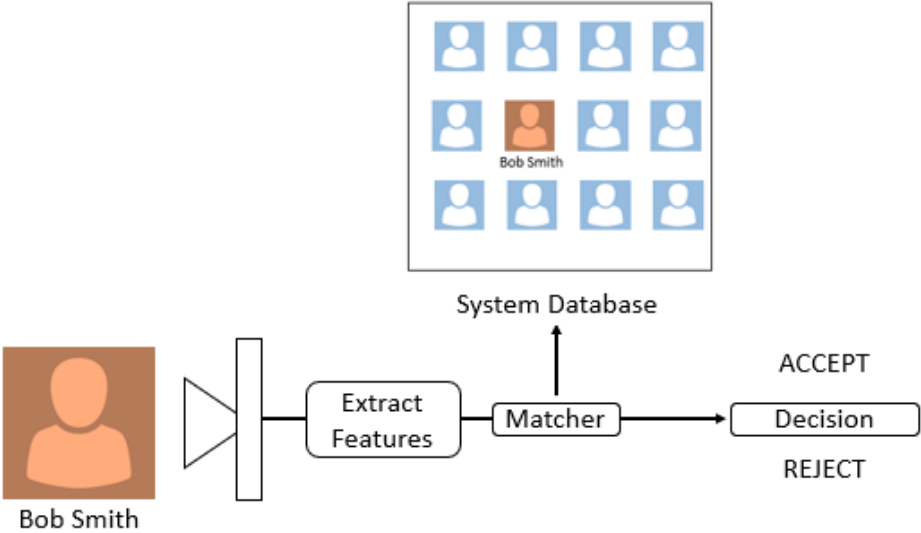
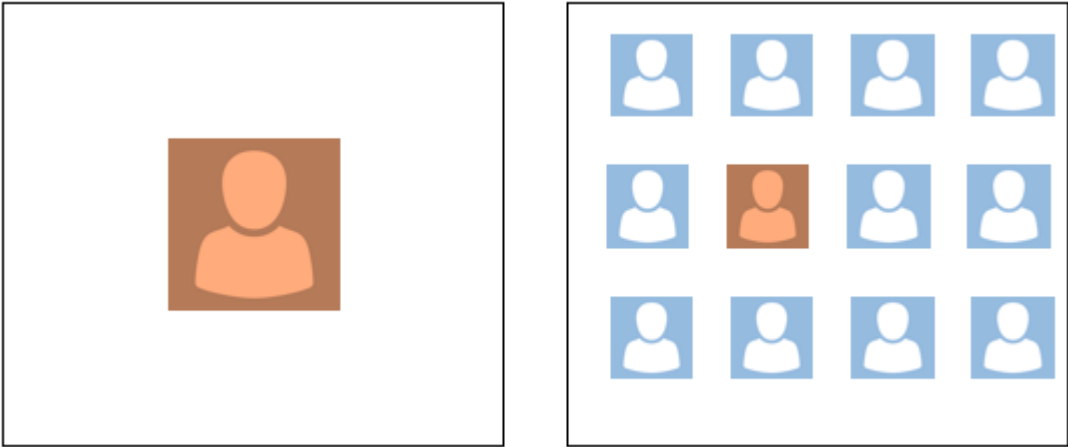


Chapter 1: Exploring Biometric Technology

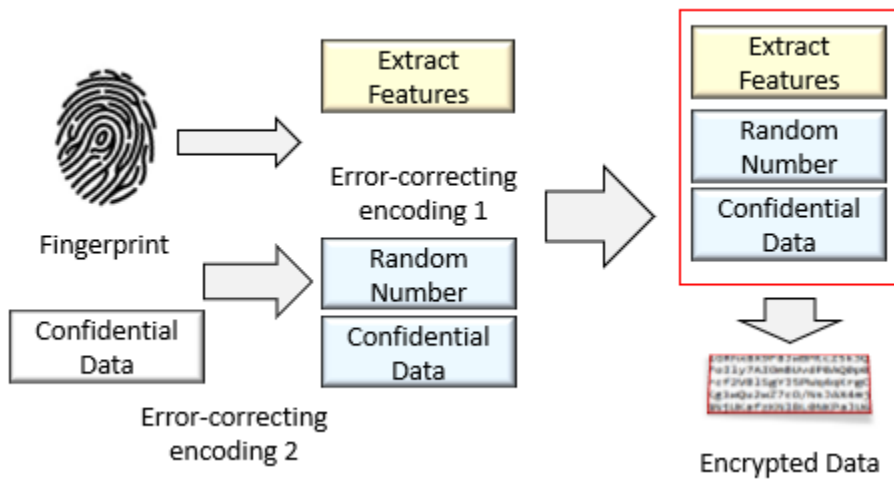
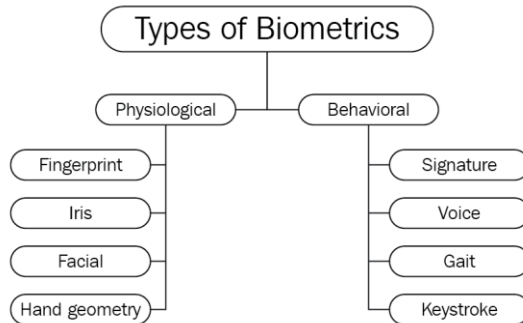




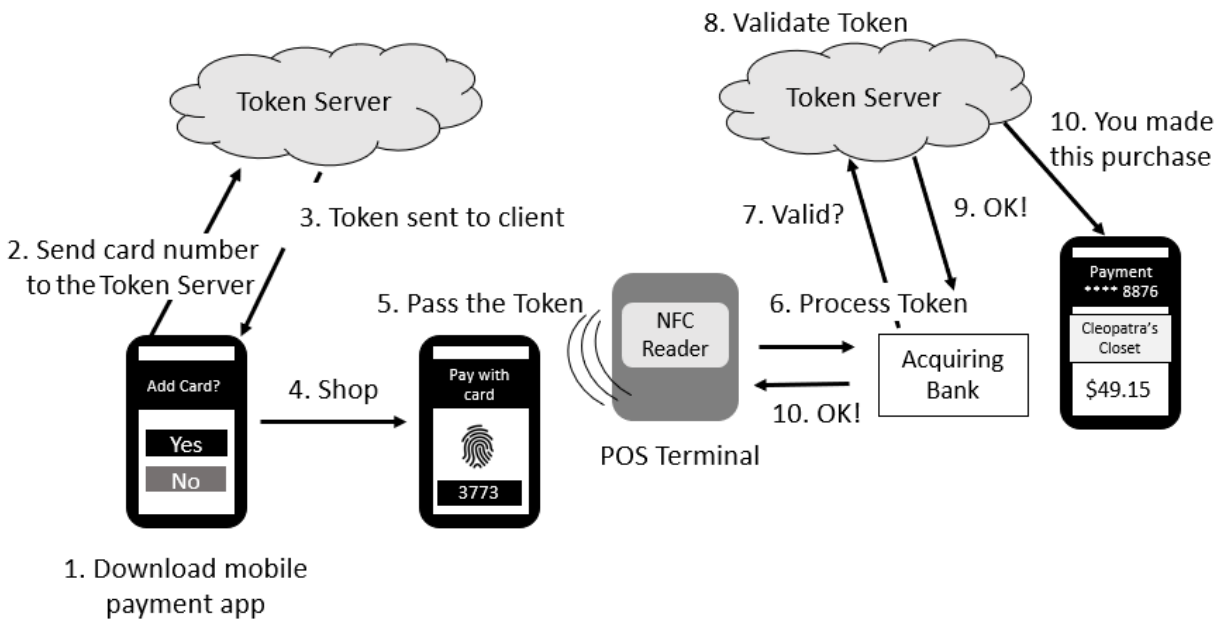
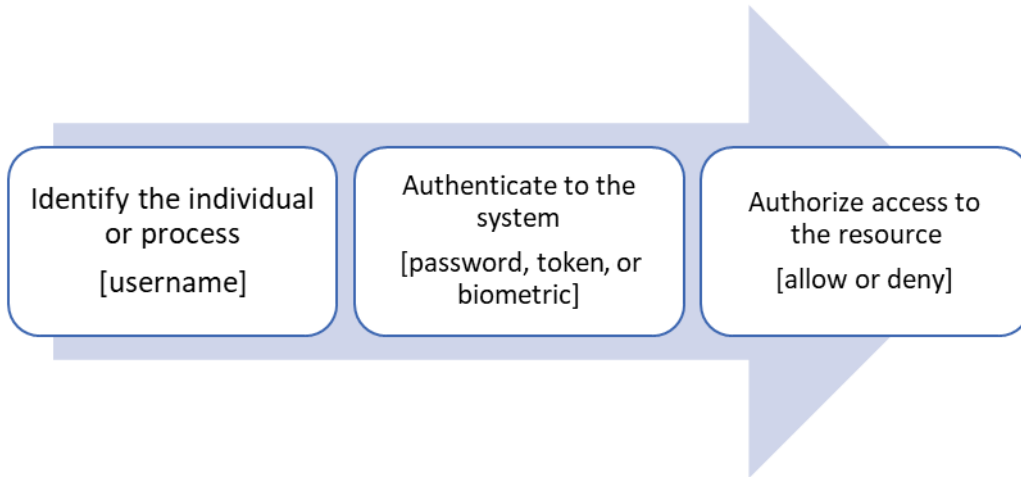
Fingerprint

IRIS

Face Recognition



Chapter 2: Biometrics and Mobile Devices





- Inexpensive and easy to use
- Can enforce frequent changes
- Nothing to handle



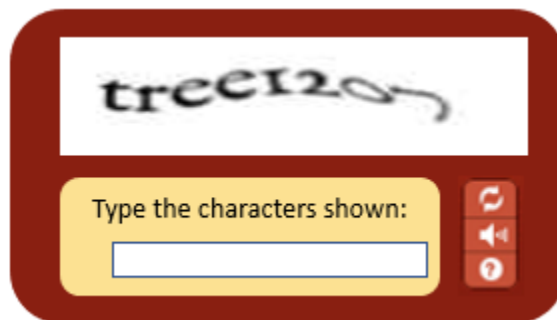
- Can be complex
- Many reuse the same password
- Regular changes required
- **Billions compromised in massive breaches**



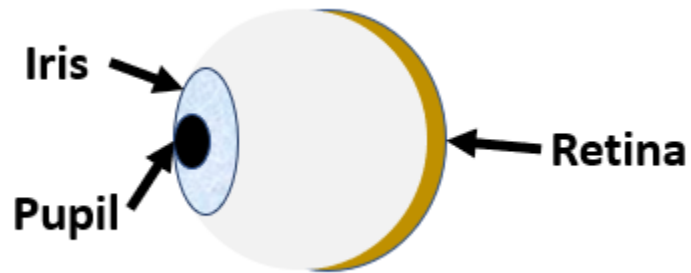
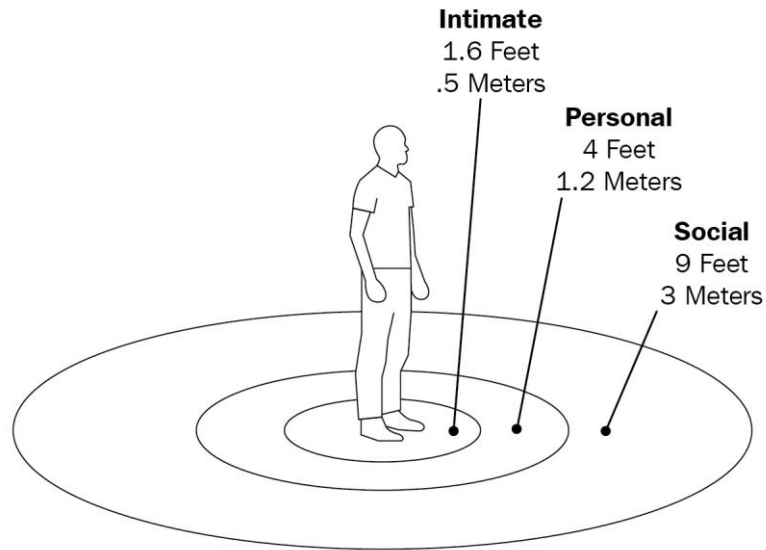
Intensity



