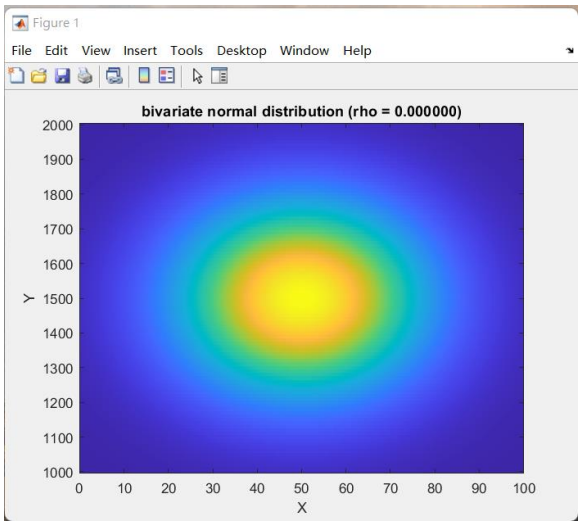
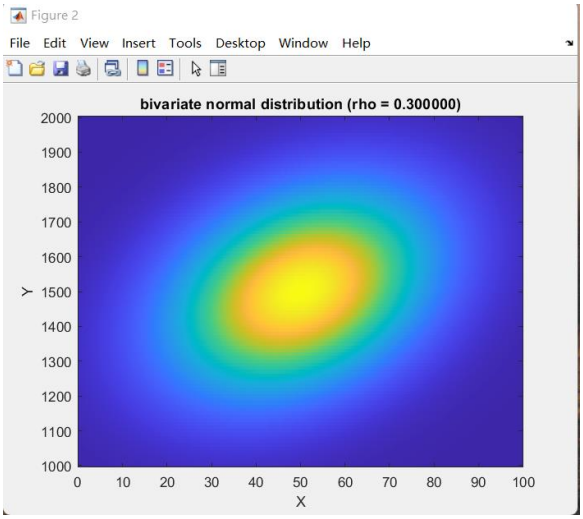
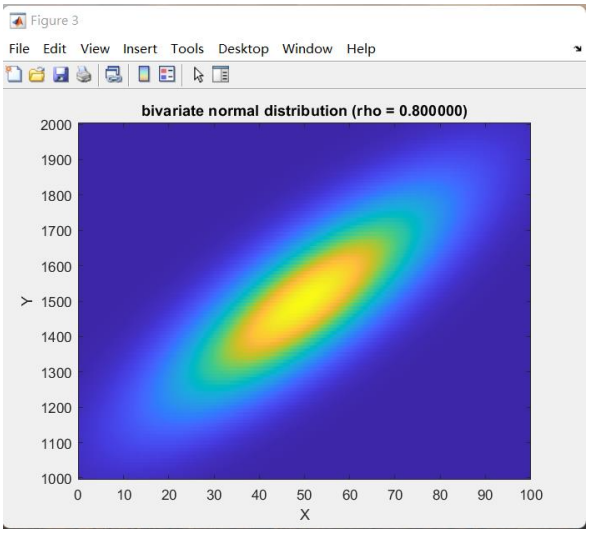
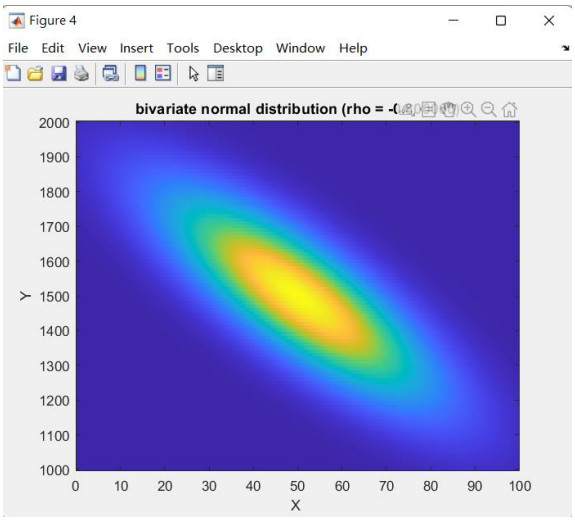
Matlab

