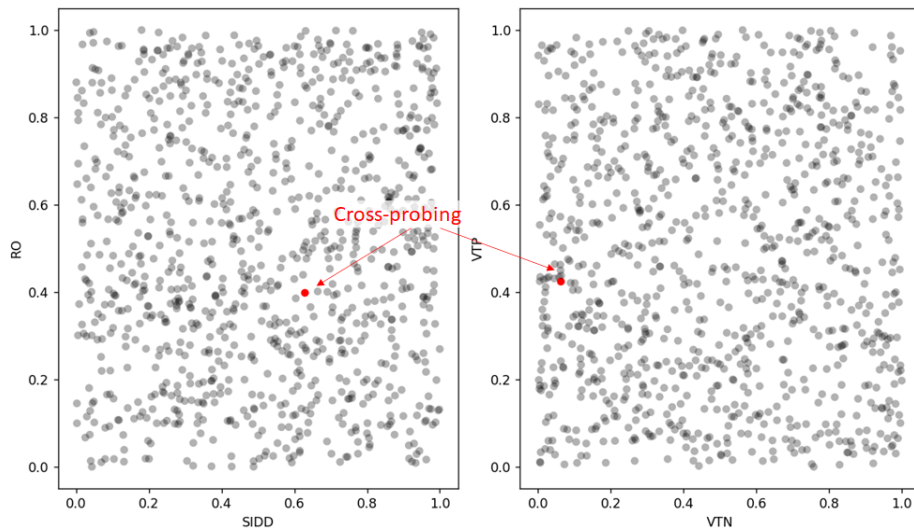


# Interactive GUI with IPyimpl

透過第三方的 ipyimpl 套件, 我們可以將原本以 matplotlib 開發的互動式 GUI 直接搬到以 web browser 開發平台為基礎的環境(例如 Jupyter or Colab).

下面範例示範選擇左邊(例如 RO, SIDD)或右邊(例如 VTN, VTP)視窗的點, 可以在另一視窗反應相關的特徵數值.



Open Google Colab

```
!pip install ipyimpl
```

Enable 3rd-party widget

```
from google.colab import output  
output.enable_custom_widget_manager()
```

Cross probing demo

只要在原始 matplotlib 的程式碼增加下列開頭

```
%matplotlib ipyimpl
```

```
%matplotlib ipyimpl  
import pandas as pd  
import numpy as np  
import matplotlib.pyplot as plt
```

```

from matplotlib.widgets import Cursor

# 產生假設的資料
np.random.seed(0)
data = np.random.rand(1000, 4)
df = pd.DataFrame(data, columns=['SIDD', 'RO', 'VTN', 'VTP'])

fig = plt.figure(figsize=(10,6))
ax1 = plt.subplot(121)
sc1 = ax1.scatter(df['SIDD'], df['RO'], picker=2, color=[(0,0,0,0.3)]*len(df),
edgecolors='none')
ax1.set_xlabel('SIDD')
ax1.set_ylabel('RO')
ax2 = plt.subplot(122)
sc2 = ax2.scatter(df['VTN'], df['VTP'], picker=2, color=[(0,0,0,0.3)]*len(df),
edgecolors='none')
ax2.set_xlabel('VTN')
ax2.set_ylabel('VTP')
plt.tight_layout(rect=(0,0,1,0.98))

#cursor2 = Cursor(ax1, horizOn=True, vertOn=True, useblit=True, color='r',
linewidth=1, alpha=0.5)
#cursor1 = Cursor(ax2, horizOn=True, vertOn=True, useblit=True, color='r',
linewidth=1, alpha=0.5)
def on_pick(event):
    ind = event.ind
    print(f'==>{ind}')
    sc1._facecolors[:,:] = (0,0,0,0.3)
    sc2._facecolors[:,:] = (0,0,0,0.3)
    sc1._facecolors[event.ind,:] = (1, 0, 0, 1)
    sc2._facecolors[event.ind,:] = (1, 0, 0, 1)
    fig.canvas.draw()

# 添加事件處理器
plt.gcf().canvas.mpl_connect('pick_event', on_pick)

Disable 3rd-party widget

from google.colab import output
output.disable_custom_widget_manager()

```

其他參考資料

<https://matplotlib.org/ipyml/examples/full-example.html>

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