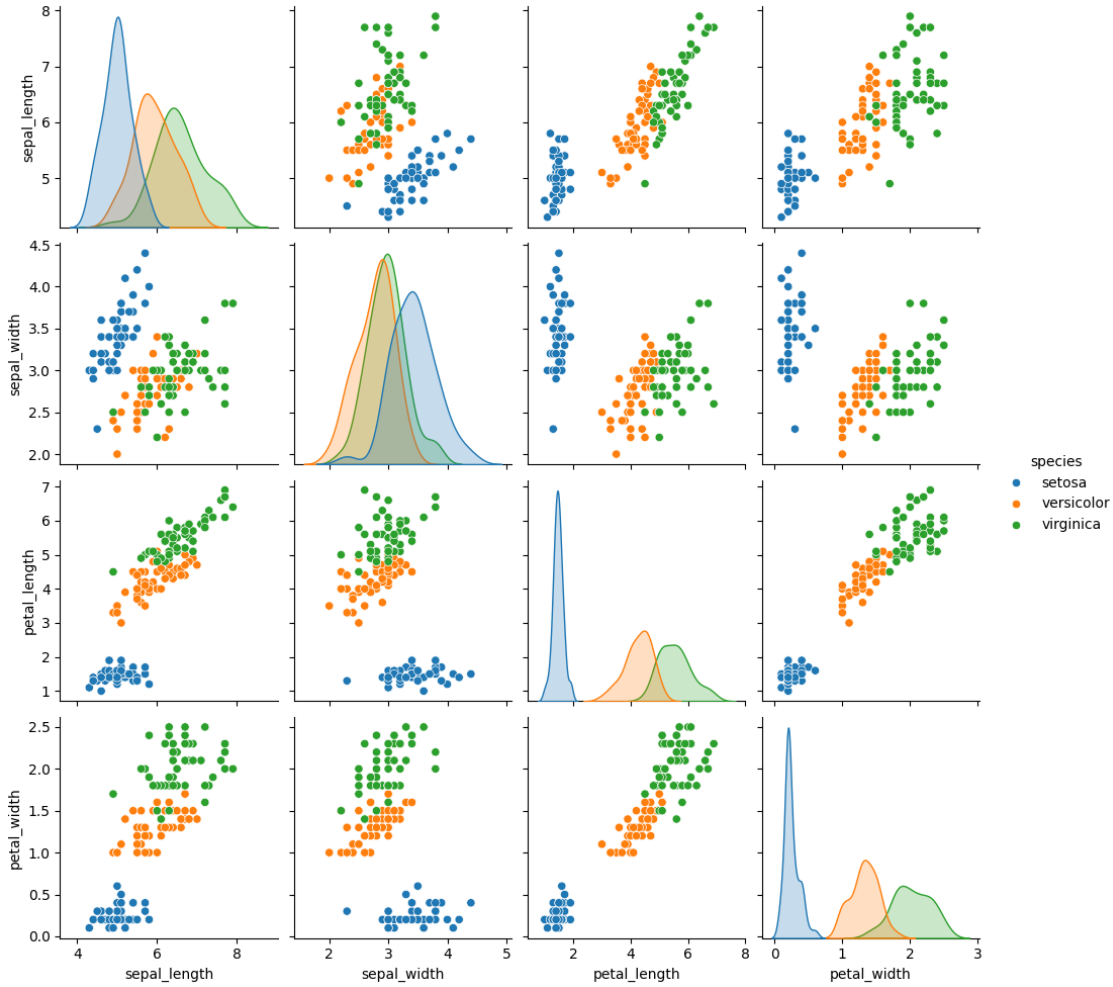
```
       sepal_length  sepal_width  petal_length  petal_width
count    150.000000   150.000000    150.000000   150.000000
mean       5.843333     3.057333      3.758000     1.199333
std        0.828066     0.435866      1.765298     0.762238
min        4.300000     2.000000      1.000000     0.100000
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
```