1a









圖片 1 ~ 4 分別為 Distribution 1 ~-4

1b

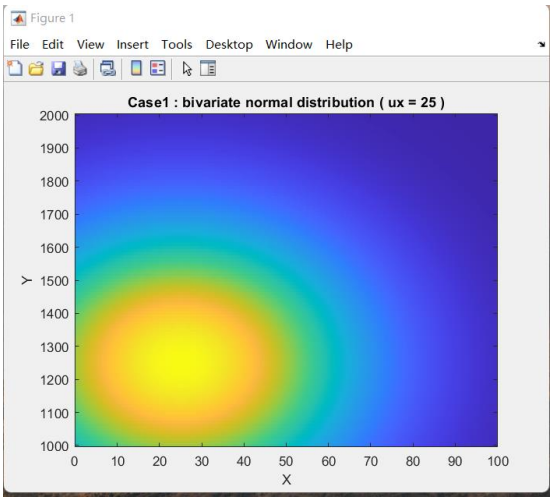
隨著 rho 的變化 圖形呈現不同分布

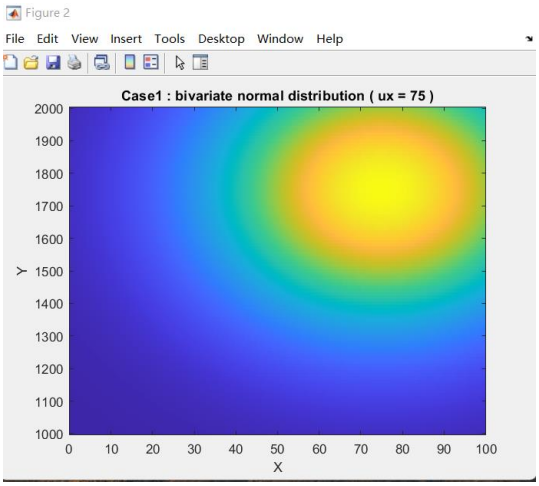
Rho 越大 -> 圖形分布越靠近左下及右上

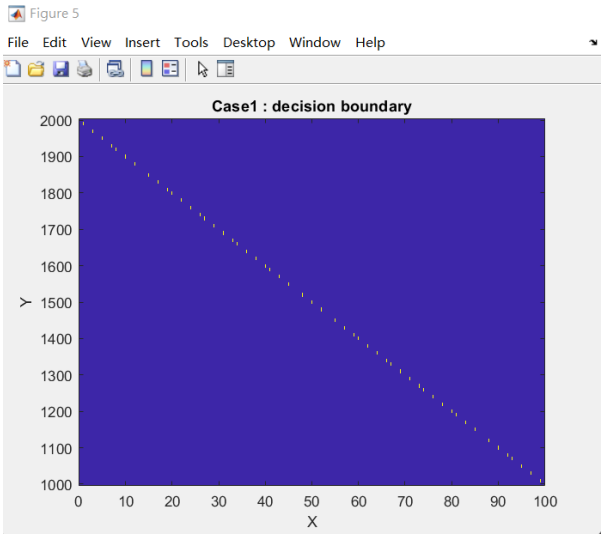
Rho 為 0 -> 圖形在中心呈現圓形

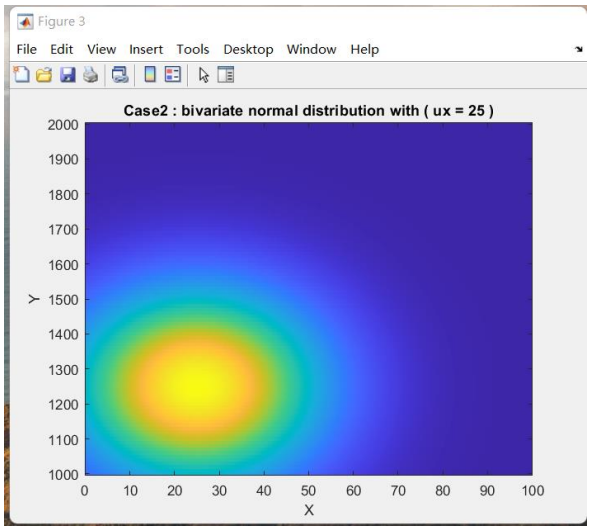
Rho 越小 -> 圖形分布越靠近左上及右下

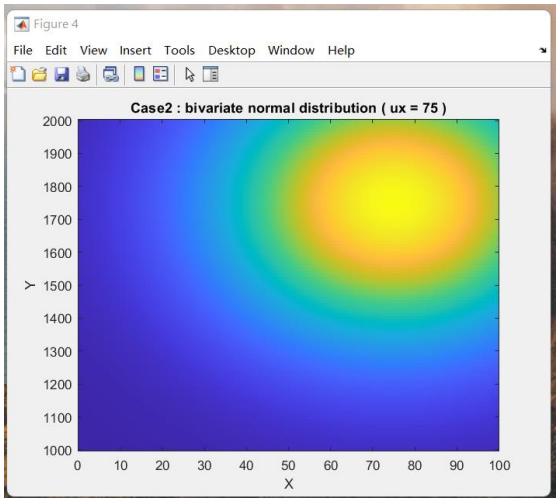
2a

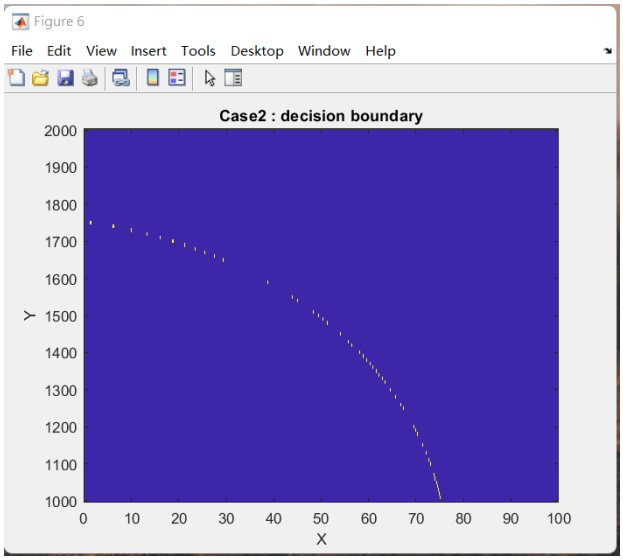












2b

