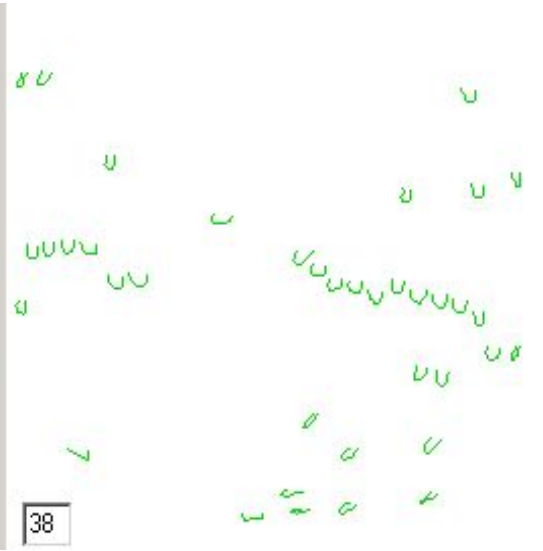


# Minutia Extraction

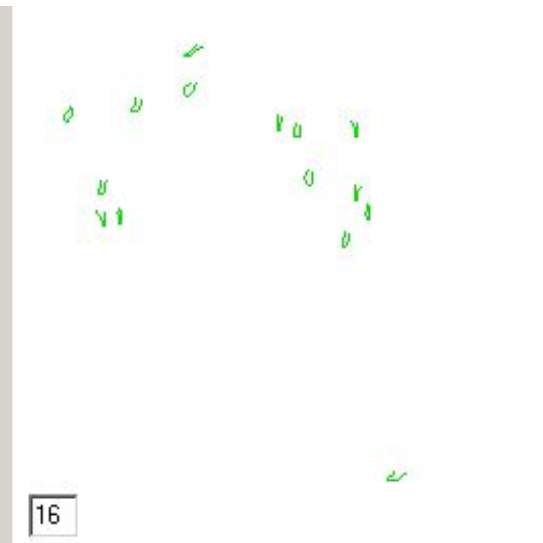


戴嘉宏

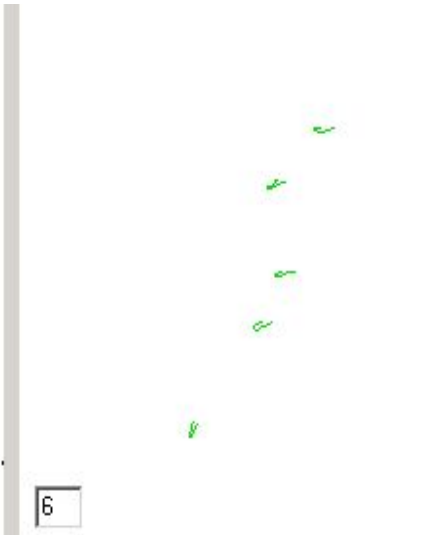
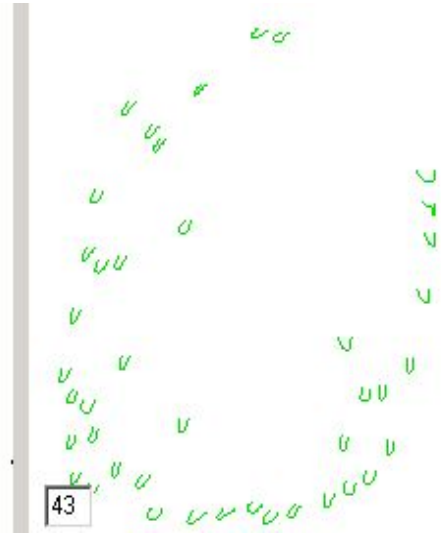
指導教授：陳慶瀚 博士