[24]:
```
#show iris dataset
print(iris)
```

```
     sepal_length  sepal_width  petal_length  petal_width    species
0             5.1          3.5           1.4          0.2     setosa
1             4.9          3.0           1.4          0.2     setosa
2             4.7          3.2           1.3          0.2     setosa
3             4.6          3.1           1.5          0.2     setosa
4             5.0          3.6           1.4          0.2     setosa
..            …            …             …            …        …
145           6.7          3.0           5.2          2.3  virginica
146           6.3          2.5           5.0          1.9  virginica
147           6.5          3.0           5.2          2.0  virginica
148           6.2          3.4           5.4          2.3  virginica
149           5.9          3.0           5.1          1.8  virginica

[150 rows x 5 columns]
```

1.**GENERAL STATISTICS PLOT**

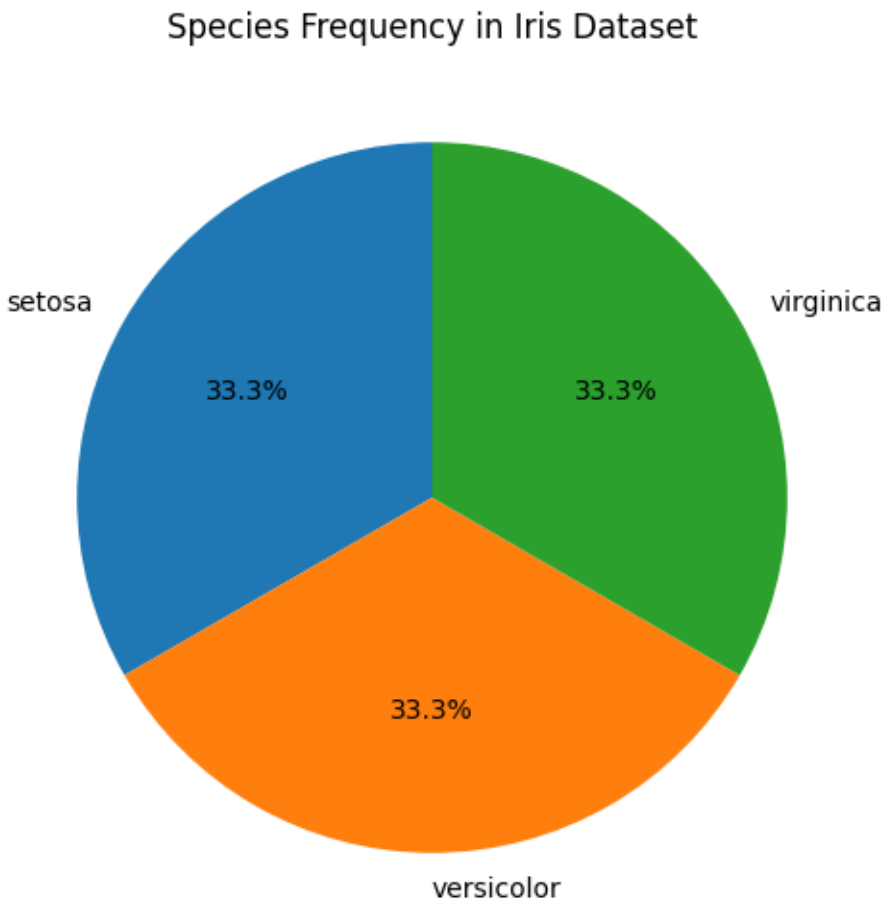
[25]:
```
# Create a pair plot to visualize relationships between features, colored by species
# 'height=2.5' sets the size of each subplot in the pair plot
sns.pairplot(iris, hue='species', height=2.5)

# Display the plot
plt.show()
```



2. **Pie Plot for Species Frequency**:

[26]:
```
species_counts = iris['species'].value_counts()

# Set the size of the pie chart
plt.figure(figsize=(6,6))

# Create the pie chart
```