根據觀察，2a 的兩個 case 只有 standard deviation x 跟 standard deviation y 有不同，所以在接下來的實驗中，我分別調整 Distribution1 的 standard deviation 去觀察圖形變化 ，過程中固定 Distribution2 的值

圖 1 的 standard deviation x 為 10 standard deviation y 為 100

每次分別增加 5、50 總共做 10 次

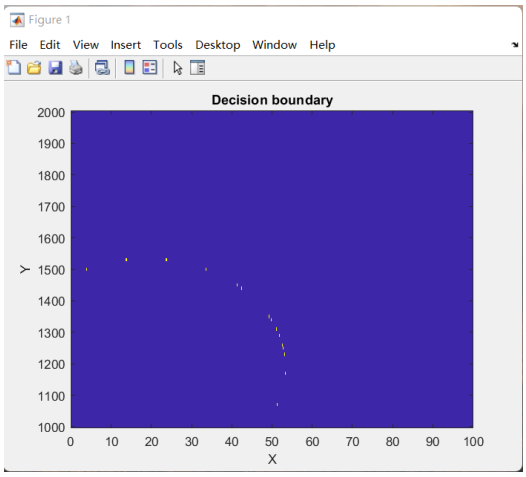


Figure 1
File Edit View Insert Tools Desktop Window Help
Decision boundary
2000 1900 1800 1700 1600 1500 1400 1300 1200 1100 1000
Y
0 10 20 30 40 50 60 70 80 90 100
X