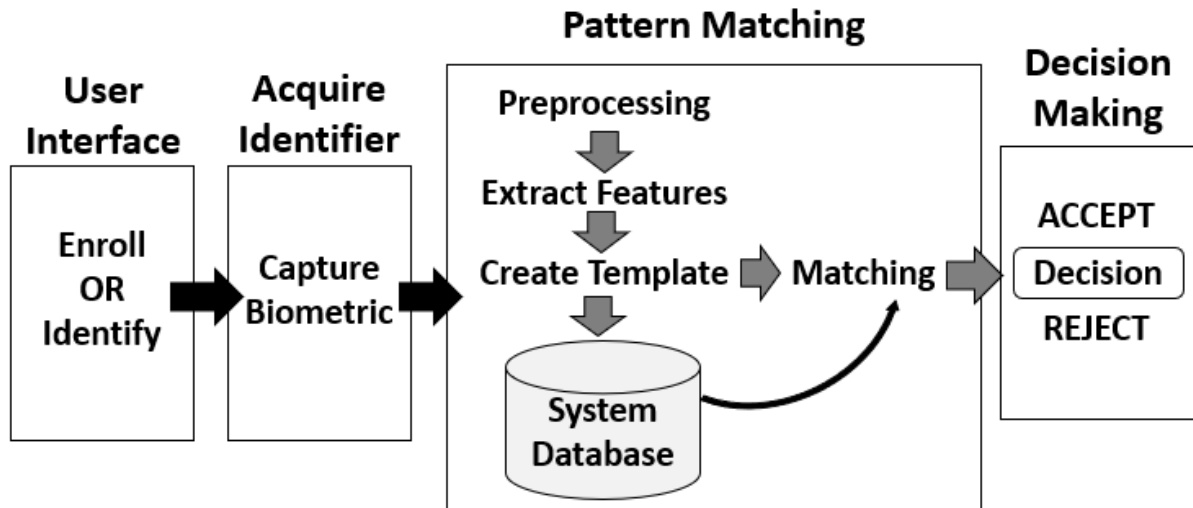
Sharpness



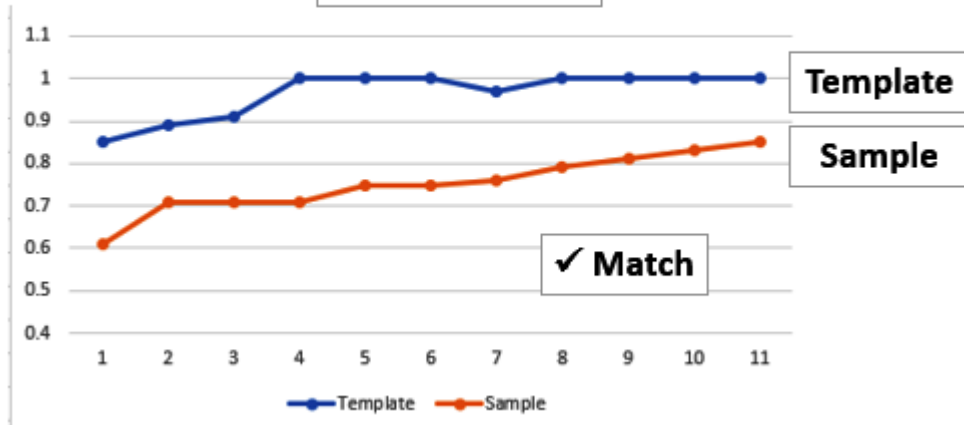
Chapter 3: Recognizing Biometric Characteristics



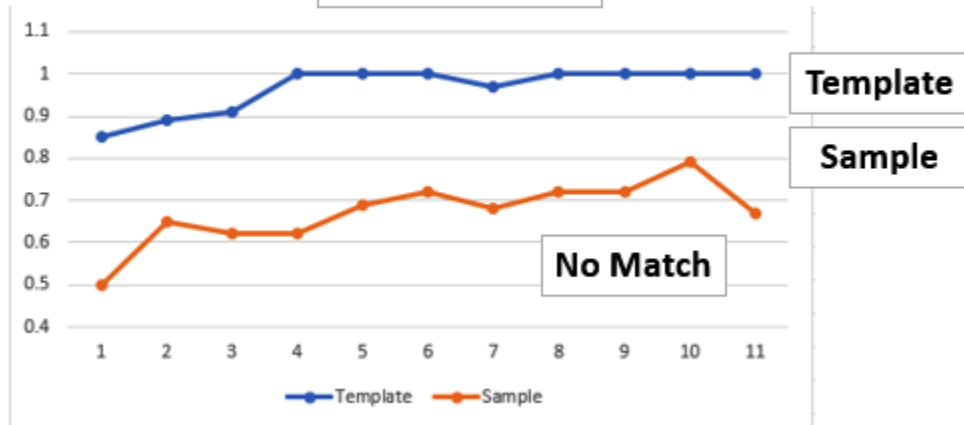
Biometric	Uniqueness	Universal	Performance	Acceptable	Circumvention	Concerns
Face	High	High	Medium	High	High	Lighting, artifacts
Fingerprint	High	Medium	High	Medium	Medium	Age, wear, dryness
Iris	High	High	High	Low	Medium	Lighting
Voice	Low	High	Low	Medium	Medium	Health, stress level



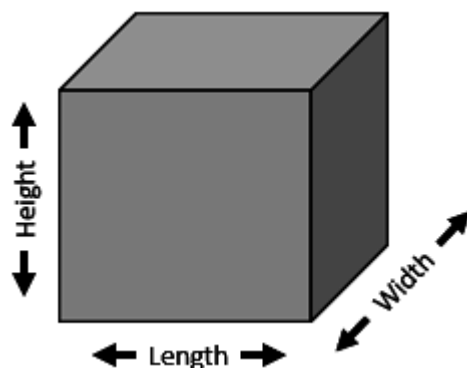
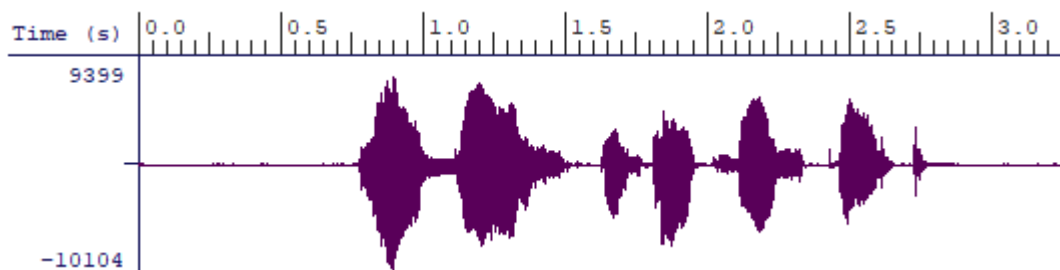
ACCEPT