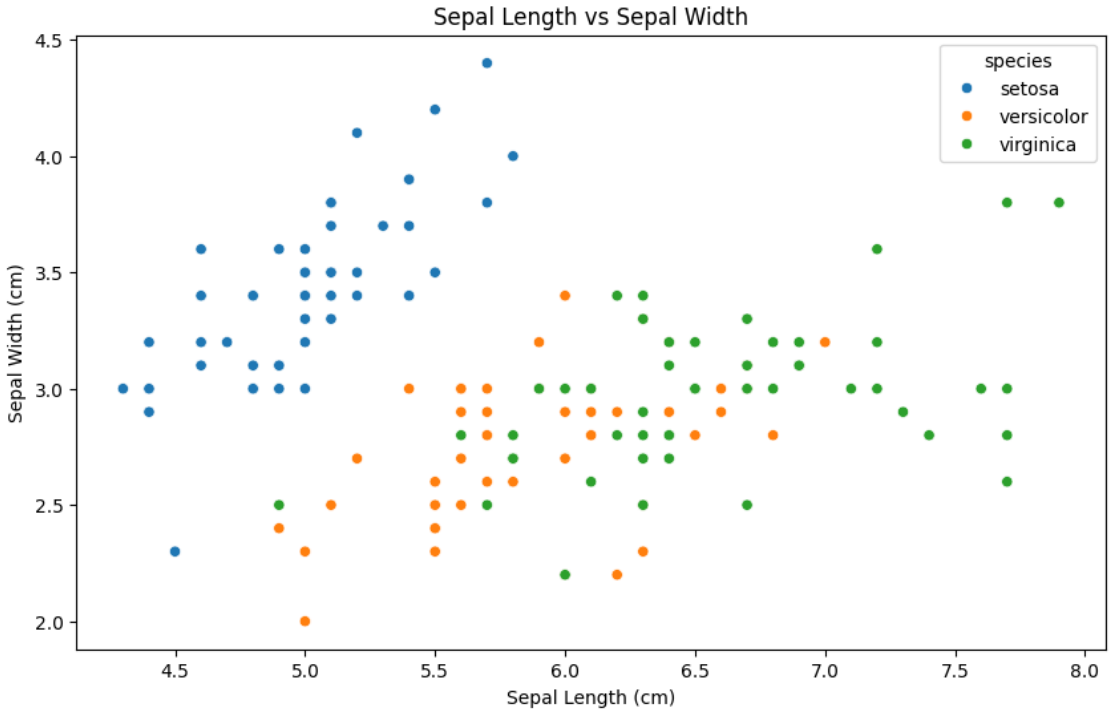
```
plt.pie(species_counts, labels=species_counts.index, autopct='%1.1f%%',␣
 ↪startangle=90)

# Set title of the chart
plt.title('Species Frequency in Iris Dataset')

# Show the pie chart
plt.show()
```



3.**Relationship Between Sepal Length and Width**:

