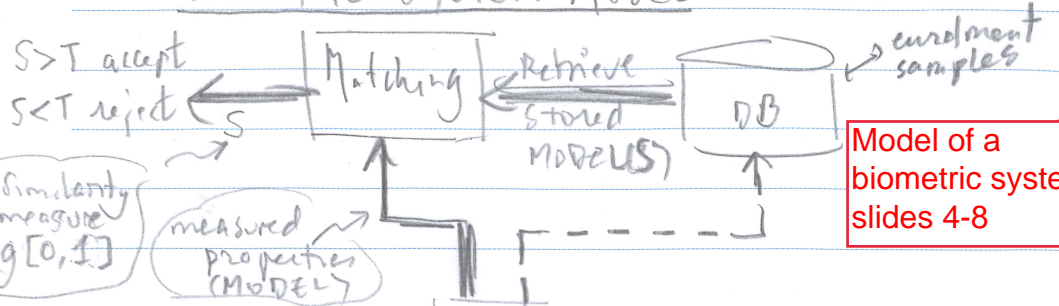
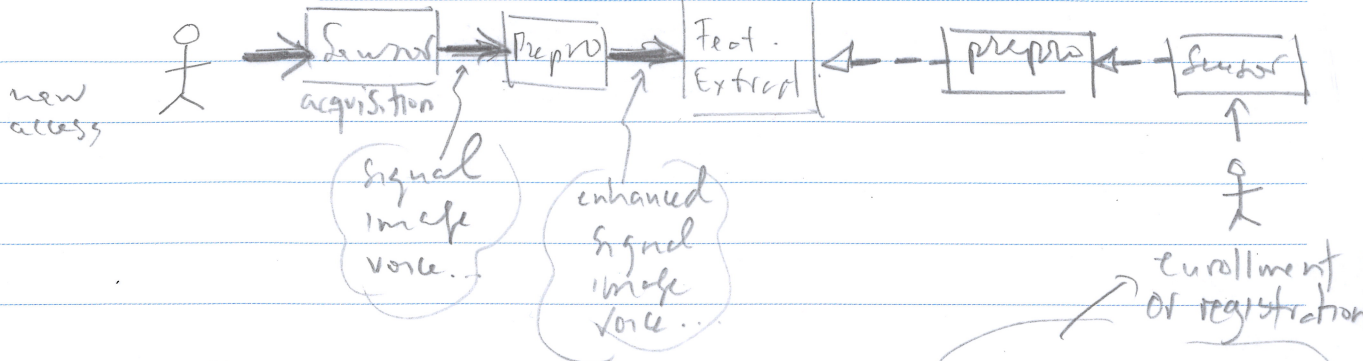


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BIOMETRIC SYSTEM MODEL



Model of a biometric system, slides 4-8



Similarity measure [0, 1]

S = 1 totally similar

S = 0 " dissimilar

Decision based on threshold T

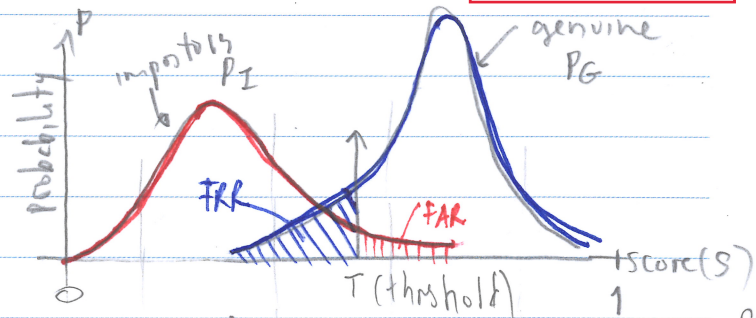
S > T accept, S < T reject

- x Supervised vs unsupervised
- x Periodic update
- x Multiple templates
- x Centralized (Server) vs. local (card)

PERFORMANCE: VERIFICATION MODE

Slides 19-29

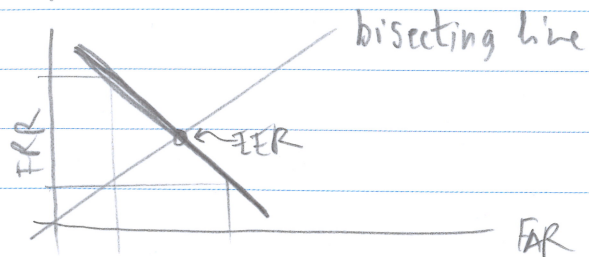
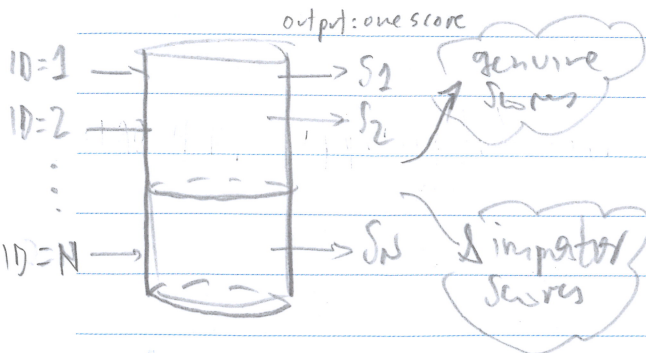
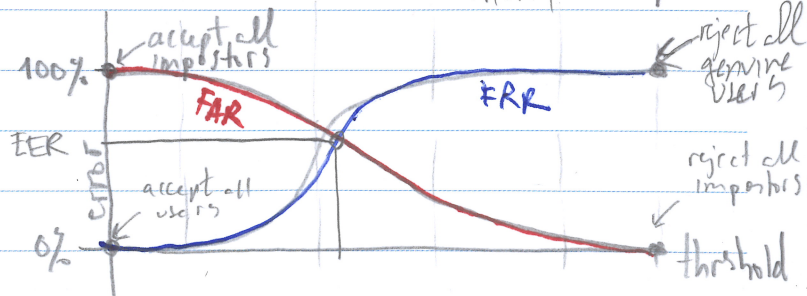
| CLAIM | OUTPUT | |
|----------|---------|----------|
| | genuine | impostor |
| genuine | ✓ | FR, FNM |
| impostor | FA, FM | ✓ |