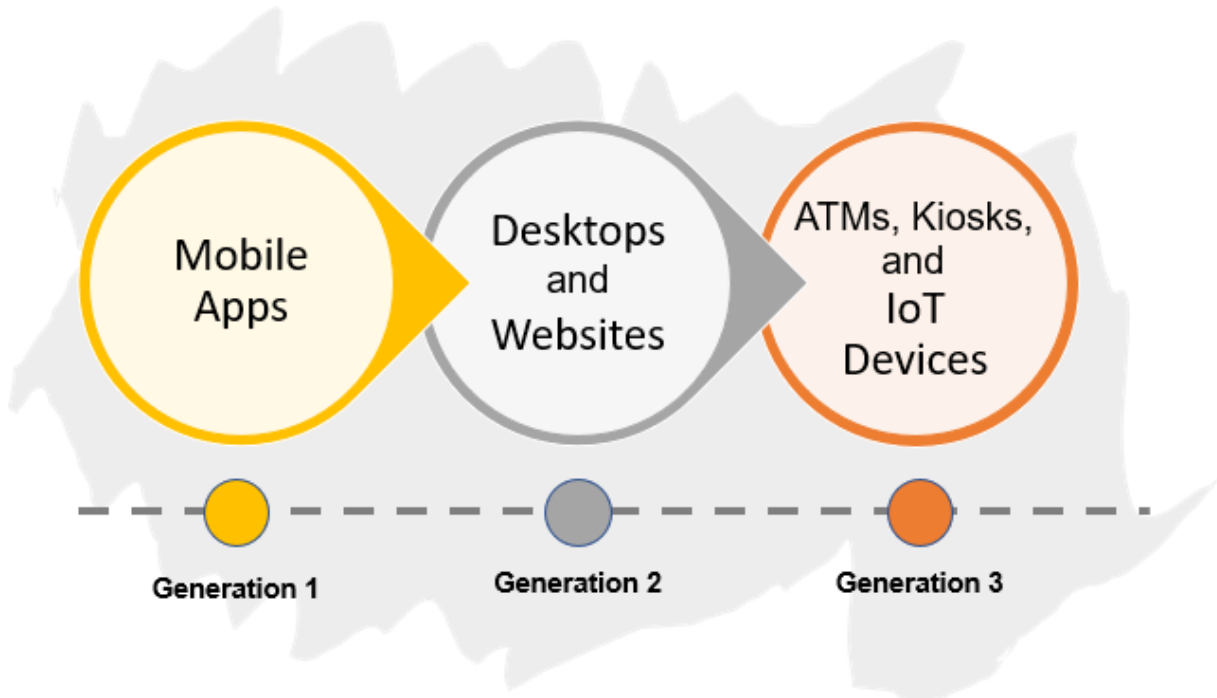


REJECT



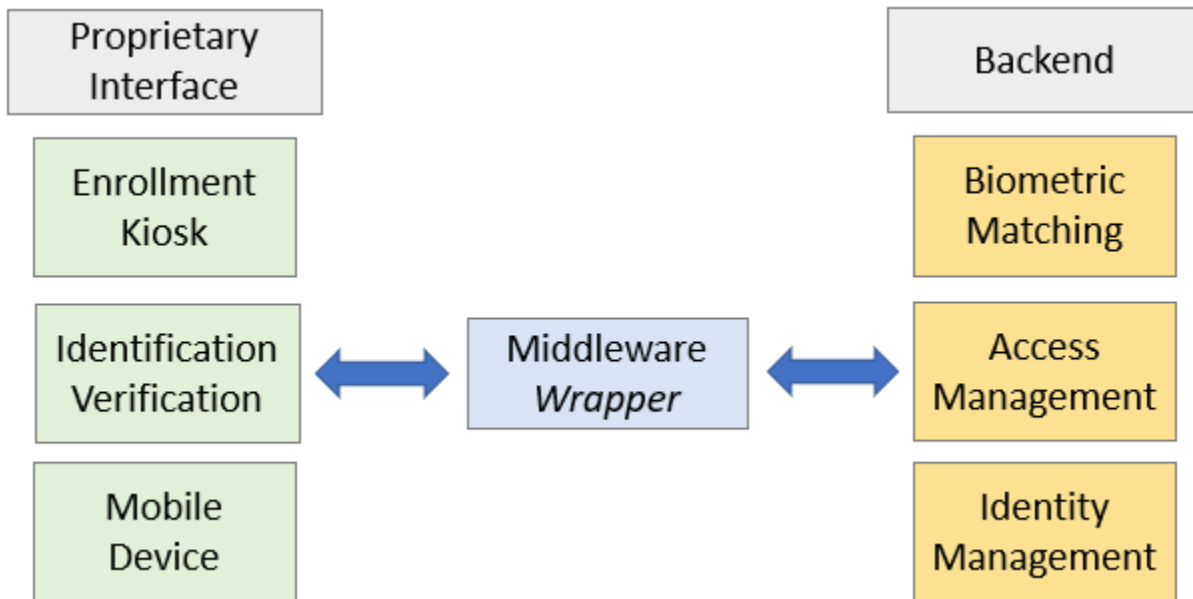
Type of system	Explanation
Habituated or Non-Habituated	<ul style="list-style-type: none"> Habituated systems are used on a daily basis and become a habit. Non-habituated systems are not used regularly, and the user must refamiliarize themselves before using the system.
Overt or Covert	<ul style="list-style-type: none"> An overt system is used when the user is aware that a biometric identifier is being measured, and include access control and any non-forensic applications. In a covert system the user is unaware that a biometric identifier is being measured, for example during a forensic evaluation.
Attended or Non-Attended	<ul style="list-style-type: none"> Attended requires someone to monitor the user. Non-attended systems allow users to interact independently with the system.
Public or Private	<ul style="list-style-type: none"> A public system is designed to be used by customers. A private system will be used internally by the employees.
Open or Closed	<ul style="list-style-type: none"> An open system uses standards for data collection, compression, and format, so that the original signal can be reconstructed. A closed system will use internally developed proprietary formats.





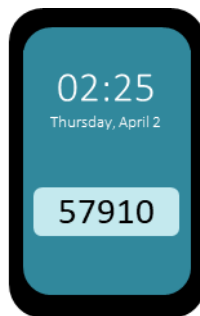
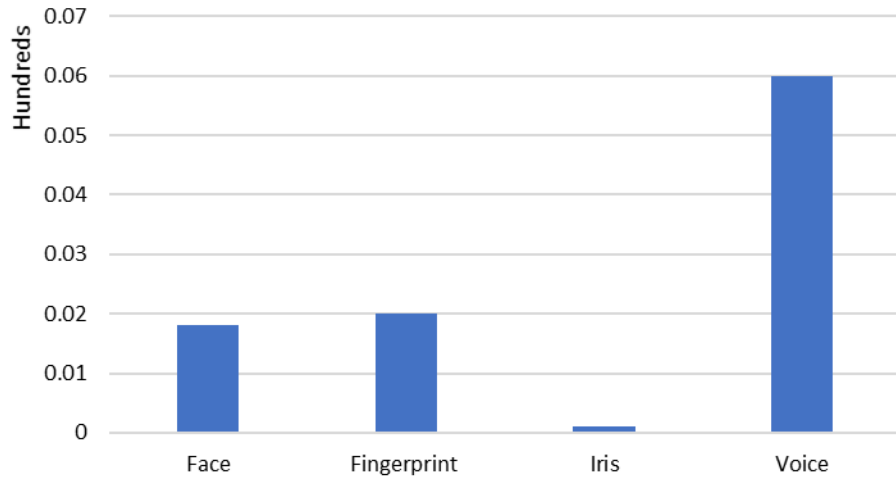
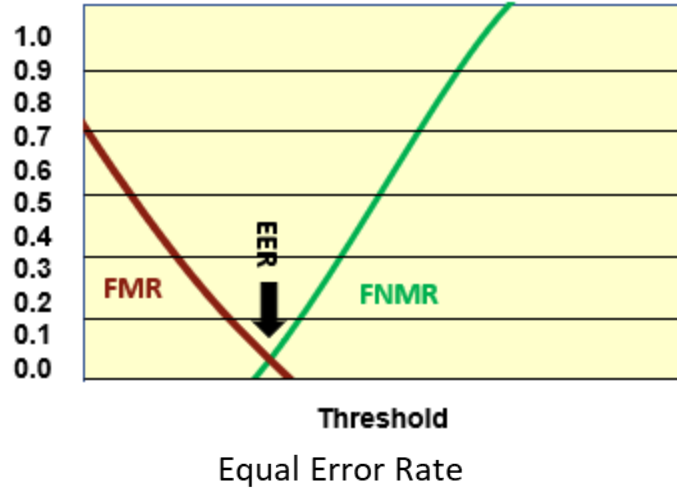
Chapter 4: Comparing Advantages and Modalities

	A	B	C	D	E	F	G	H	I	J	K	L
1	Time Card Report											
2	<i>02/09/2020 - 02/15/2020</i>											
3												
4												
5	Employee ID: 78321		Employee name: Roxy Blake				DEPT: Sales		SHIFT: 8:00 - 5:00		Totals	Notes
6	Date	Week	(IN)	(OUT)	(IN)	(OUT)	(IN)	(OUT)	(IN)	(OUT)		
7	9-Feb	SUN										Not assigned
8	10-Feb	MON	7:59	12:00	12:59	17:01						
9	11-Feb	TUE	8:03	11:55	12:55	17:04						
10	12-Feb	WED	7:59	12:10	13:00	17:01						
11	13-Feb	THU	8:01	11:52	13:06	17:02						
12	14-Feb	FRI	7:58	12:00	12:55	17:01						
13	15-Feb	SAT										Not assigned
14												
15	Work Total (hrs):				Overtime (hrs):				Flags: 3			



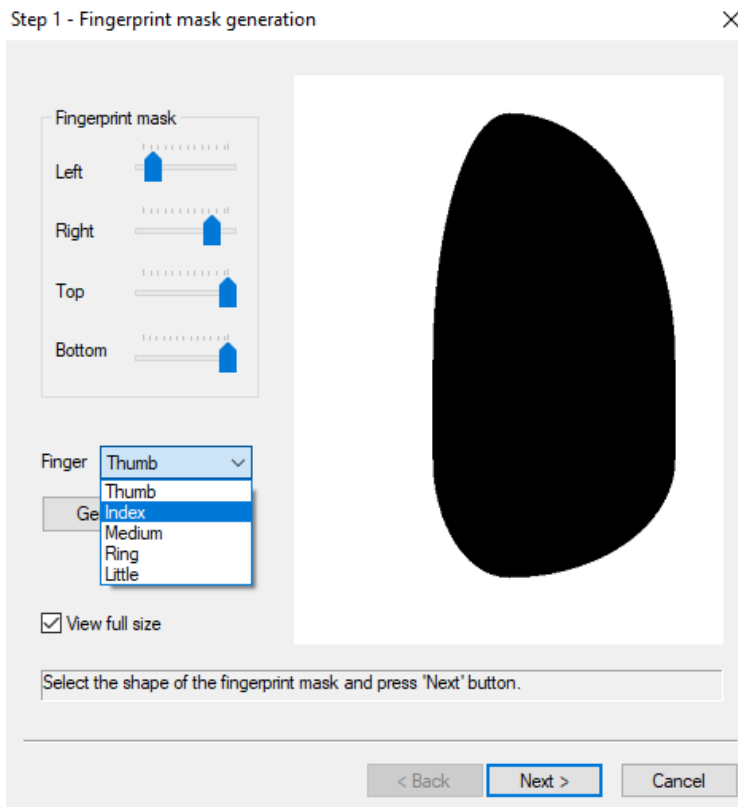
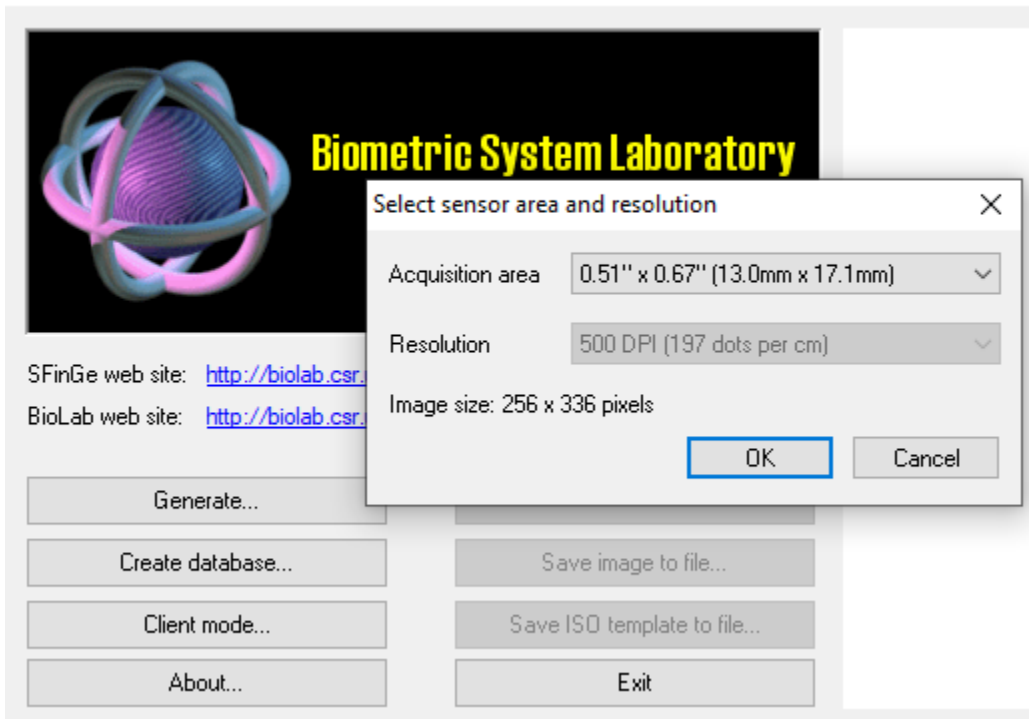
FNMR: = 1%

FMR: <0.1%



Chapter 5: Implementing Fingerprint Technology

SFinGe - Synthetic Fingerprint Generator - Demo Version



Step 2 - Directional map generation



Fingerprint class

- Left loop
- Arch
- Left loop
- Right loop
- Whorl
- Tented arch

Core

Level 1

Level 2

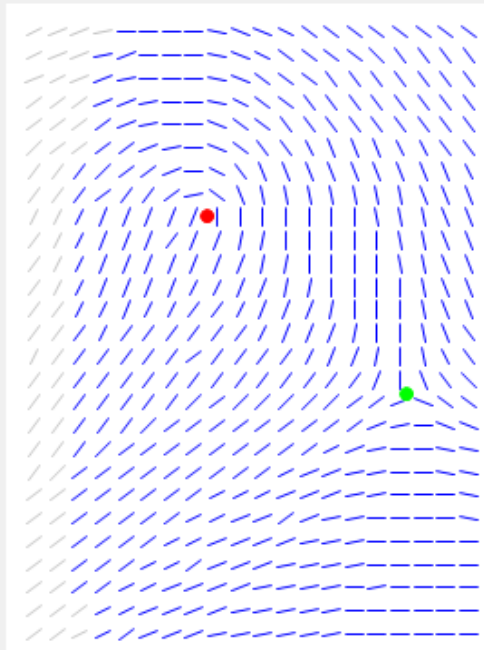
Direction perturbation

Generate

View full size

Select the fingerprint class, then drag the singularities to change their positions (or set the curvature level if the class is Arch); the orientation correction can also be tuned. Finally, set the amount of perturbation and press 'Next'.