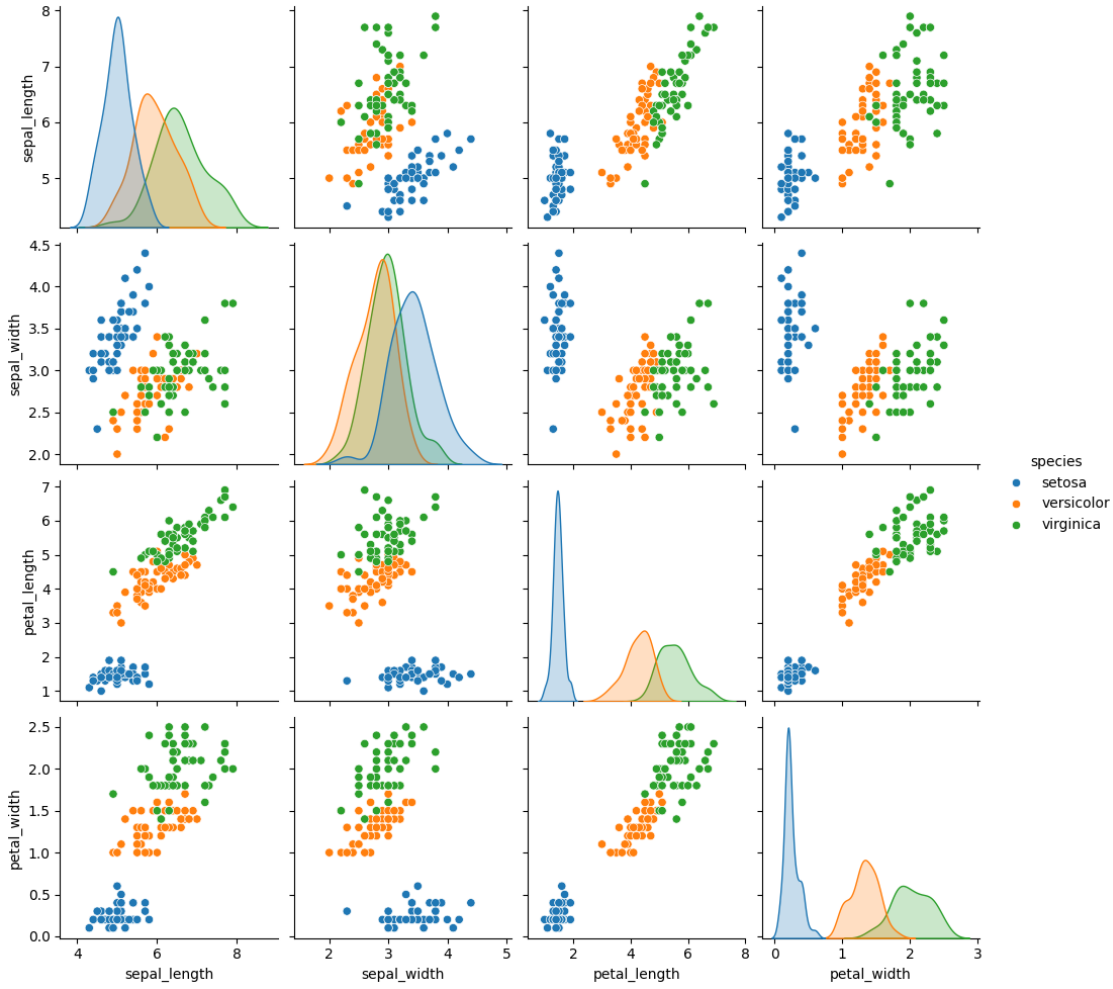
[27]:
```
# Set the size of the plot
plt.figure(figsize=(10, 6))

# Create a scatter plot to show the relationship between sepal length and sepal␣
 ↪width
# Color the points by species
```

```
sns.scatterplot(x='sepal_length', y='sepal_width', hue='species', data=iris)

# Set the title of the plot
plt.title('Sepal Length vs Sepal Width')

# Label the x-axis
plt.xlabel('Sepal Length (cm)')

# Label the y-axis
plt.ylabel('Sepal Width (cm)')

# Show the plot
plt.show()
```



