

iris_flower_classification

October 17, 2024

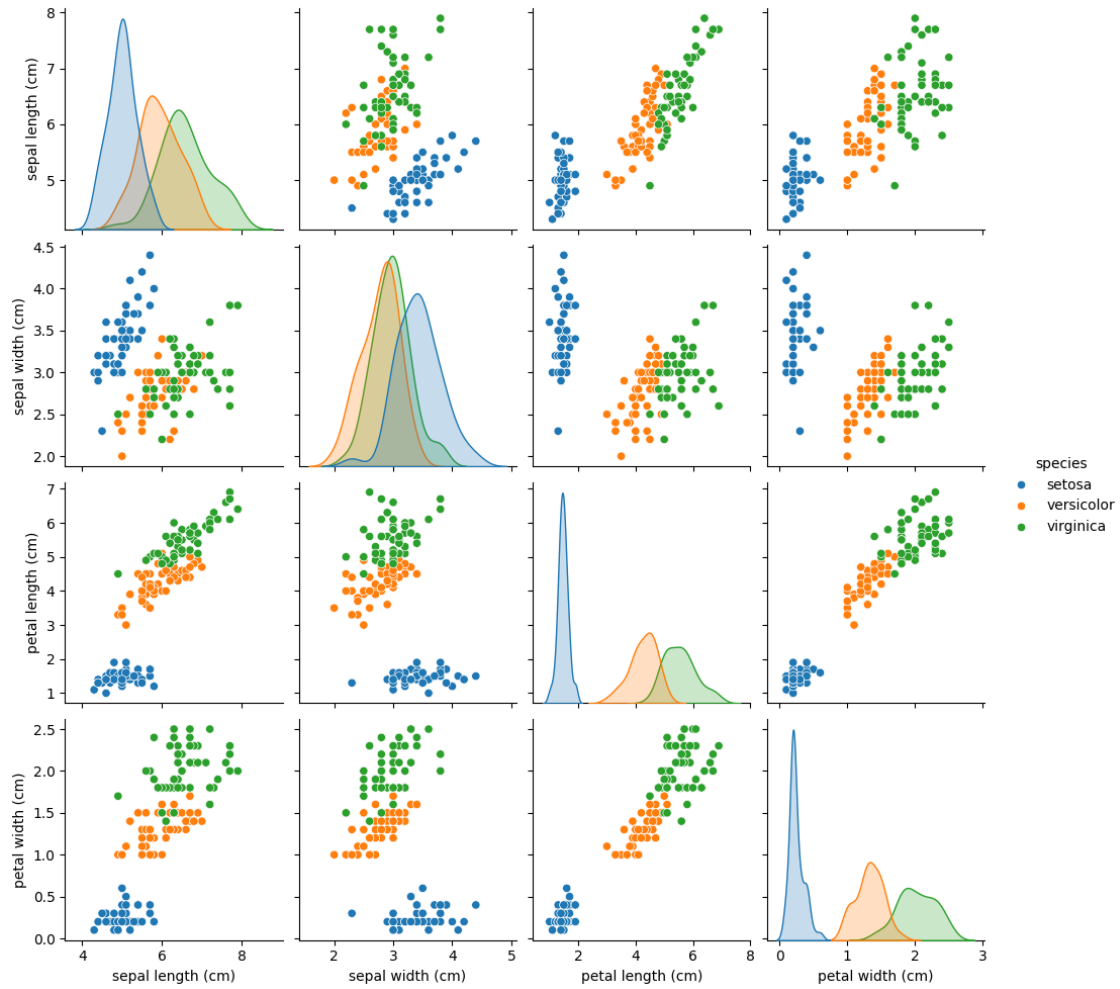
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[1]: import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
from sklearn.datasets import load_iris
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import StandardScaler
from sklearn.ensemble import RandomForestClassifier
from sklearn.metrics import classification_report, confusion_matrix
```

```
[2]: iris = load_iris()
iris_df = pd.DataFrame(data=iris.data, columns=iris.feature_names)
iris_df['species'] = iris.target
iris_df['species'] = iris_df['species'].map({0: 'setosa', 1: 'versicolor', 2: 'virginica'})
```

```
[3]: print(iris_df.head())
sns.pairplot(iris_df, hue='species')
plt.show()
```

| | sepal length (cm) | sepal width (cm) | petal length (cm) | petal width (cm) | \ |
|---|-------------------|------------------|-------------------|------------------|---|
| 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 | |

| | species |
|---|---------|
| 0 | setosa |
| 1 | setosa |
| 2 | setosa |
| 3 | setosa |
| 4 | setosa |



```
[4]: X = iris_df.drop('species', axis=1)
y = iris_df['species']
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2,
↪random_state=42)
scaler = StandardScaler()
X_train = scaler.fit_transform(X_train)
X_test = scaler.transform(X_test)
```

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[5]: model = RandomForestClassifier(n_estimators=100, random_state=42)
model.fit(X_train, y_train)
```

```
[5]: RandomForestClassifier(random_state=42)
```

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[6]: y_pred = model.predict(X_test)
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```
[ ]: print(classification_report(y_test, y_pred))
      conf_matrix = confusion_matrix(y_test, y_pred)
      sns.heatmap(conf_matrix, annot=True, fmt='d', cmap='Blues', xticklabels=iris.
        ↳target_names, yticklabels=iris.target_names)
      plt.ylabel('Actual')
      plt.xlabel('Predicted')
      plt.show()
```