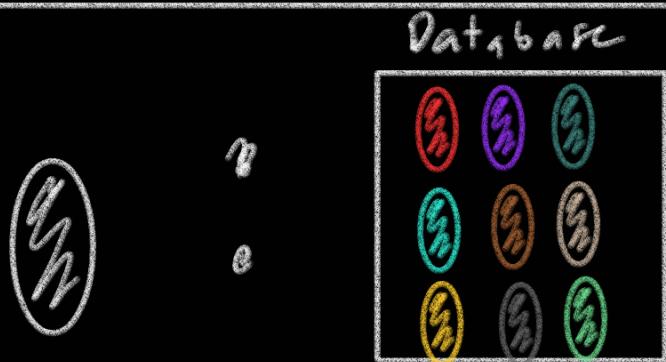
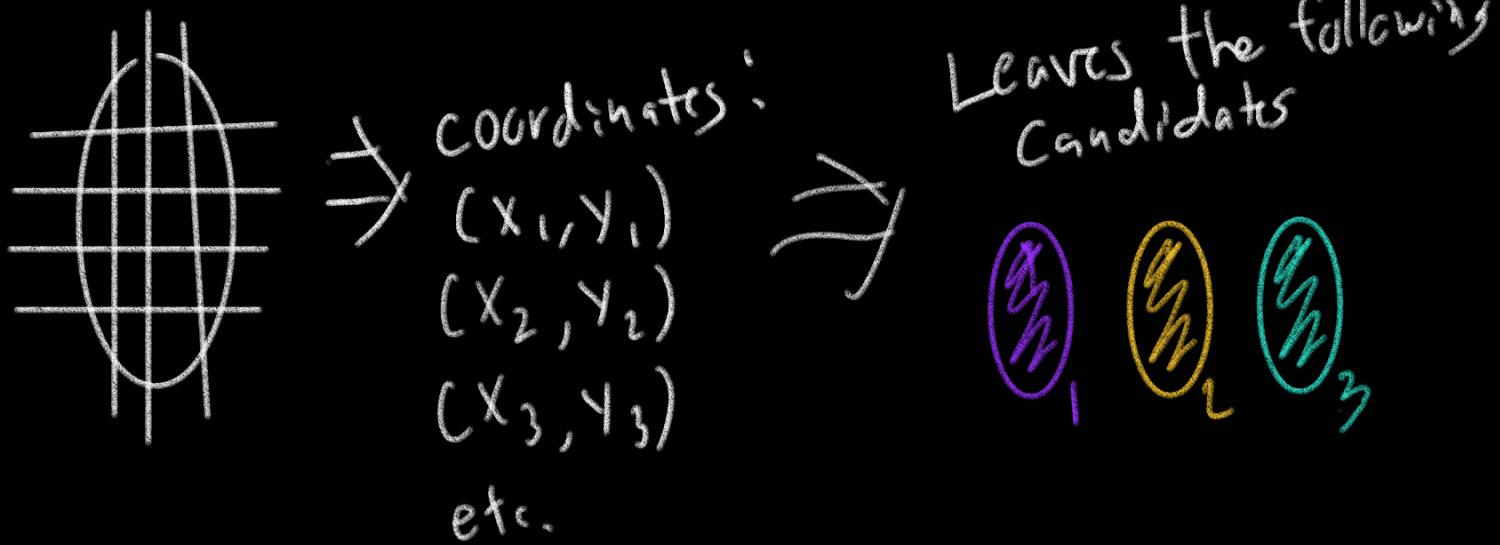


# I: Many Matching



## 1st Level: Cascade Filtering

Gather Probe fps High-Density segments  
Coordinates & compare coordinates to  
Coordinates in Database



## Level 2: High-Density matching

Extract minutiae data from probe's high-density segments and compare against remaining candidates from database

$$\begin{array}{c} \text{Data} \\ \downarrow \\ \text{In coordinates:} \\ (x_1, y_1) \Rightarrow \begin{array}{l} \text{Minutae}_1 = a \\ \text{Minutae}_2 = b \\ \text{Minutae}_3 = c \end{array} \end{array}$$