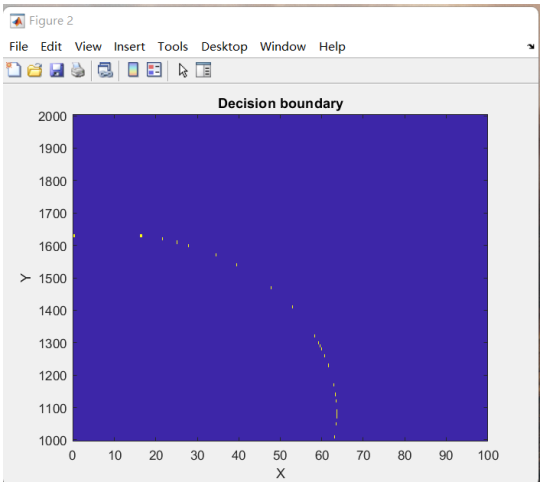


Figure 2
File Edit View Insert Tools Desktop Window Help
Decision boundary
2000 1900 1800 1700 1600 1500 1400 1300 1200 1100 1000
Y
0 10 20 30 40 50 60 70 80 90 100
X

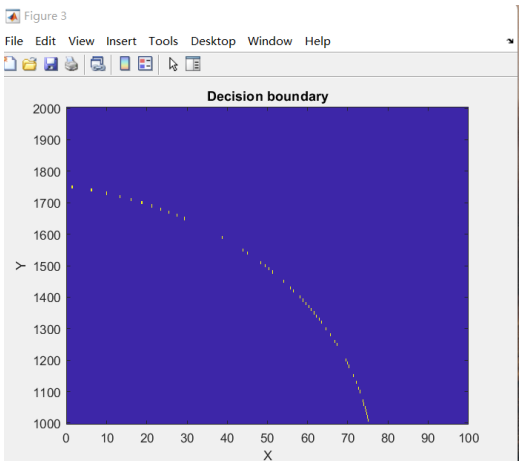


Figure 3
File Edit View Insert Tools Desktop Window Help
Decision boundary
2000 1900 1800 1700 1600 1500 1400 1300 1200 1100 1000
Y
0 10 20 30 40 50 60 70 80 90 100
X

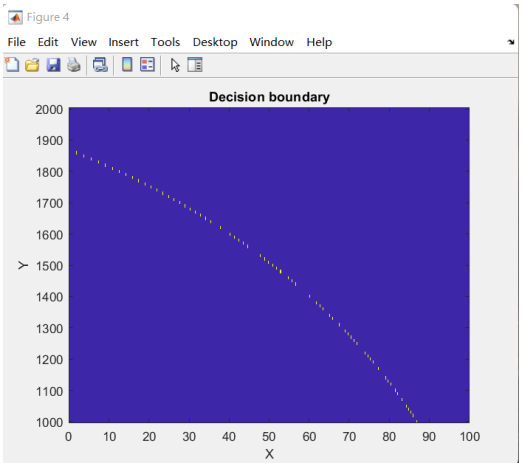


Figure 4
File Edit View Insert Tools Desktop Window Help
Decision boundary
2000 1900 1800 1700 1600 1500 1400 1300 1200 1100 1000
Y
0 10 20 30 40 50 60 70 80 90 100
X

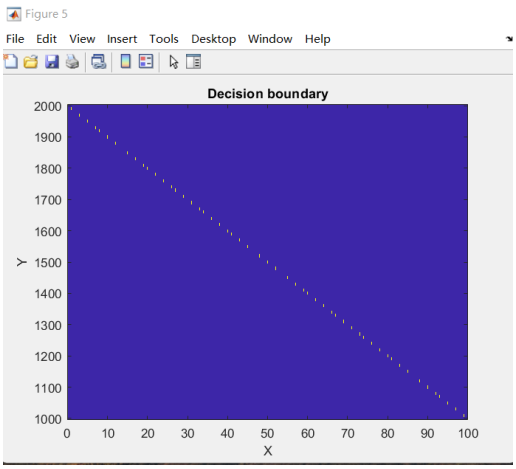


Figure 5
File Edit View Insert Tools Desktop Window Help
Decision boundary
2000 1900 1800 1700 1600 1500 1400 1300 1200 1100 1000
Y
0 10 20 30 40 50 60 70 80 90 100
X