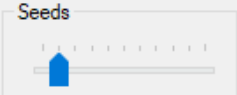
< Back Next > Cancel




Step 3 - Density map and ridge pattern generation



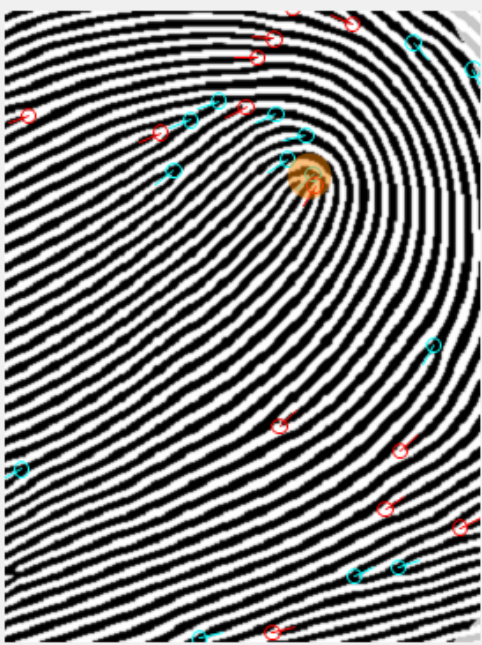
Seeds



Ridge density



View minutiae
 View full size



Start ridge generation Stop

Select the amount of seeds and the ridge density, then press 'Start ridge generation'. The generation process can be interrupted by pressing 'Stop'.

< Back Next > Cancel



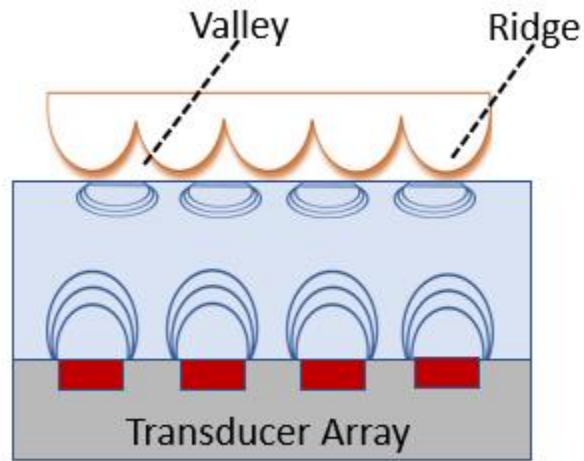
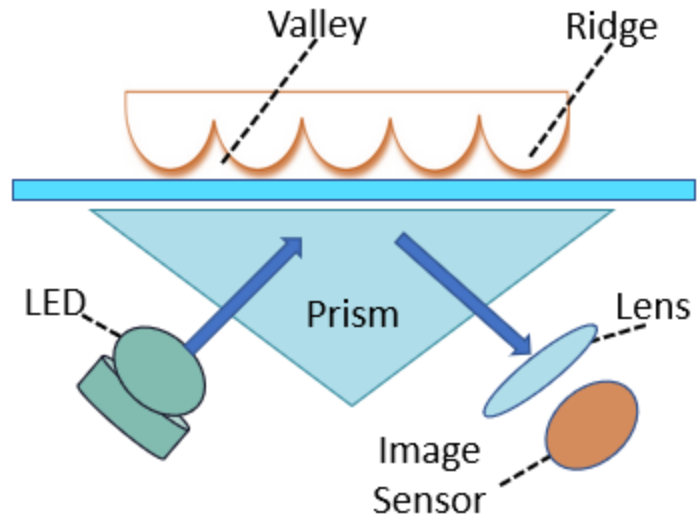
Whorl



Loop



Arch



Capture



Enhance



Overlap

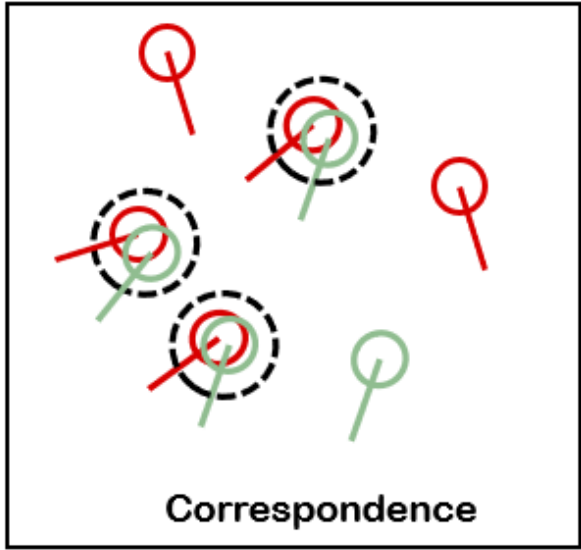
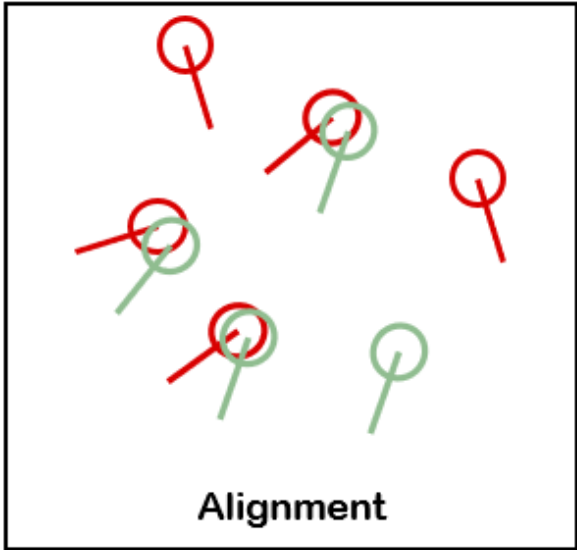


Dry Skin



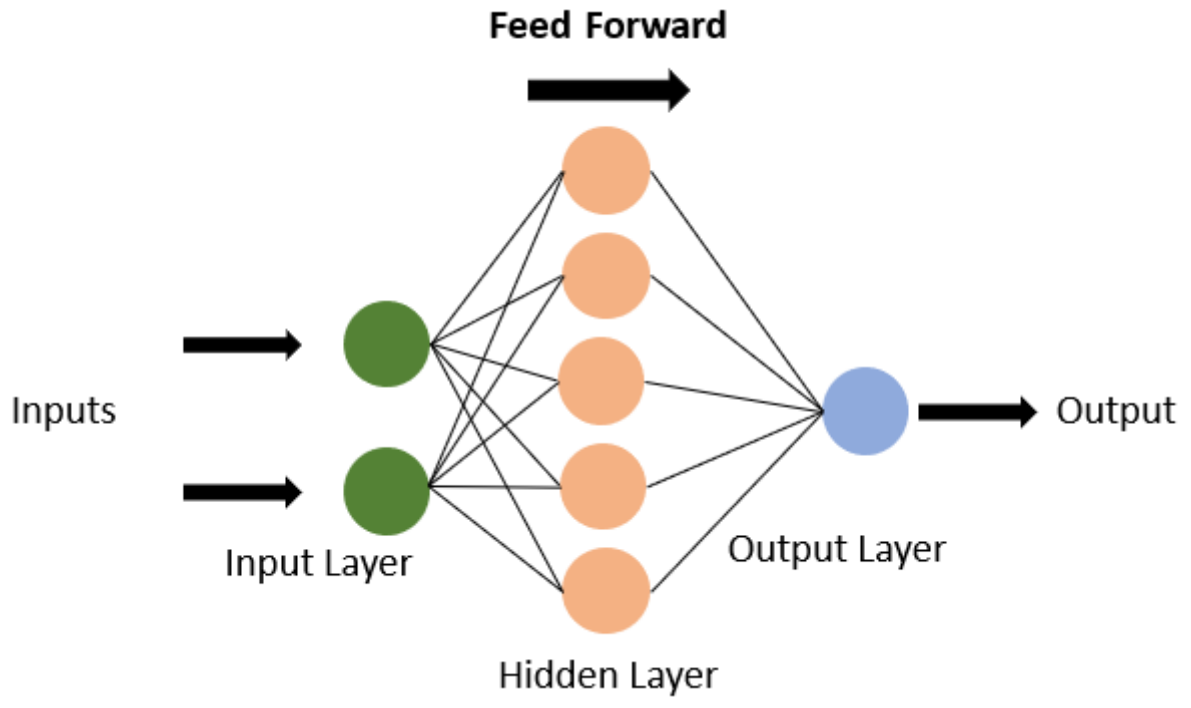
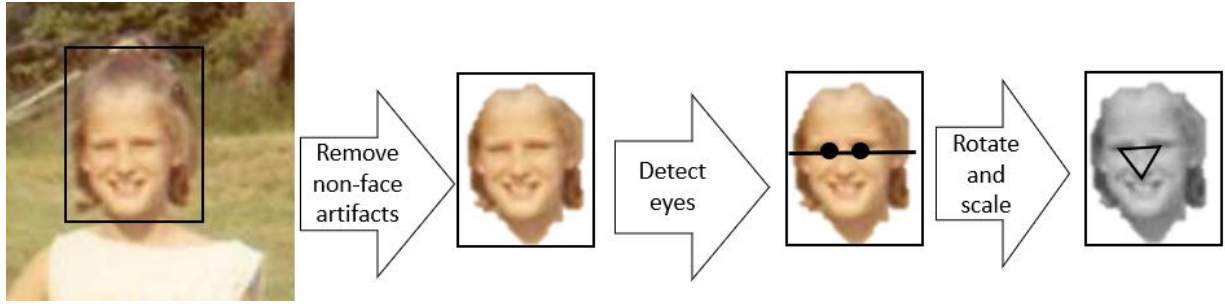
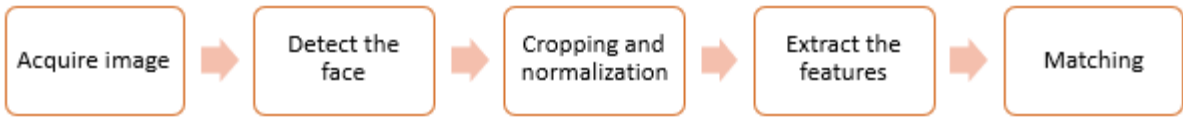
Distortion





