

SVM

```

from sklearn.datasets import load_breast_cancer
import Matplotlib.pyplot as plt
from sklearn.inspection import DecisionBoundaryDisplay
from sklearn.jm import SVC

```

```

cancer = load_breast_cancer()
X = cancer.data[:, :2]
y = cancer.target

```

```

svm = SVC(kernel="rbf", gamma=0.5, C=1.0)
svm.fit(X, y)

```

```

DecisionBoundaryDisplay.from_estimator(
    svm,
    X,
    response_method="predict",
    cmap=plt.cm.spectral,
    alpha=0.8,
    xlabel=cancer.feature_name[0],
    ylabel=cancer.feature_name[1],
)

```

```

plt.scatter(X[:, 0], X[:, 1], c=y, s=20, edgecolor='k')
plt.show()

```

PCA

```

import pandas as pd
import numpy as np
from sklearn.decomposition import PCA
from sklearn.preprocessing import StandardScaler

```

```

data = pd.read_csv("...")

```

```

scaler = StandardScaler()

```

```

scaler.fit(data)

```

```

scaled_data = scaler.transform(data)

```

```

principal = PCA(n_components=3)

```

```

principal.fit(scaled_data)

```

```

X = principal.transform(scaled_data)

```

```

plt.figure(figsize=(10, 10))

```

```

plt.scatter(X[:, 0], X[:, 1], c=data['target'], cmap=plt.cm.spectral)

```

```

plt.xlabel('Pc1')

```

```

plt.ylabel('Pc2')

```

K-means

```
import pandas as pd  
data = pd.read_csv('...')  
data.head()
```

```
import numpy as np  
import seaborn as sns  
from sklearn.datasets import load_iris  
from sklearn.cluster import KMeans
```

```
X, y = load_iris(return_X_y=True)
```

```
kmeans = KMeans(n_clusters=3, random_state=2)
```

```
kmeans.fit(X)
```

```
pred = kmeans.fit_predict(X)
```

```
pred
```

N
30/5/24