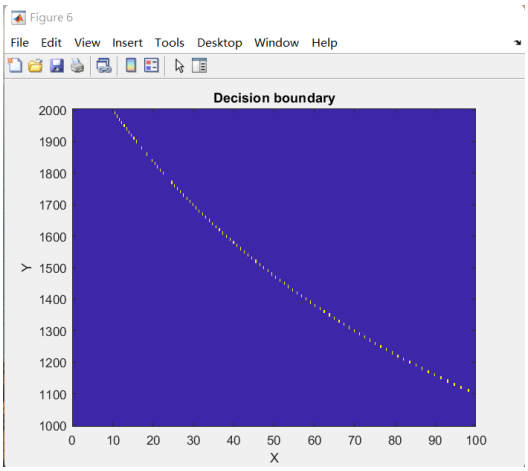
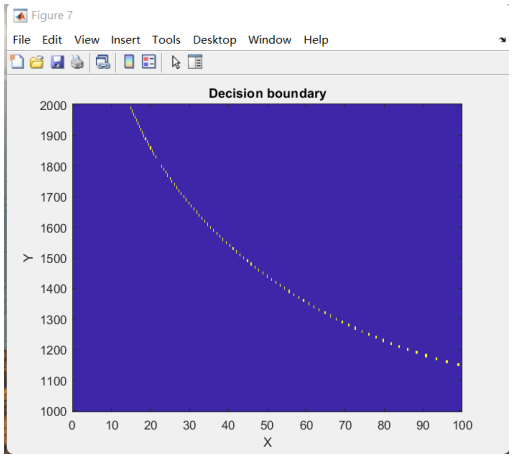
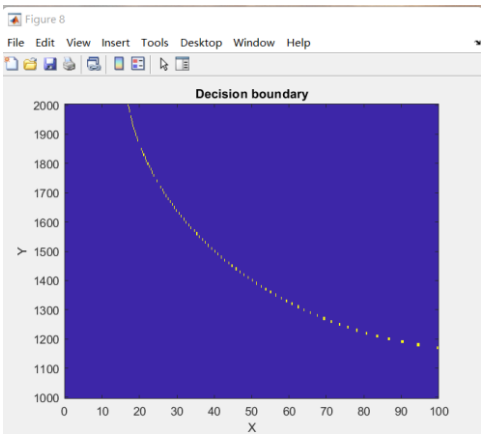
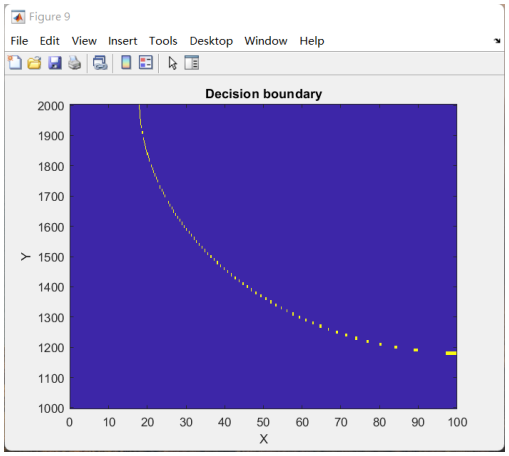
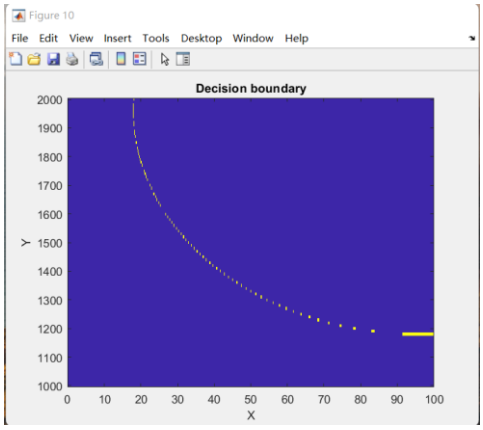


Figure 6
File Edit View Insert Tools Desktop Window Help
Decision boundary
2000 1900 1800 1700 1600 1500 1400 1300 1200 1100 1000
Y
0 10 20 30 40 50 60 70 80 90 100
X









根據以上圖片我麼得出以下結論

當 distribution1 的 standard deviation x 、 standard deviation y 小於 distribution2 時，decision boundary 的曲線凹口朝左下，並且越小彎曲程度越大