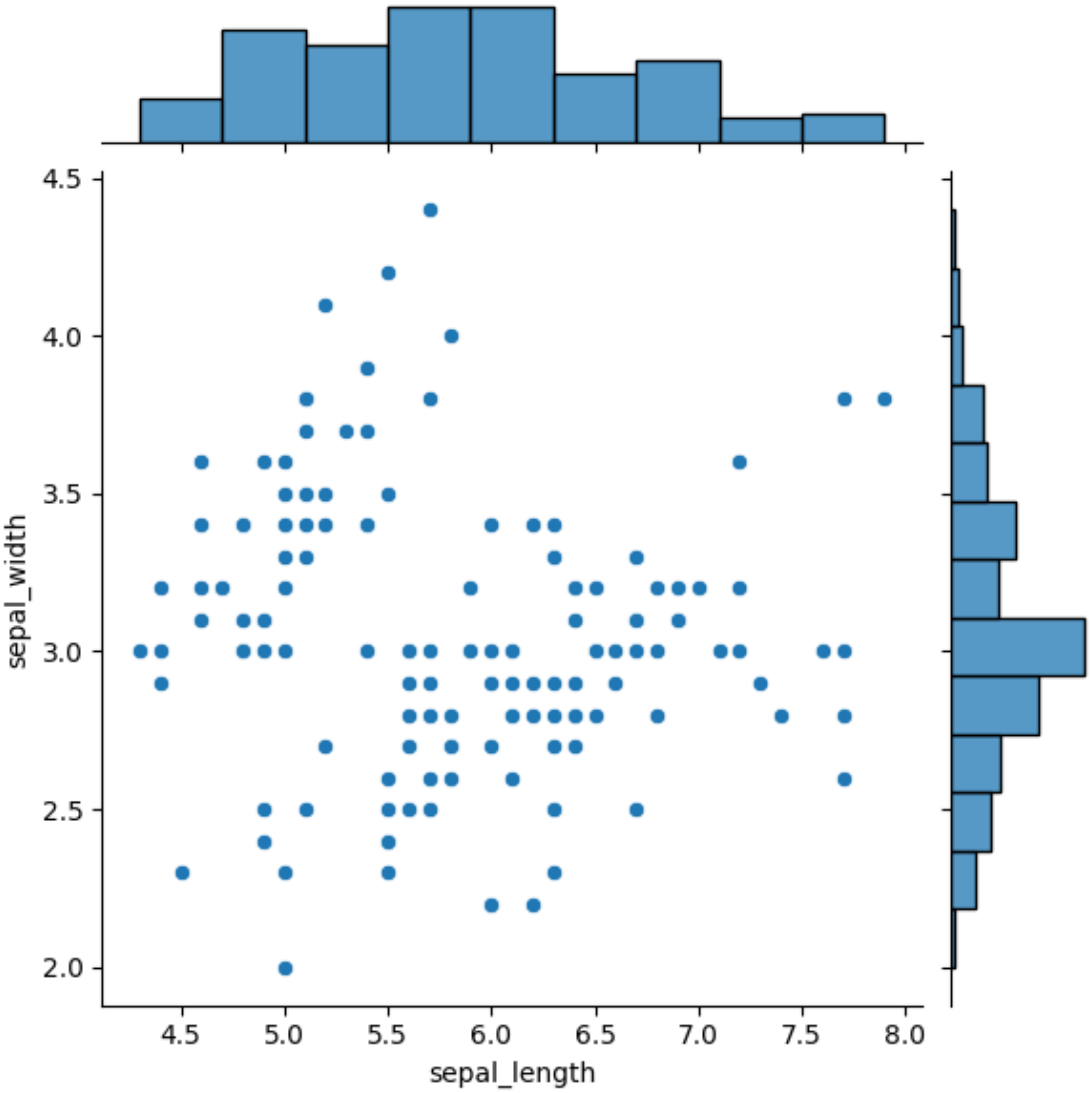
1.**Distribution of Sepal and Petal Features**:

[28]:
```
# Create a pair plot to visualize relationships between features, colored by␣
↪species
# 'height=2.5' sets the size of each subplot in the pair plot
sns.pairplot(iris, hue='species', height=2.5)

# Display the plot
plt.show()
```



2.**Jointplot of Sepal Length vs Sepal Width**:

[30]:
```
# Create a joint plot to show the relationship between sepal length and sepal␣
↪width
sns.jointplot(x='sepal_length', y='sepal_width', data=iris, kind='scatter')

# Display the plot
plt.show()
```