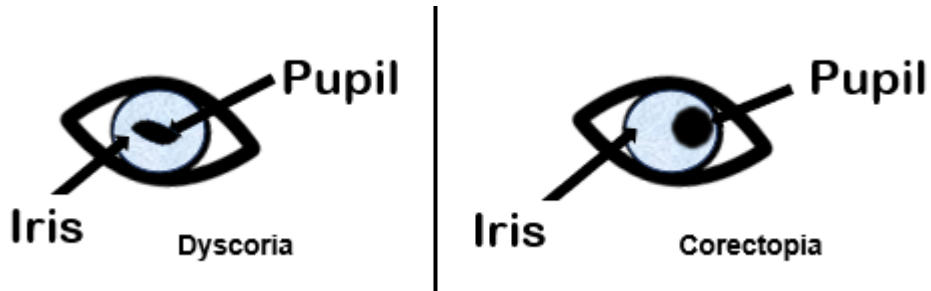
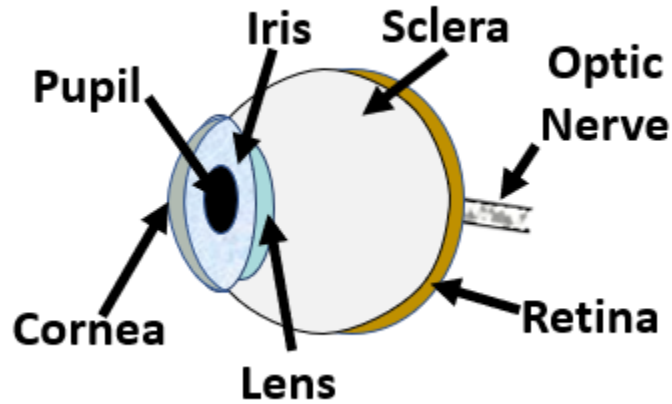
Chapter 6: Using Facial Recognition

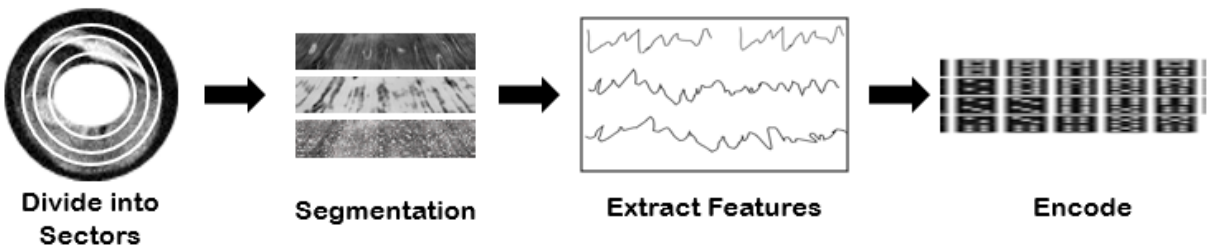
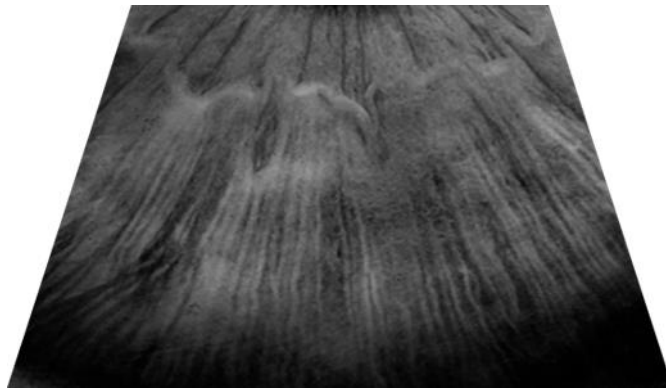
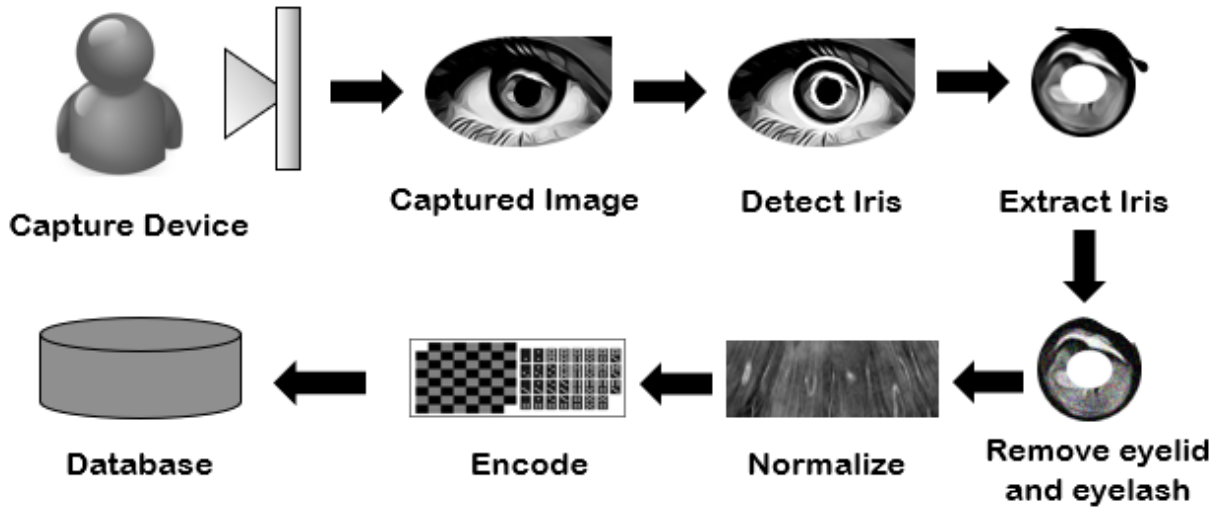




Chapter 7: Learning Iris Recognition

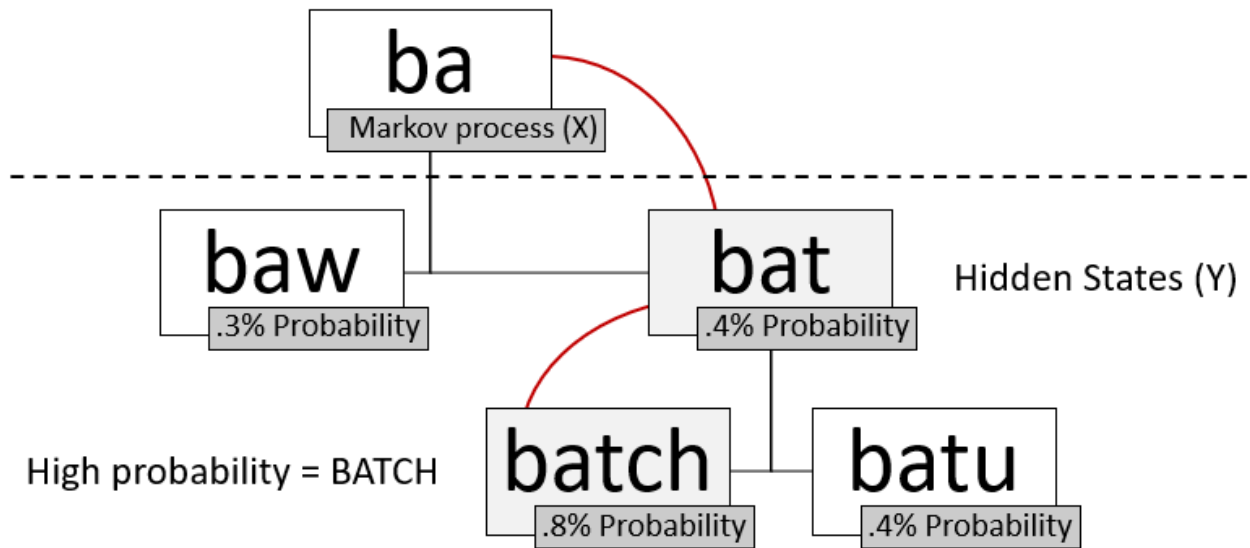
3. Eye. (j) yellow, (or) orange, (ch) chestnut, (mar) dark chestnut, (as) azure, (i) intermediate violet tinge, (ard) slaty, (v) greenish.





<i>A</i>	1	0	1	1	0	0	1	0	0	1
<i>B</i>	1	0	0	1	0	0	0	0	1	1
<i>XOR</i>	0	0	1	0	0	0	1	0	1	0

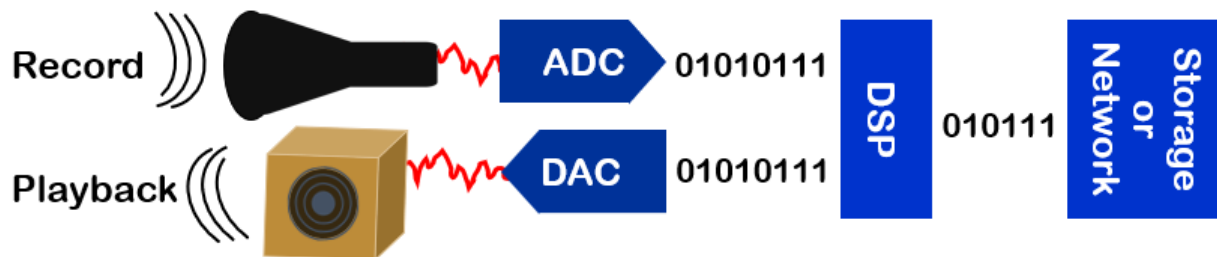
Chapter 8: Using Voice Recognition

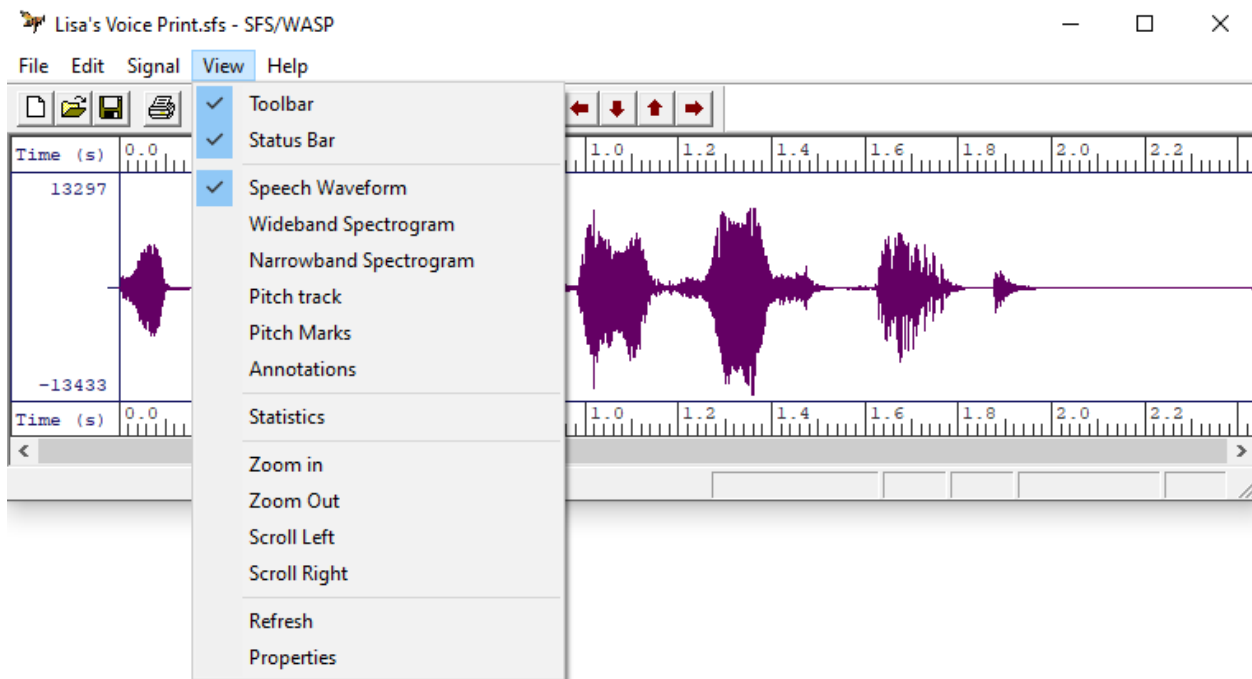
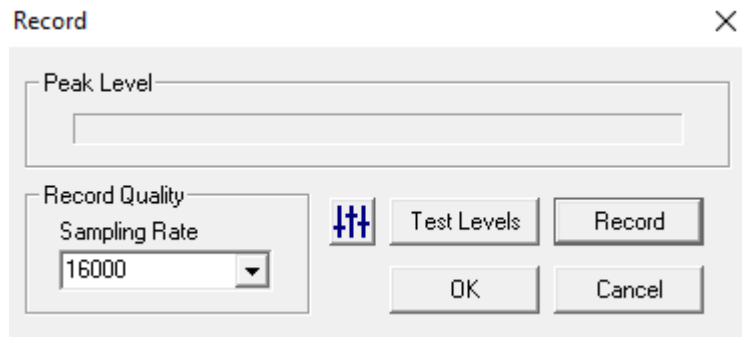
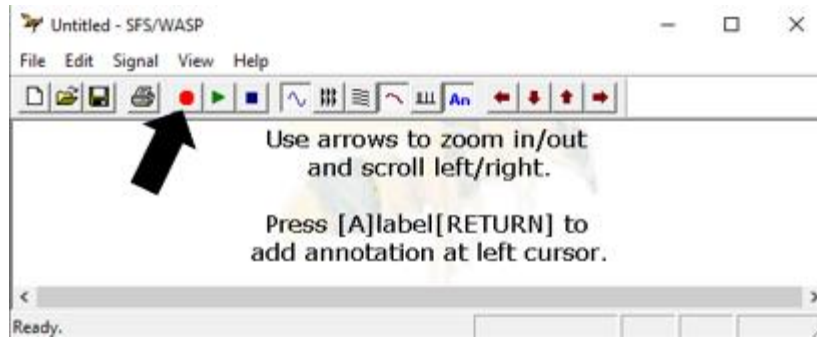