當 distribution1 的 standard deviation x 、 standard deviation y 等於 distribution2 時，decision boundary 的呈現協直線，並且兩端分別在正左上及正右下，剛好呈現對角線

當 distribution1 的 standard deviation x 、 standard deviation y 大於 distribution2 時 decision boundary 的曲線凹口朝右下，並且越大彎曲程度越大

3a

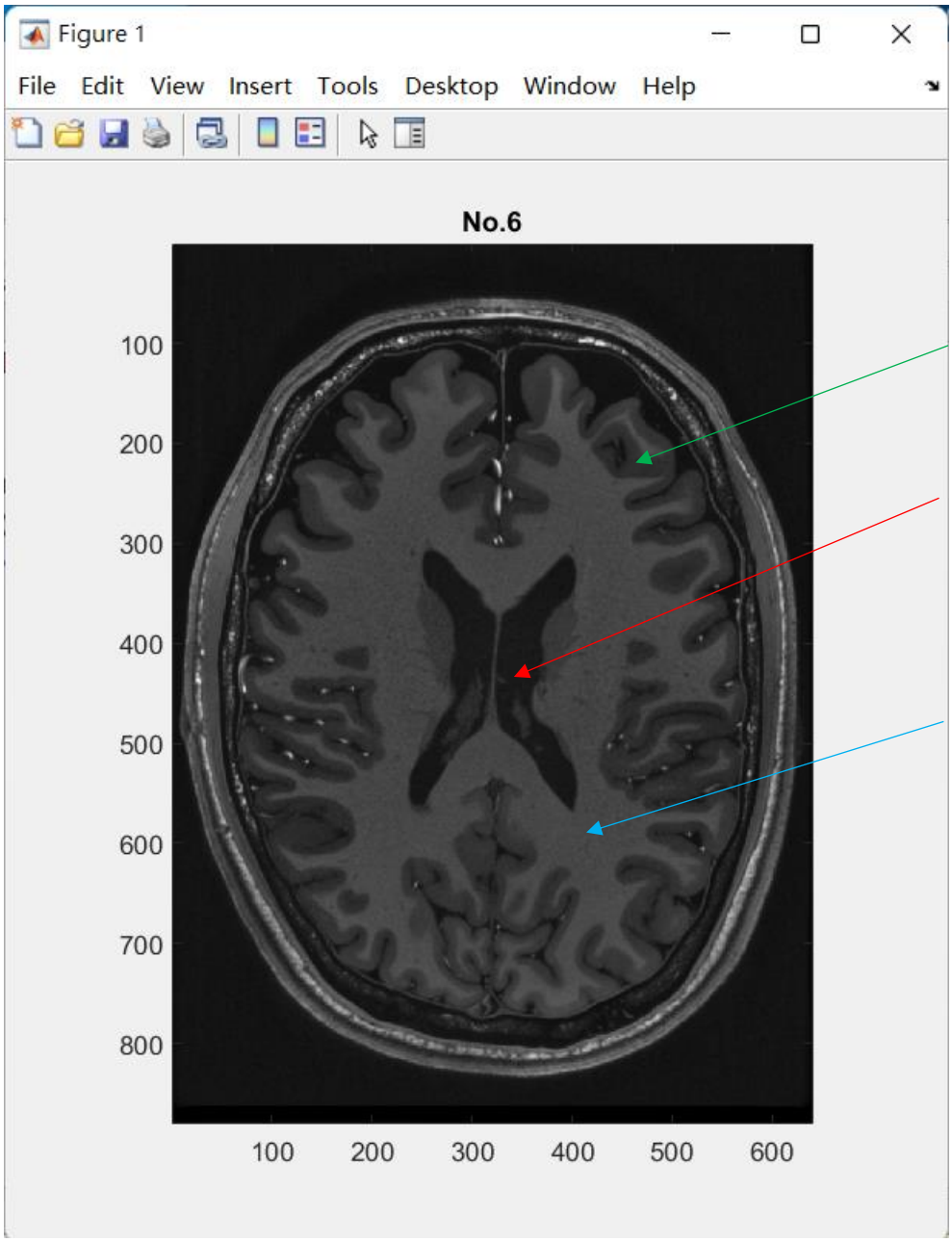
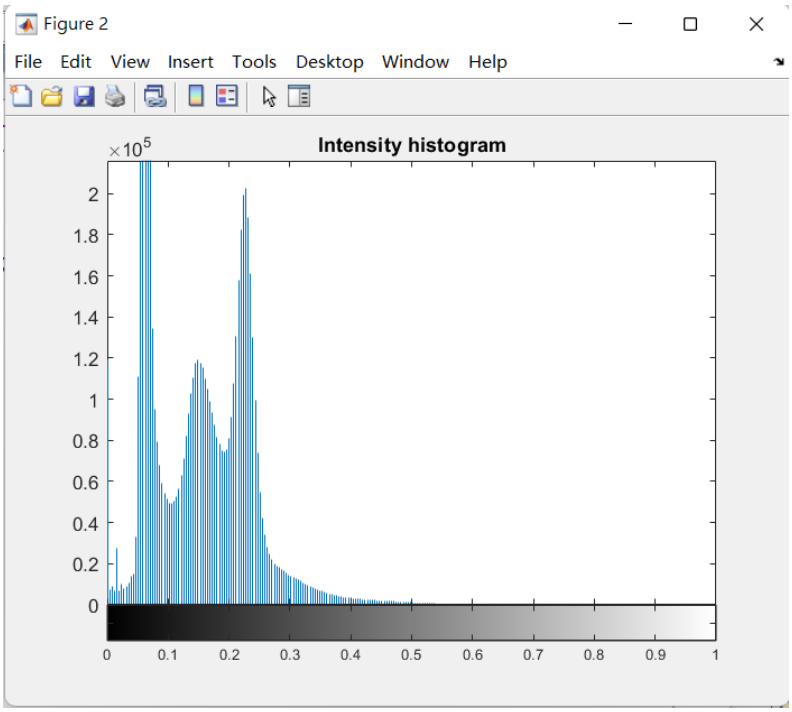