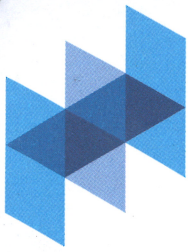


$$FRR(T) = \sum_{s=0}^T P_G(s)$$

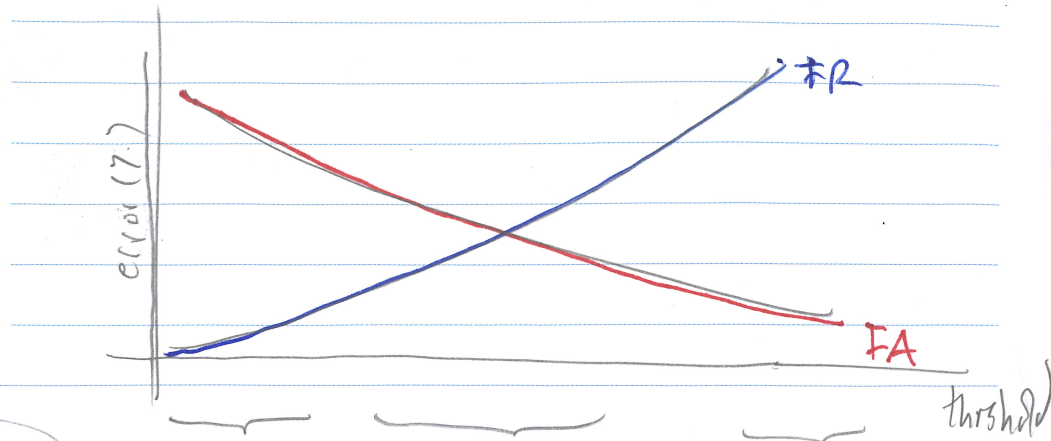
$$FAR(T) = \sum_{s=T}^1 P_I(s)$$

opposite behavior





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Low threshold

- many false positives... (\uparrow FA)
 - but does not miss a genuine identity (\downarrow FR)
- (FORENSICS)

civilian applications

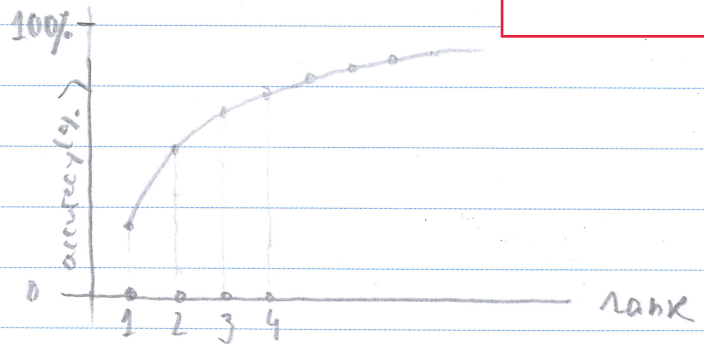
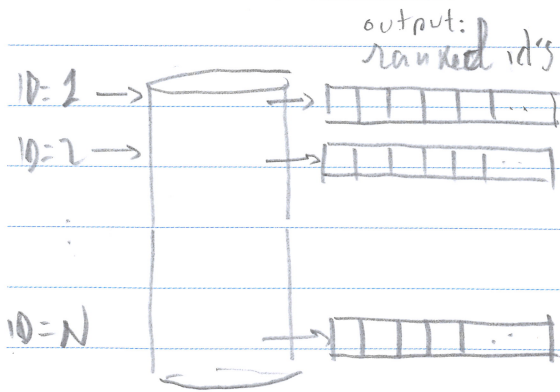
high threshold

- does not 'accept' impostors (\downarrow FA)
 - but reject many genuine (\uparrow FR)... unfriendly
- (HIGH SECURITY)

- The above graphs are valid if "similarity measure" is used
- Check slides for "distance measure" case

PERFORMANCE: IDENTIFICATION MODE

Slides 30-33



- Return a list of M identities/candidates
- Can use a threshold as well