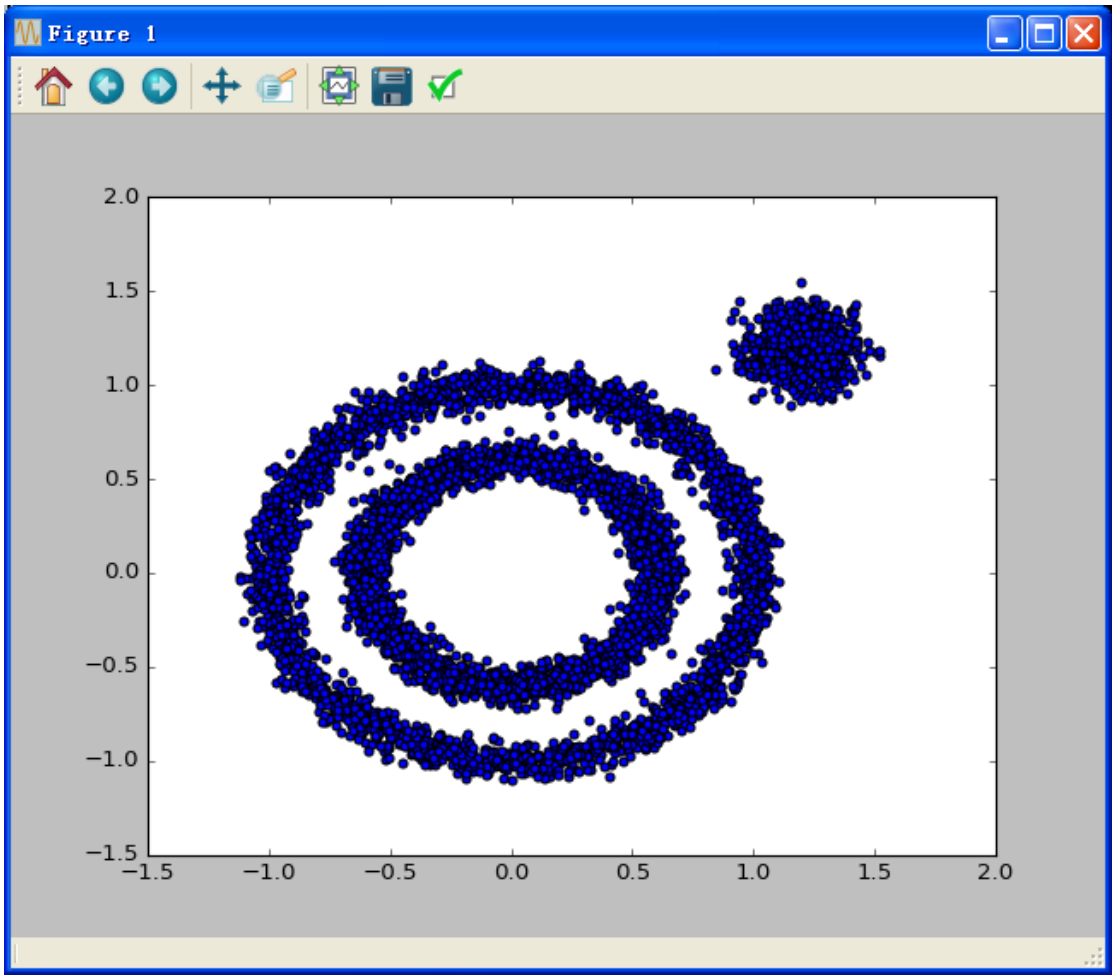
```
# DBSCAN 示例

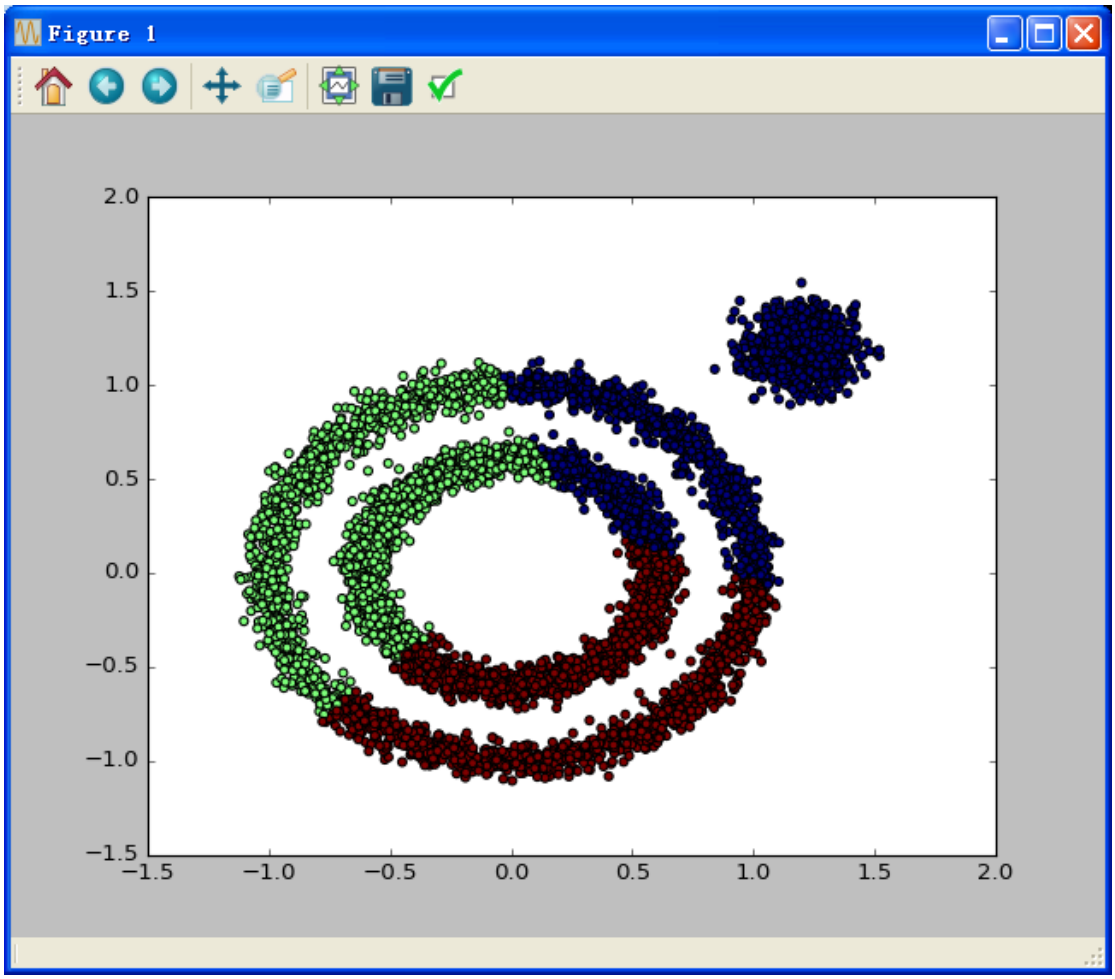
from sklearn.cluster import DBSCAN
from sklearn.cluster import KMeans
from sklearn.datasets import make_circles
from sklearn.datasets import make_blobs