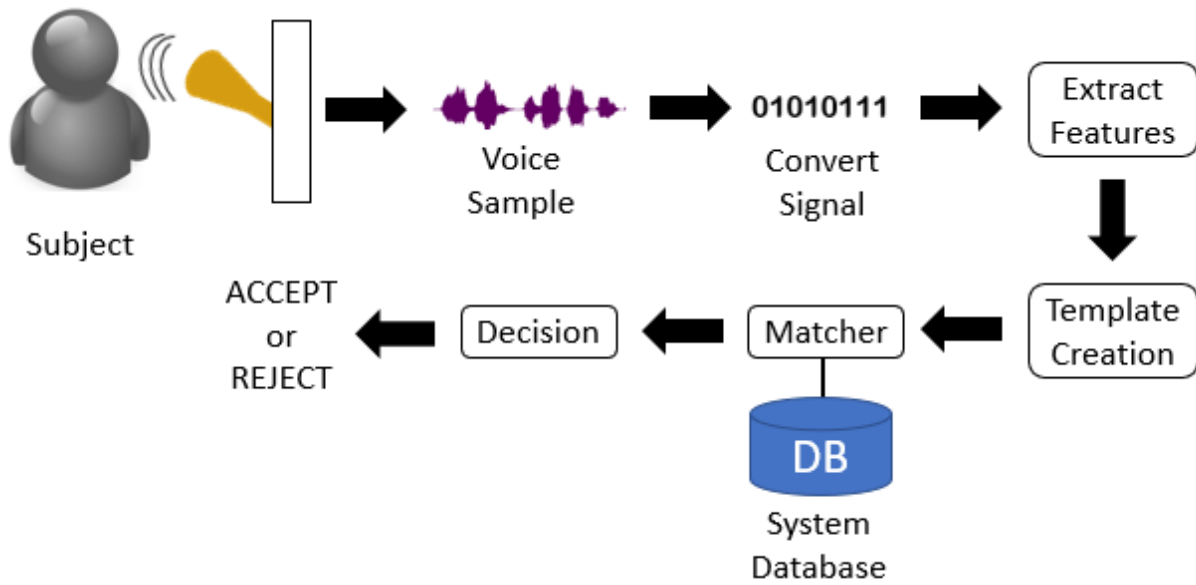
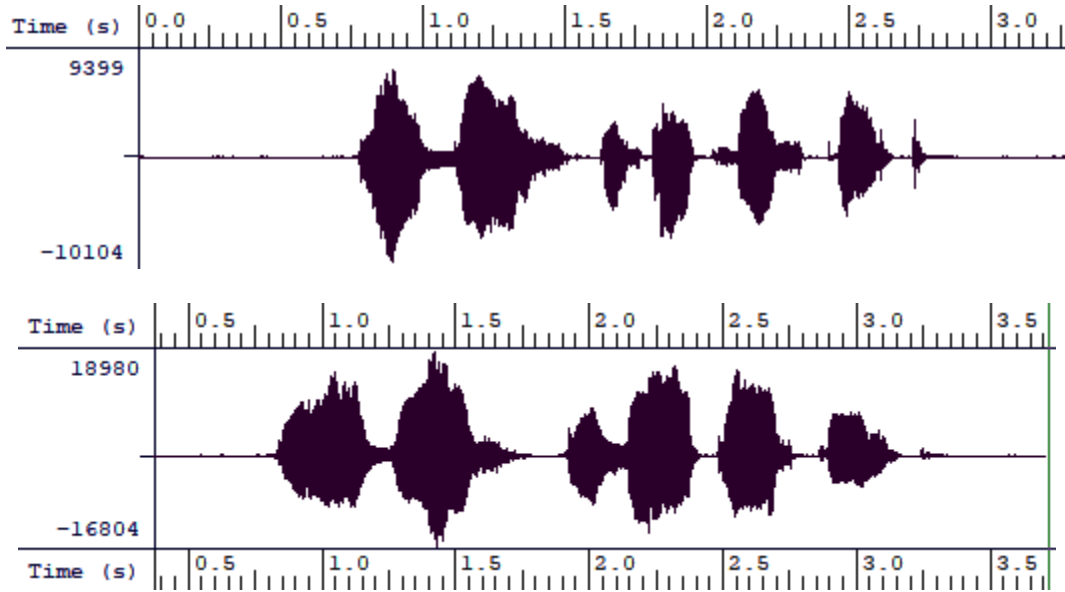
Analog Signal

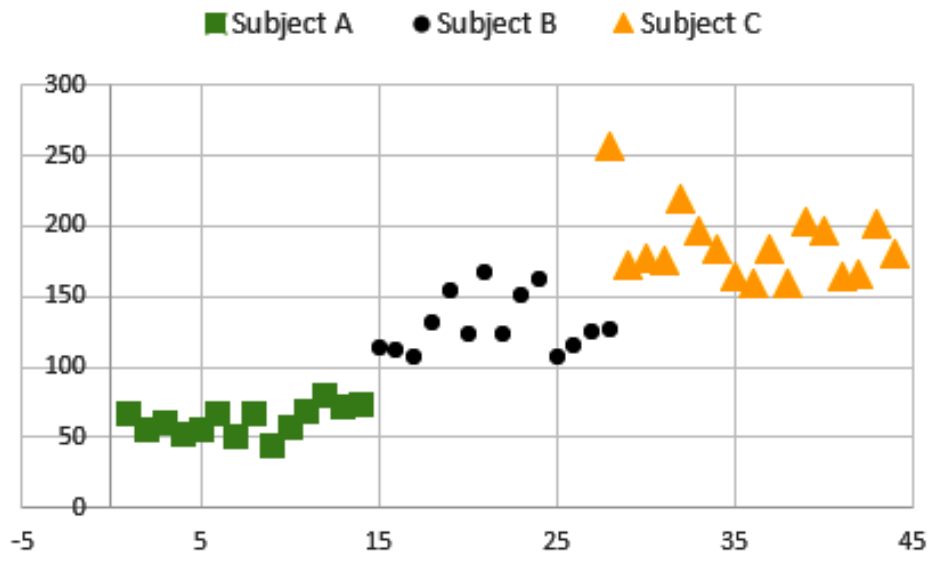


Digital Signal

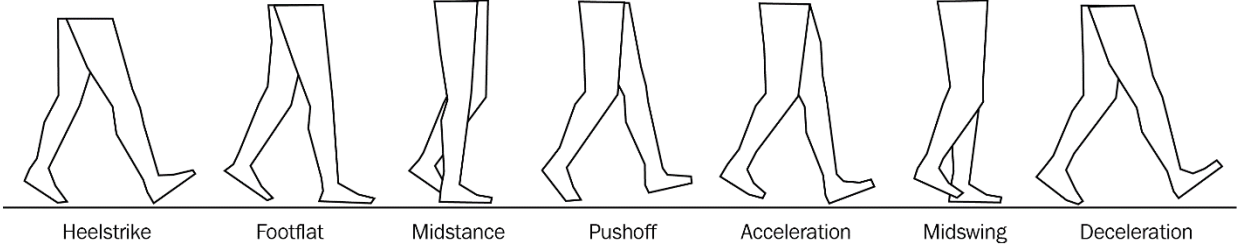
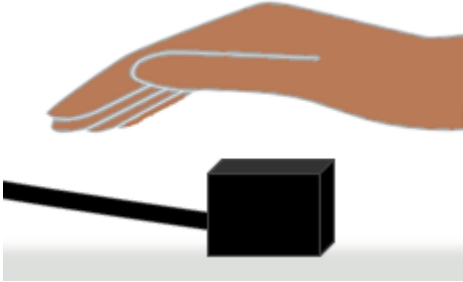
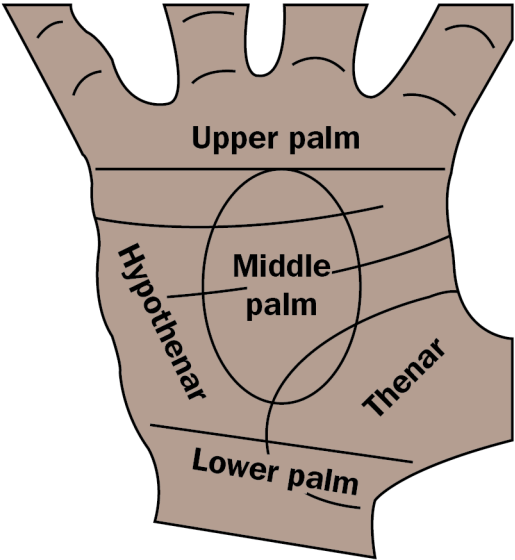