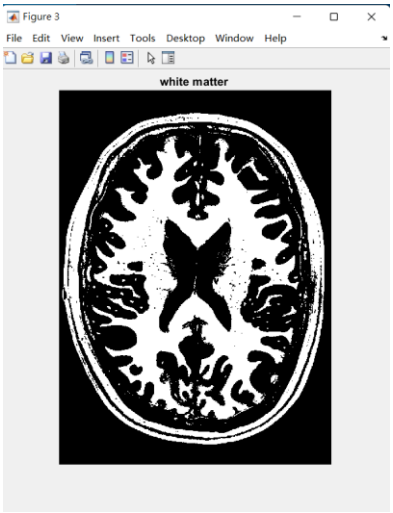
Figure 1
File Edit View Insert Tools Desktop Window Help
No.6
100
200
300
400
500
600
700
800
100 200 300 400 500 600
灰質
腦脊髓液
白質

挑選第 6 張圖片

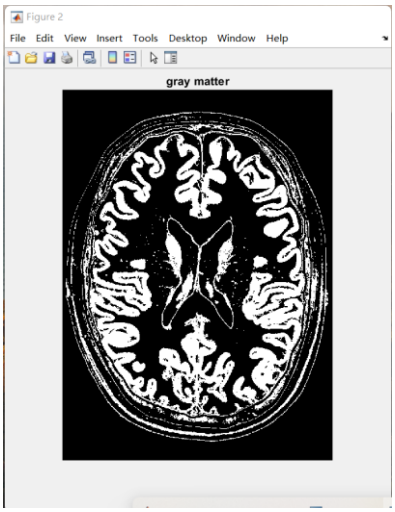
3b



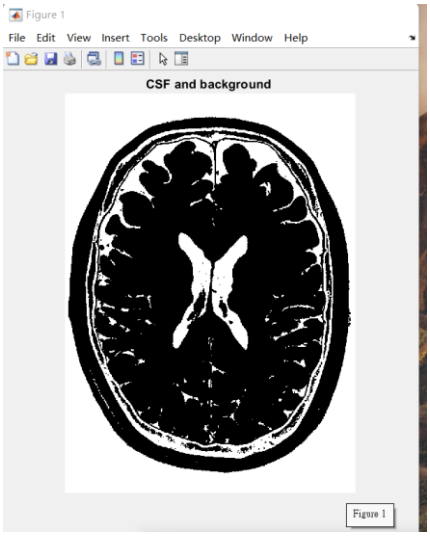
3c



白質



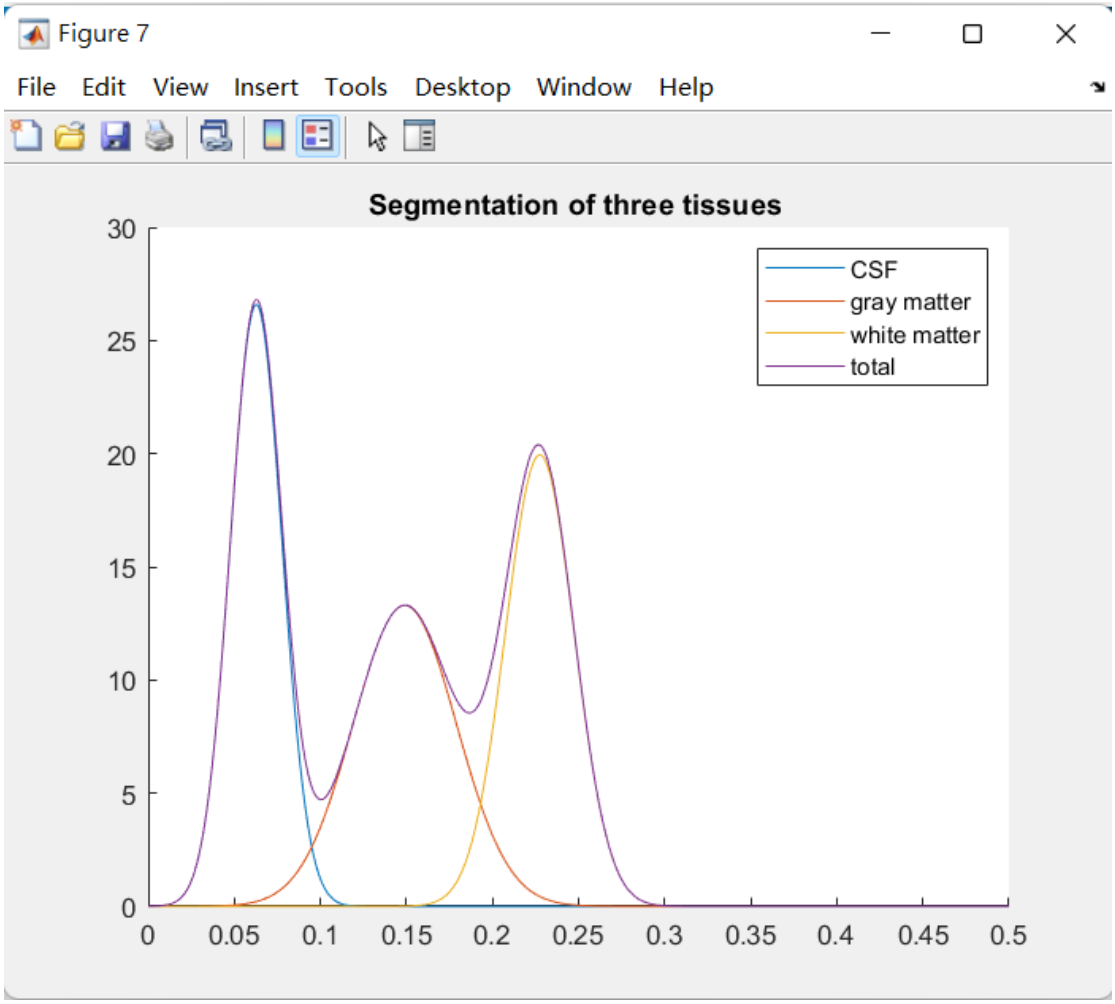
灰質



腦脊髓液

白色部分為選取部分

3d



與 3b 看起來沒有差很多