# 生成 3 簇数据
# 两组圆形数据
X1, y1 = make_circles(n_samples=5000, factor=.6, noise=.05)
# 一组 blob 数据
X2, y2 = make_blobs(n_samples=1000,
                    n_features=2,
                    centers=[[1.2,1.2]],
                    cluster_std=[[.1]],
                    random_state=9)
# 按行合并
X = np.concatenate((X1,X2))

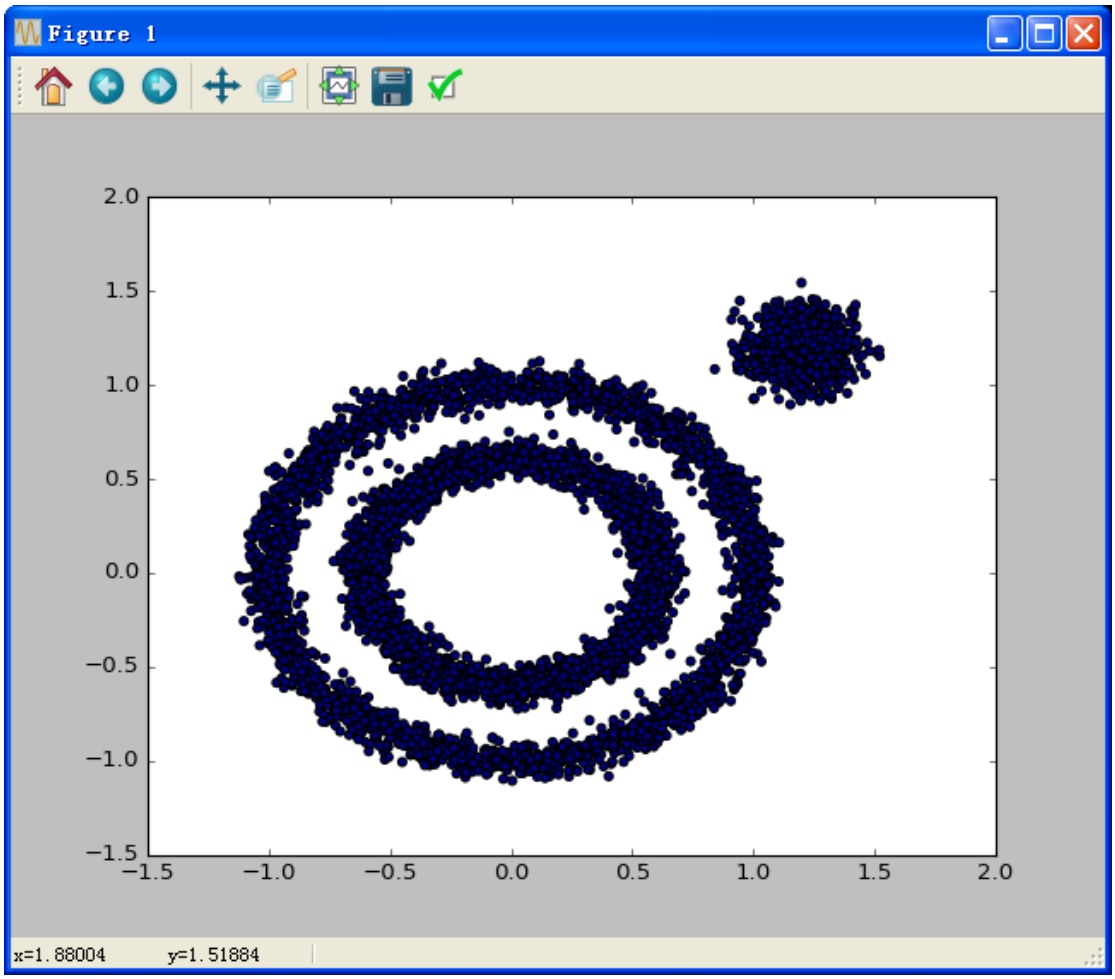
# 看看数据分布
plt.scatter(X[:,0], X[:,1], marker='o')
plt.show()
```



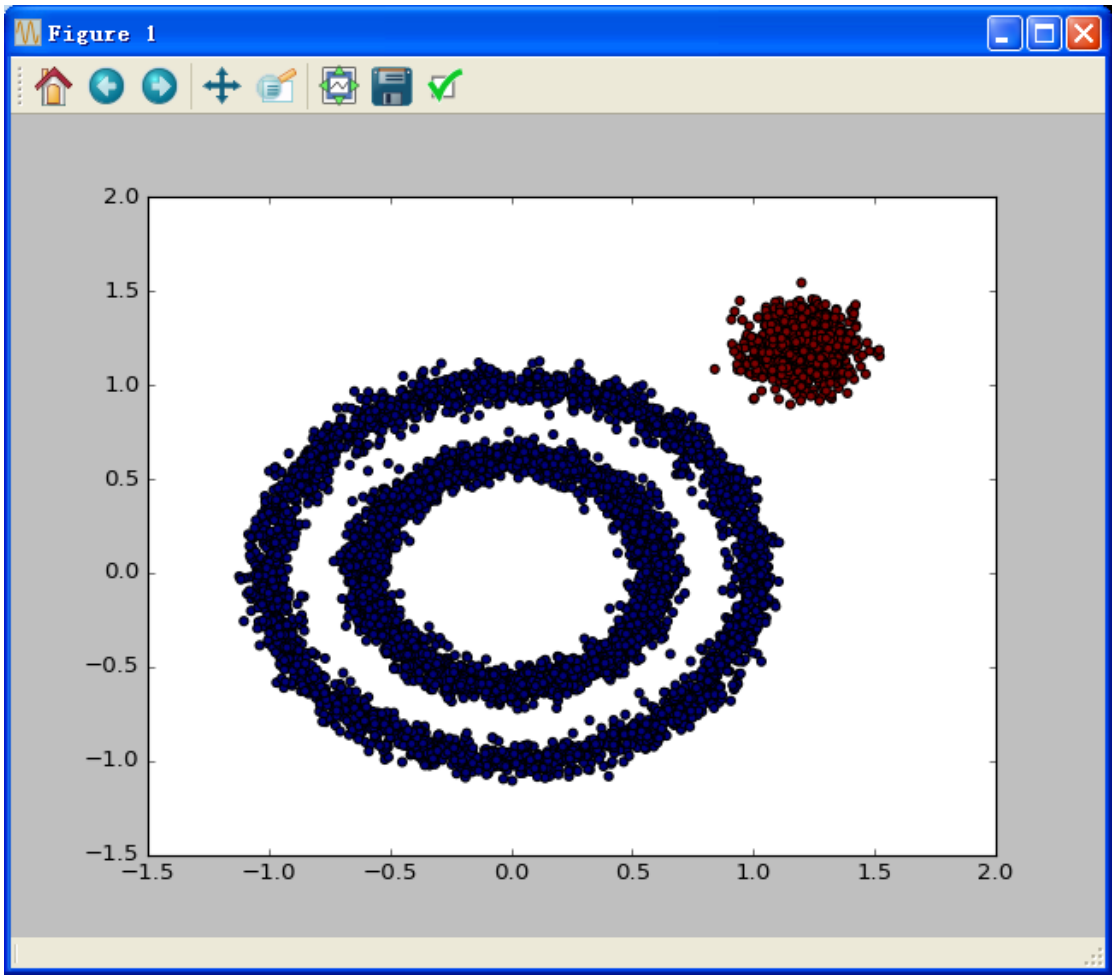

```
# 用 KMeans 的效果不佳
y_pred = KMeans(n_clusters=3,random_state=9).fit_predict(X)
plt.scatter(X[:,0], X[:,1], c=y_pred)
plt.show()