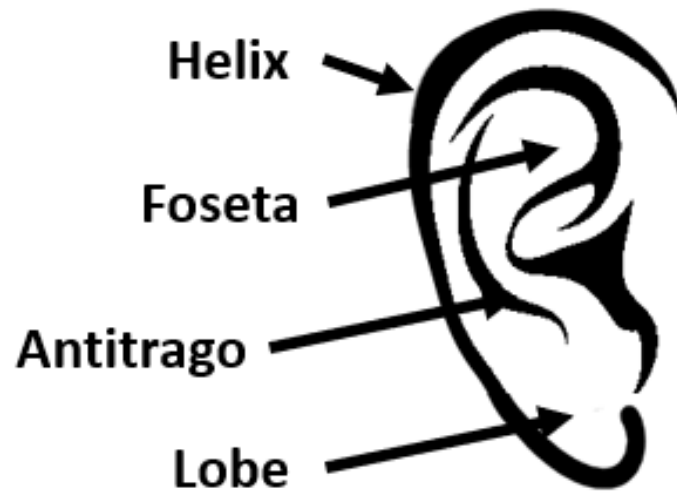




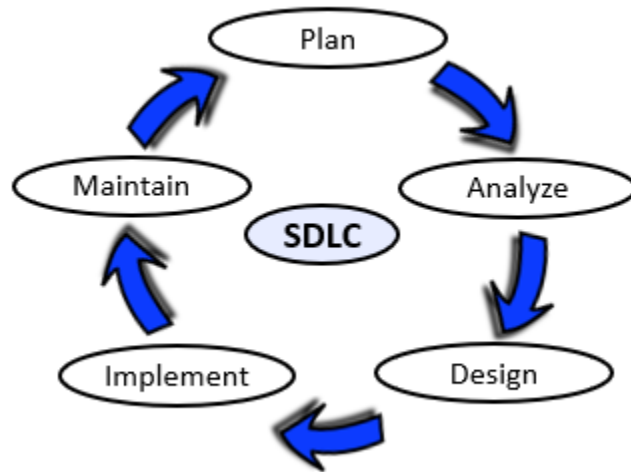
Chapter 9: Considering Alternate Biometrics



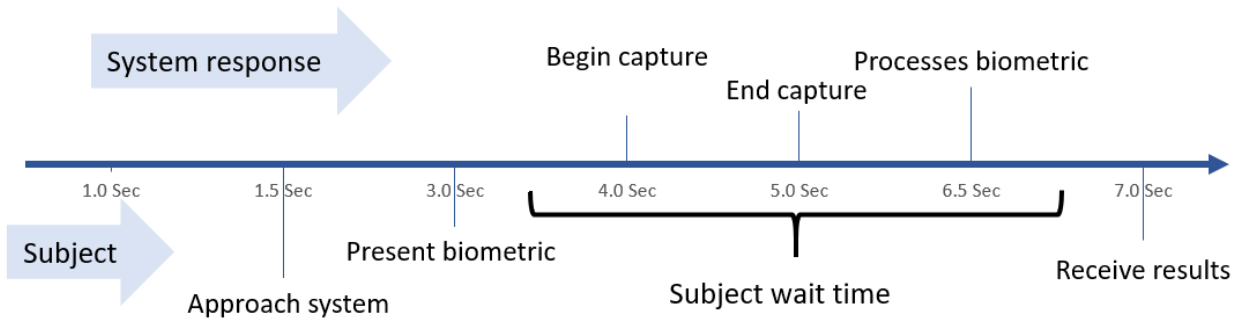
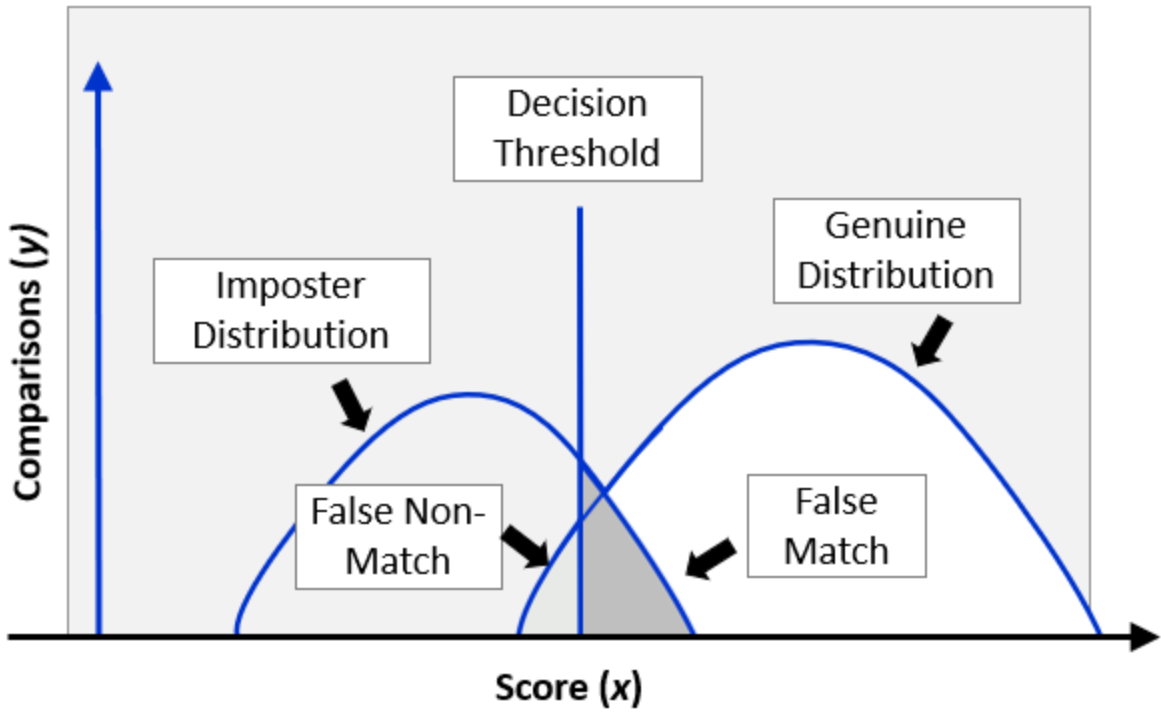
Lisa Boeck

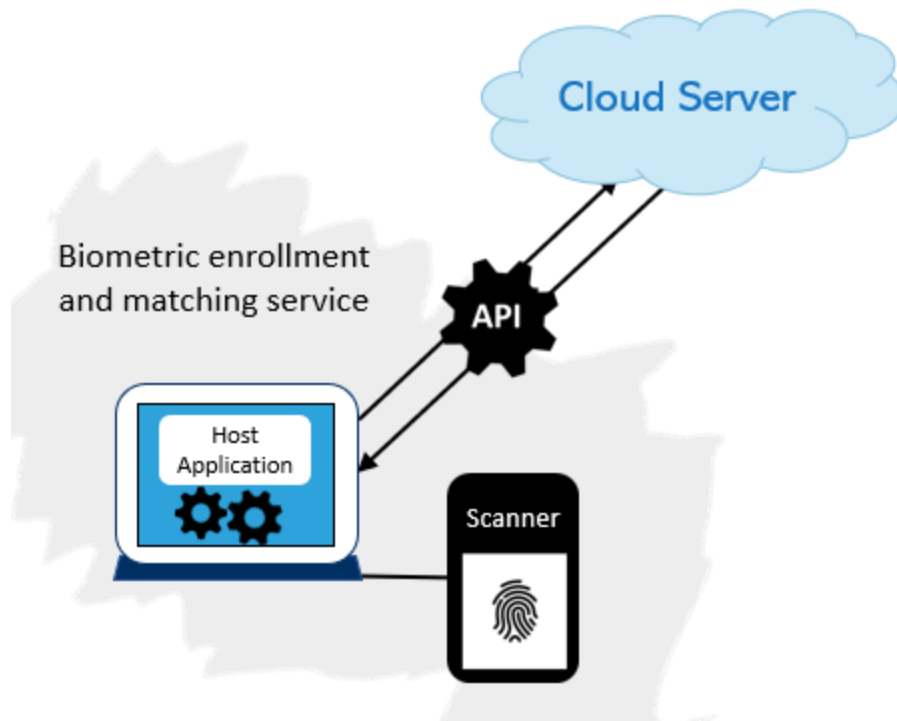


Chapter 10: Selecting the Right Biometric

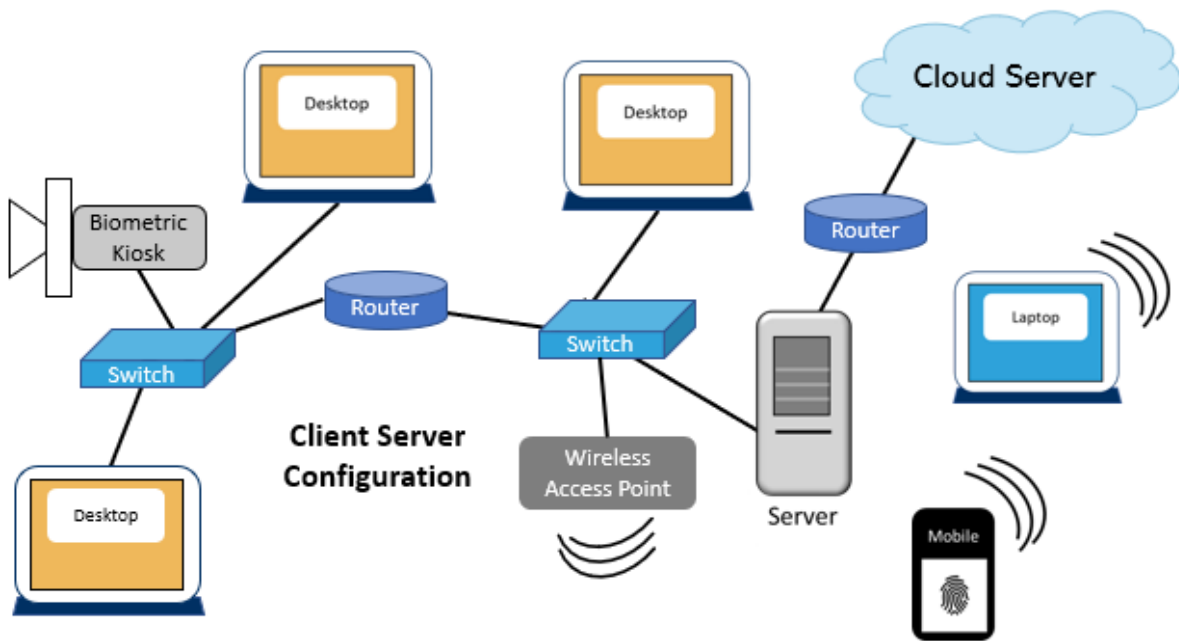
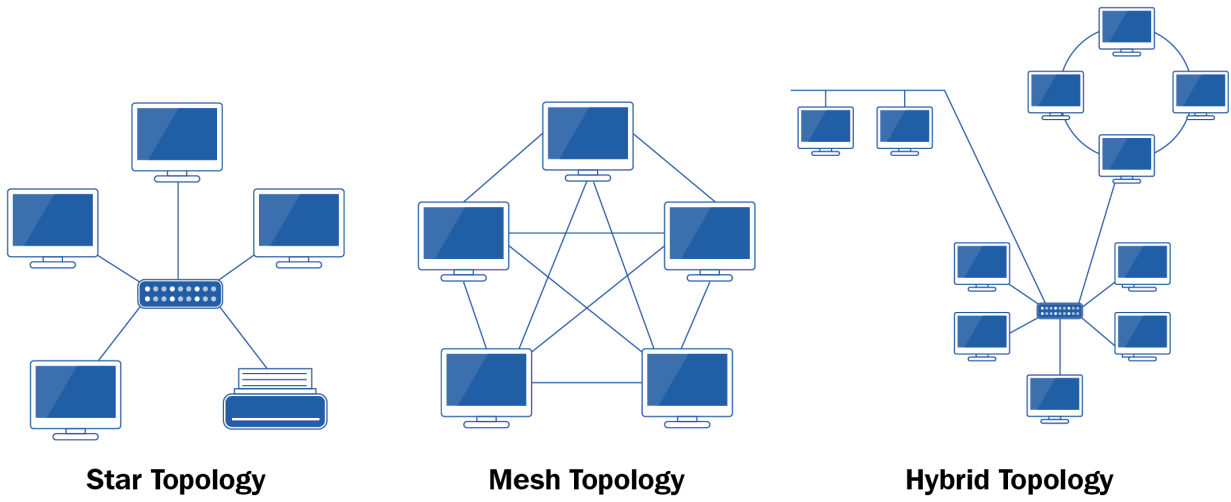