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# Rule

## ■ Step 1. 檢查是否可以走(1 clk)

if  $a[8]=255$  ,stop

if  $a[1]=0 \ \& \ a[3]=0 \ \& \ a[5]=0 \ \& \ a[7]=0$  ,stop

if  $a[4] \neq 0 \ || \ a[5] \neq 0 \ \& \ a[6] \neq 0$  , stop

## ■ Step 2. 週期 1

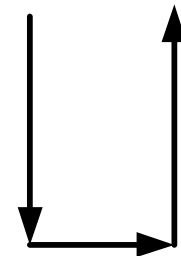
6  
1 5  
2 3 4

## ■ Step 3. 週期 2

4 3 2  
5 1  
6

(15 clk)

0	7	6
1	8	5
2	3	4

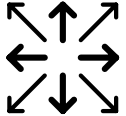


■ Step 4. 計算軌跡值總和(1 clk)

T=15

$P_{15 \times 3}$

$$Sum = \sum_{t=0}^T p_{t,3}$$

-1	-1	-1
1		-1
1	1	1

■ Step 5. 比較Sum,threshold (1 clk)

$Threshold = T / 2$  ,

if(  $sum < |Threshold|$  &  $|x_0 - x_T| < W$  &  $(y_0 - 1) \leq y_T < (y_0 + 1)$  ) ,

then:

Minutia position is  $\begin{cases} x_0 = P_{(T/2+1),0} \\ y_0 = P_{(T/2+1),1} \end{cases}$

first point position is  $\begin{cases} x_1 = p_{0,0} \\ y_1 = P_{0,1} \end{cases}$