```




```
# 用 DBSCAN 不调参数,结果构成了一个聚簇
y_pred = DBSCAN().fit_predict(X)
plt.scatter(X[:,0], X[:,1], c=y_pred)
plt.show()
```




```
# 减小 eps 可增加类别数
y_pred = DBSCAN(eps=0.1).fit_predict(X)
plt.scatter(X[:, 0], X[:, 1], c=y_pred)
plt.show()
```

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# 增加min_samples
y_pred = DBSCAN(eps = 0.1, min_samples = 10).fit_predict(X)
plt.scatter(X[:, 0], X[:, 1], c=y_pred)
plt.show()
```

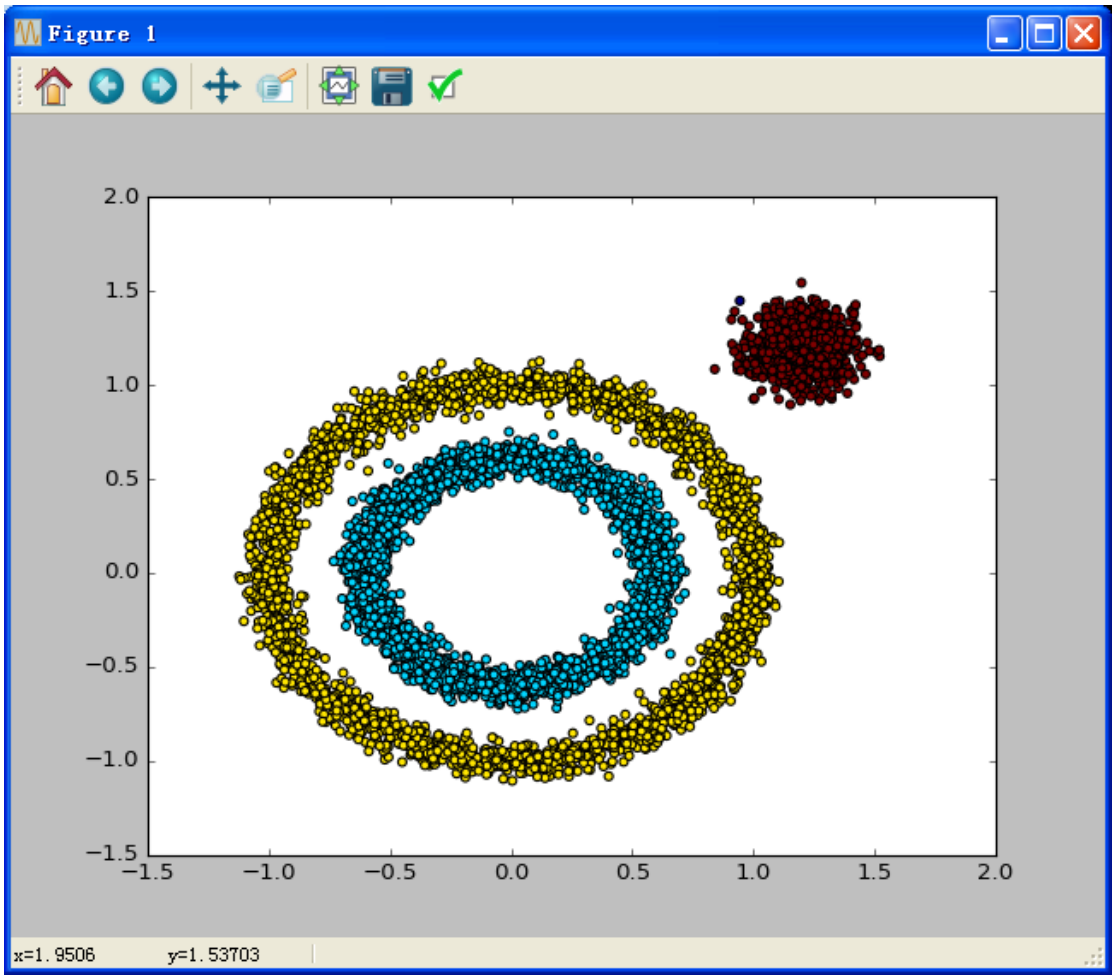
Figure 1
2.0
1.5
1.0
0.5
0.0
−0.5
−1.0
−1.5
−1.5
−1.0
−0.5
0.0
0.5
1.0
1.5
2.0
x=1.9506
y=1.53703