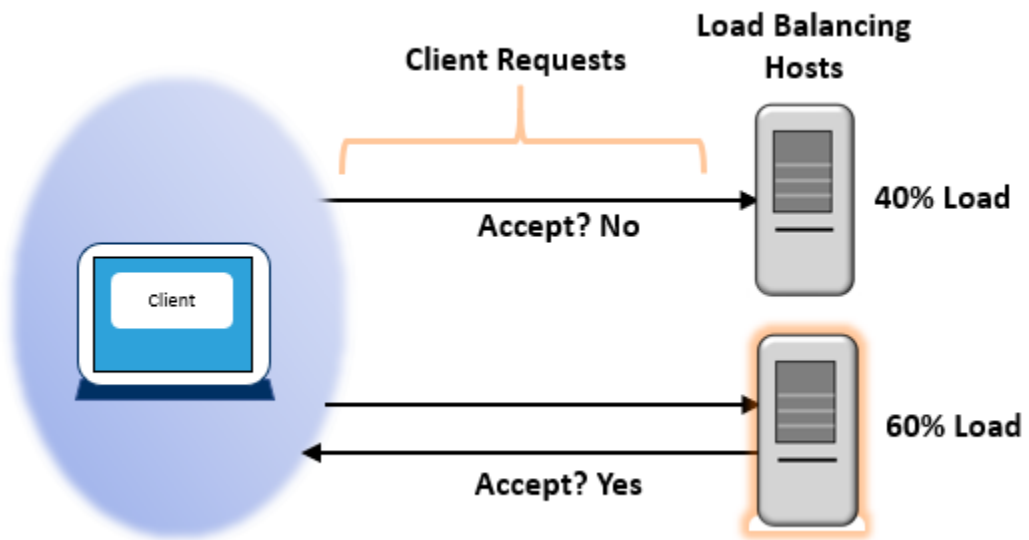
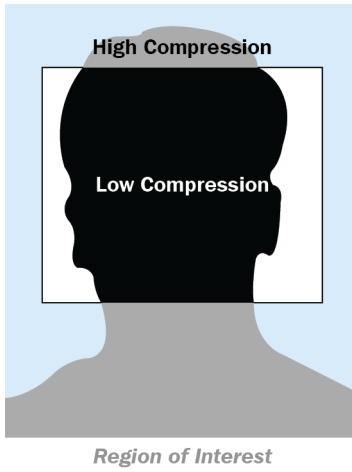
ID	Task Name	Duration	Start	Finish	Predecessors
1	Sample Biometric Project Implementation	166 days	Mon 07/13/20	Mon 03/01/21	
2	Initiation	11 days	Mon 01/04/21	Mon 01/18/21	
3	Develop Project Charter	10 days	Mon 01/04/21	Fri 01/15/21	
4	Scope Statement	3 days	Mon 01/04/21	Wed 01/06/21	
5	Milestones	2 days	Thu 01/07/21	Fri 01/08/21	4
6	Business Case	2 days	Mon 01/11/21	Tue 01/12/21	5
7	Funding Details	3 days	Wed 01/13/21	Fri 01/15/21	6
8	Stakeholder Identification	1 day	Mon 01/18/21	Mon 01/18/21	7
9	Planning	14 days	Mon 01/18/21	Thu 02/04/21	
10	Project Management Plan	2 days	Mon 01/18/21	Tue 01/19/21	3
11	Requirements	5 days	Wed 01/20/21	Tue 01/26/21	10
12	System Design	5 days	Wed 01/27/21	Tue 02/02/21	11
13	Test Plan	2 days	Wed 02/03/21	Thu 02/04/21	12
14	Training Plan	1 day	Wed 01/27/21	Wed 01/27/21	12SS
15	Implementation and Cutover Plan	1 day	Wed 02/03/21	Wed 02/03/21	12
16	Support Plan	1 day	Thu 02/04/21	Thu 02/04/21	15
17	Execution	166 days	Mon 07/13/20	Mon 03/01/21	
18	System Build and Directory Integration	10 days	Fri 02/05/21	Thu 02/18/21	9
19	Factory Acceptance Testing	1 day	Fri 02/19/21	Fri 02/19/21	18
20	Issue Remediation	3 days	Mon 02/22/21	Wed 02/24/21	19
21	On-Site Installation	2 days	Thu 02/25/21	Fri 02/26/21	20
22	Site Acceptance Testing	1 day	Mon 03/01/21	Mon 03/01/21	21
23	Training	2 days	Mon 07/13/20	Tue 07/14/20	
24	Authentication Enrollment	3 days	Wed 07/15/20	Fri 07/17/20	23
25	User Acceptance Testing	2 days	Mon 07/20/20	Tue 07/21/20	24
26	Issue Remediation	2 days	Wed 07/22/20	Thu 07/23/20	25
27	Cutover or Begin Parallel Operations	1 day	Fri 07/24/20	Fri 07/24/20	26
28	Closing	5 days	Mon 07/27/20	Fri 07/31/20	
29	Lessons Learned Documentation	3 days	Mon 07/27/20	Wed 07/29/20	27
30	Transition to Support	1 day	Thu 07/30/20	Thu 07/30/20	29
31	Close Implementation	1 day	Fri 07/31/20	Fri 07/31/20	30
32	Operational Support	1 day	Mon 08/03/20	Mon 08/03/20	
33	Analyze Thresholds and Adjust	1 day	Mon 08/03/20	Mon 08/03/20	31
34	Begin Maintenance and Monitoring	1 day	Mon 08/03/20	Mon 08/03/20	31

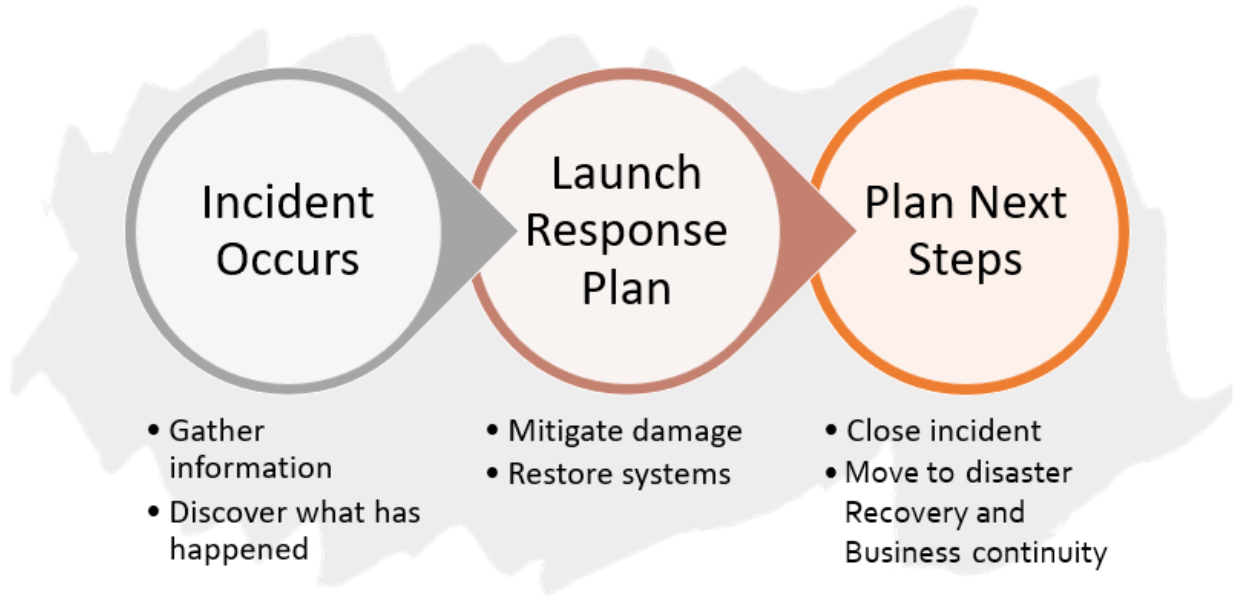




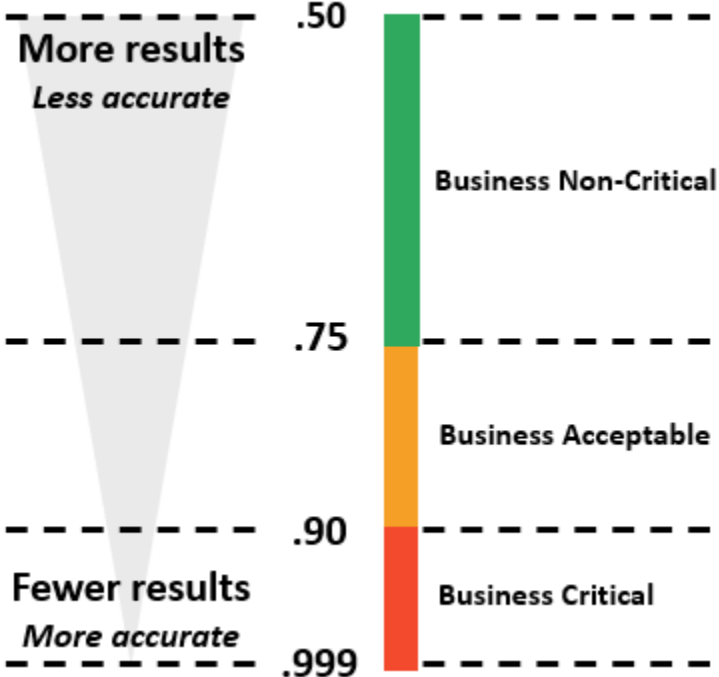
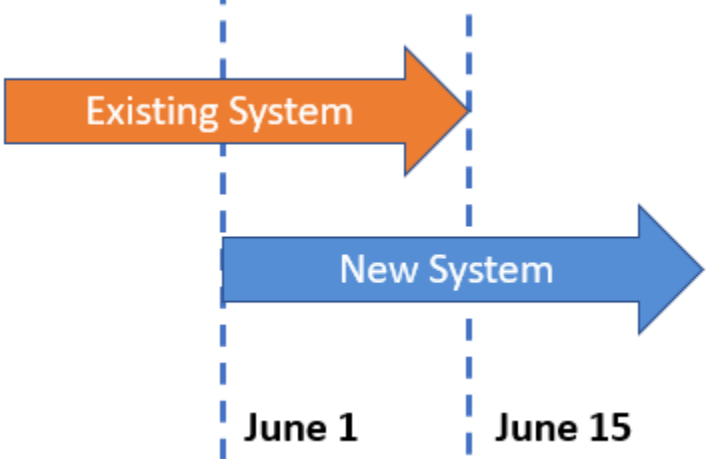
Chapter 11: Integrating the Biometric System







Chapter 12: Testing and System Deployment



Chapter 13: Discovering Practical Biometric Applications



SECURITY

Proactive



THREAT MANAGEMENT

Active



FORENSICS

Reactive



Chapter 14: Addressing Privacy Concerns