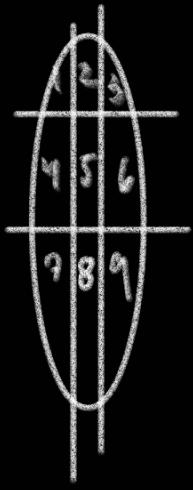
$$(x_2, y_2) \Rightarrow \begin{array}{l} \text{Minutae}_1 = d \\ \text{Minutae}_2 = e \\ \text{Minutae}_3 = f \end{array}$$

$$(x_3, y_3) \Rightarrow \begin{array}{l} \text{Minutae}_1 = g \\ \text{Minutae}_2 = h \\ \text{Minutae}_3 = i \end{array}$$

etc.

### Database FP1: Database FP1: Database FP1:

$$\begin{array}{lll} \text{in coordinates:} & \text{in coordinates:} & \text{in coordinates:} \\ (x_1, y_1) \Rightarrow \begin{array}{l} \text{Minutae}_1 = k \\ \text{Minutae}_2 = l \\ \text{Minutae}_3 = m \end{array} & (x_1, y_1) \Rightarrow \begin{array}{l} \text{Minutae}_1 = a \\ \text{Minutae}_2 = b \\ \text{Minutae}_3 = c \end{array} & (x_1, y_1) \Rightarrow \begin{array}{l} \text{Minutae}_1 = s \\ \text{Minutae}_2 = t \\ \text{Minutae}_3 = u \end{array} \\ (x_2, y_2) \Rightarrow \begin{array}{l} \text{Minutae}_1 = w \\ \text{Minutae}_2 = v \\ \text{Minutae}_3 = x \end{array} & (x_2, y_2) \Rightarrow \begin{array}{l} \text{Minutae}_1 = d \\ \text{Minutae}_2 = e \\ \text{Minutae}_3 = f \end{array} & (x_2, y_2) \Rightarrow \begin{array}{l} \text{Minutae}_1 = w \\ \text{Minutae}_2 = q \\ \text{Minutae}_3 = b \end{array} \\ (x_3, y_3) \Rightarrow \begin{array}{l} \text{Minutae}_1 = u \\ \text{Minutae}_2 = x \\ \text{Minutae}_3 = d \end{array} & \text{etc.} & (x_3, y_3) \Rightarrow \begin{array}{l} \text{Minutae}_1 = g \\ \text{Minutae}_2 = h \\ \text{Minutae}_3 = i \end{array} \\ \text{etc.} & & \text{etc.} \end{array}$$



Tom)  $s:[2, 5, 8]$

- A  $\{16, 3, 9, 10\}$
- B  $\{1, 12, 6, 3\}$
- C  $\{8, 12, 4, 6\}$

Jake)  $s:[2, 5, 8]$

- A  $\{2, 9, 6, 12\}$
- B  $\{8, 11, 3, 2\}$
- C  $\{1, 9, 8, 16\}$

Jill)  $s:[2, 5, 8]$

- A  $\{1, 4, 12, 6\}$
- B  $\{9, 1, 16, 4\}$
- C  $\{5, 8, 12, 11\}$

Ken)  $s:[6, 8, 9]$

- A  $\{16, 3, 9, 10\}$
- B  $\{1, 12, 6, 3\}$
- C  $\{8, 12, 4, 6\}$

Joe)  $s:[6, 8, 9]$

- A  $\{4, 2, 8, 5\}$
- B  $\{16, 8, 1, 5\}$
- C  $\{3, 9, 12, 11\}$

Walks in Worker :

Sensor takes print, takes high-density grid segment coordinates 's' then extracts minutiae data of each segment 'a', 'b', 'c'

System :

Probe is a : s:[2, 5, 8]

Cascade 1 output : Tom, Jake, Jill

Probe is a :  
A {2, 9, 6, 12}  
B {8, 11, 3, 2}  
C {1, 9, 8, 16}

Therefore Probe = Jake