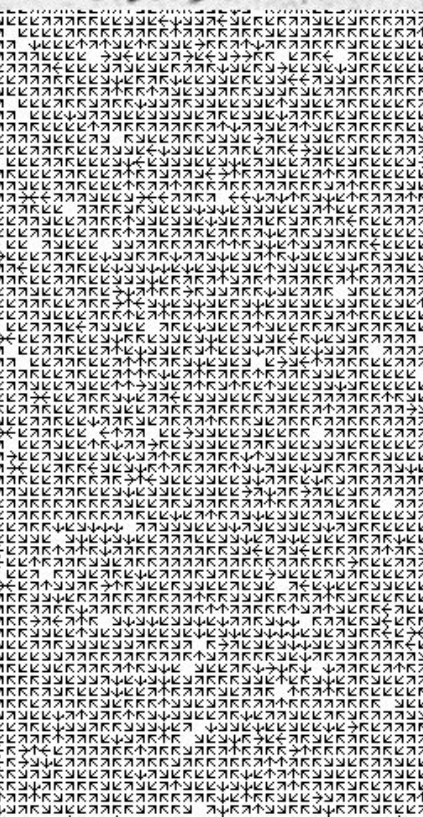
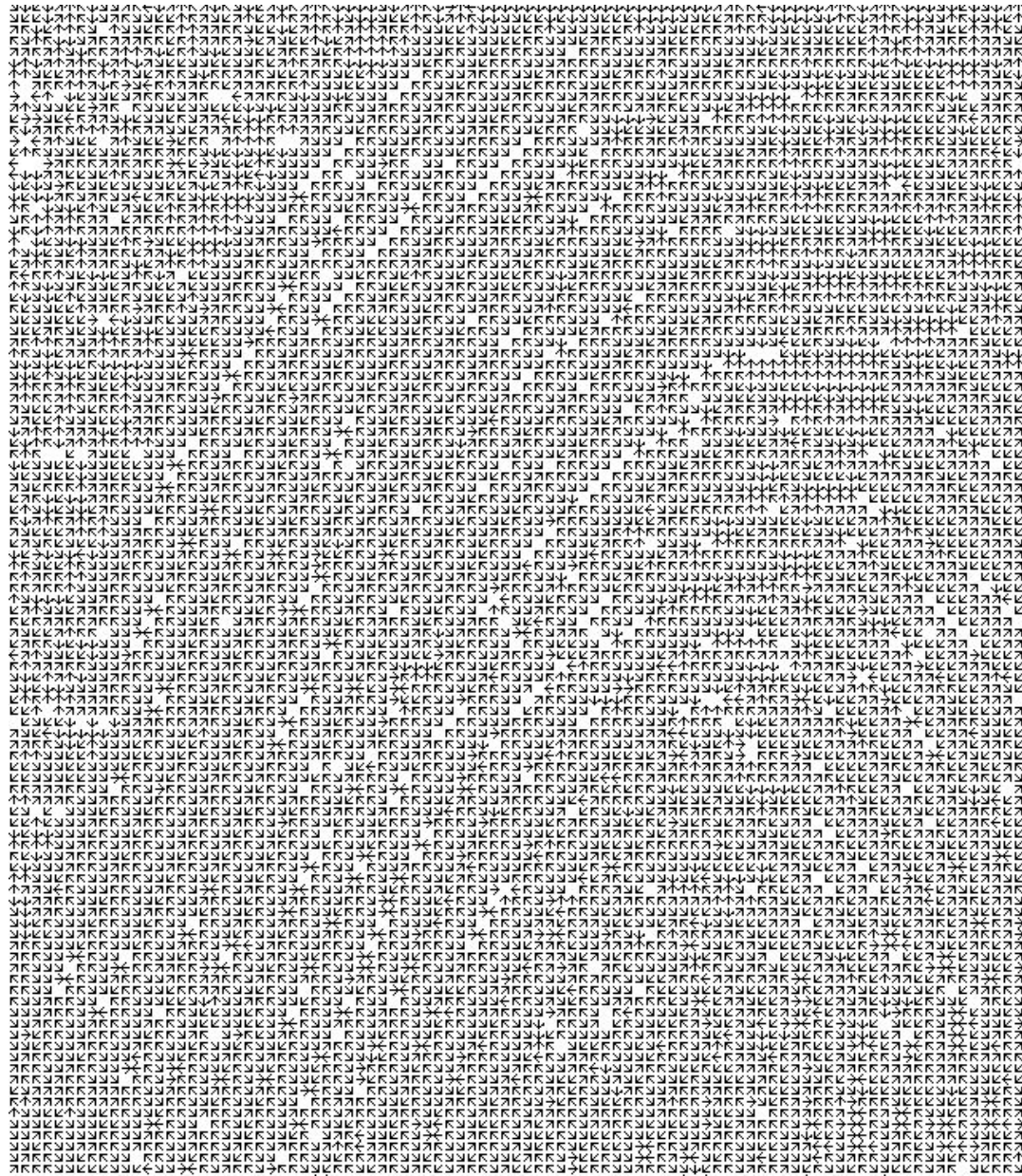
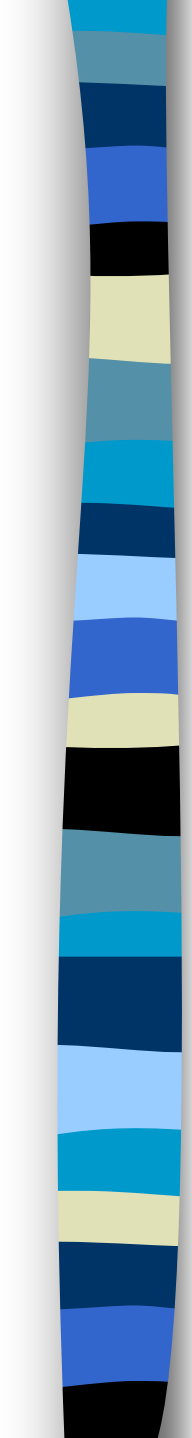
$$\theta = \tan^{-1} \frac{x_1 - x_0}{y_1 - y_0}$$

else: is not Minutia







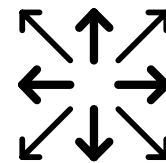




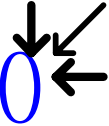

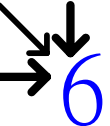







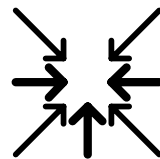
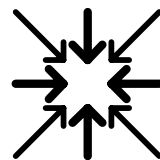
# 方向元素

0	1
3	2



# 將方向轉為動態二值圖

 0	 7	 6
 1	8	 5
 2	 3	 4





# 範例