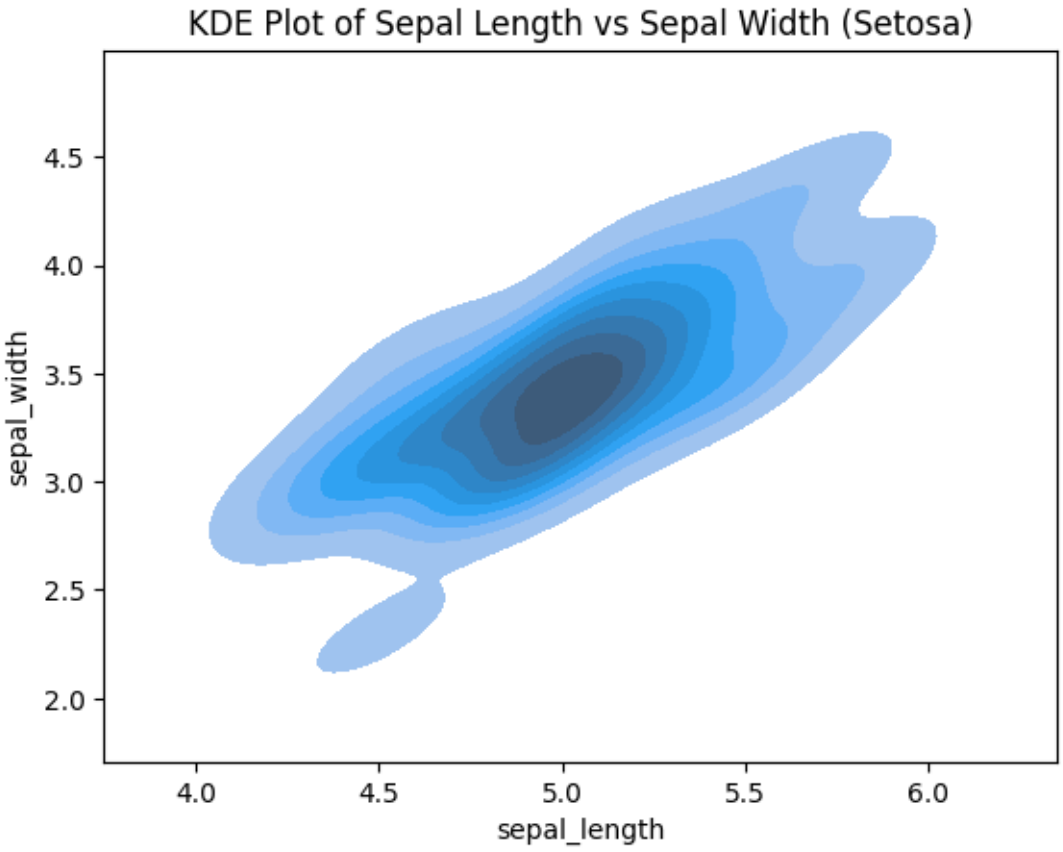


3.. **KDE Plot for Setosa Species (Sepal Length vs Sepal Width):**

[32]:
```
# Filter the data to only include setosa species
setosa = iris[iris['species'] == 'setosa']

# Create a KDE plot to show the distribution of sepal length and sepal width␣
↪for setosa species
# Shade the area under the curve
sns.kdeplot(x='sepal_length', y='sepal_width', data=setosa, shade=True)

# Set the title of the plot
plt.title('KDE Plot of Sepal Length vs Sepal Width (Setosa)')
```

```
# Show the plot
plt.show()
```

```
<ipython-input-32-964664eead66>:6: FutureWarning:

`shade` is now deprecated in favor of `fill`; setting `fill=True`.
This will become an error in seaborn v0.14.0; please update your code.

  sns.kdeplot(x='sepal_length', y='sepal_width', data=setosa, shade=True)
```



4.**KDE Plot for Setosa Species (Petal Length vs Petal Width)**:

[33]:
```
# Make a density plot for petal length and petal width
sns.kdeplot(x='petal_length', y='petal_width', data=setosa, shade=True)

# Add a title to the plot
plt.title('KDE Plot of Petal Length vs Petal Width (Setosa)')

# Show the plot
plt.show()
```

```
<ipython-input-33-731468c6d73a>:2: FutureWarning:

`shade` is now deprecated in favor of `fill`; setting `fill=True`.
This will become an error in seaborn v0.14.0; please update your code.

  sns.kdeplot(x='petal_length', y='petal_width', data=setosa, shade=True)
```