FINGERPRINT SCANNER TECHNOLOGY

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S2 CSE A 19

Professional Communication Presentation

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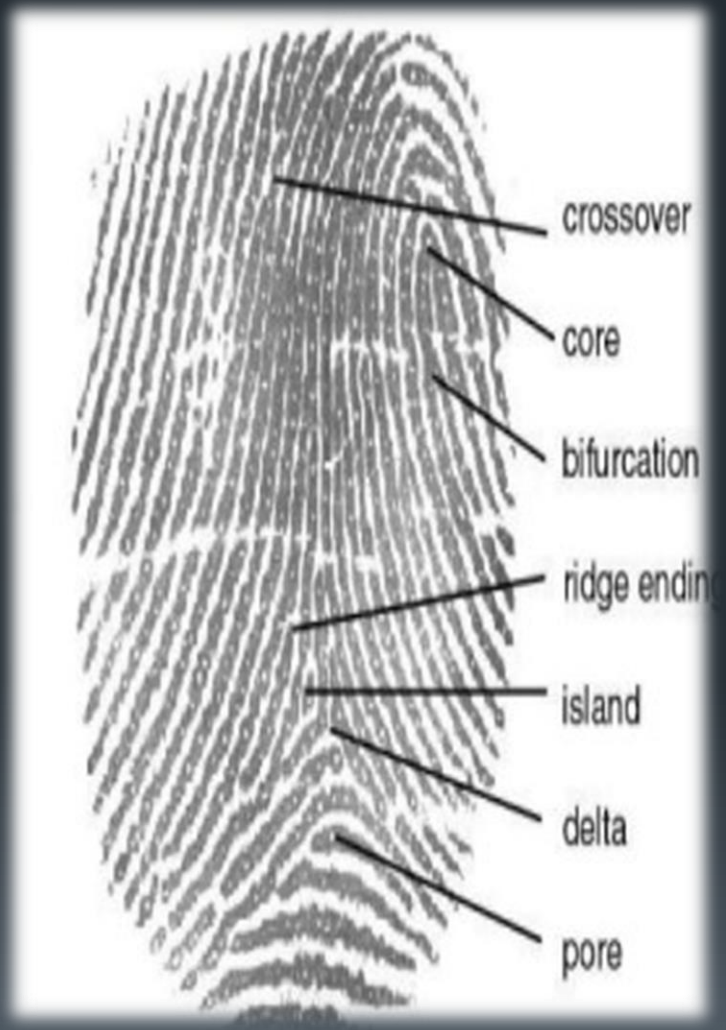
INTRODUCTION

- Fingerprint recognition refers to the automated method of verifying a match between two fingerprints.
- It is one of forms of biometrics used to identify individuals and verify their identity.
- Idea of fingerprints was first put forward by Dr.Henry Faulds, in 1880s.
- Fingerprint is based on “Key”.
- Fingerprints are distinguished by Minutiae, which are some points on the ridges.

Different Identification of Fingerprint

- ✓ Crossover :two ridges cross each other
- ✓ Core: centre
- ✓ Bifurcation: ridges separates
- ✓ Ridge ending: end point
- ✓ Island: small ridge between two spaces.
- ✓ Delta: space between ridges
- ✓ Pores



Fingerprint Patterns

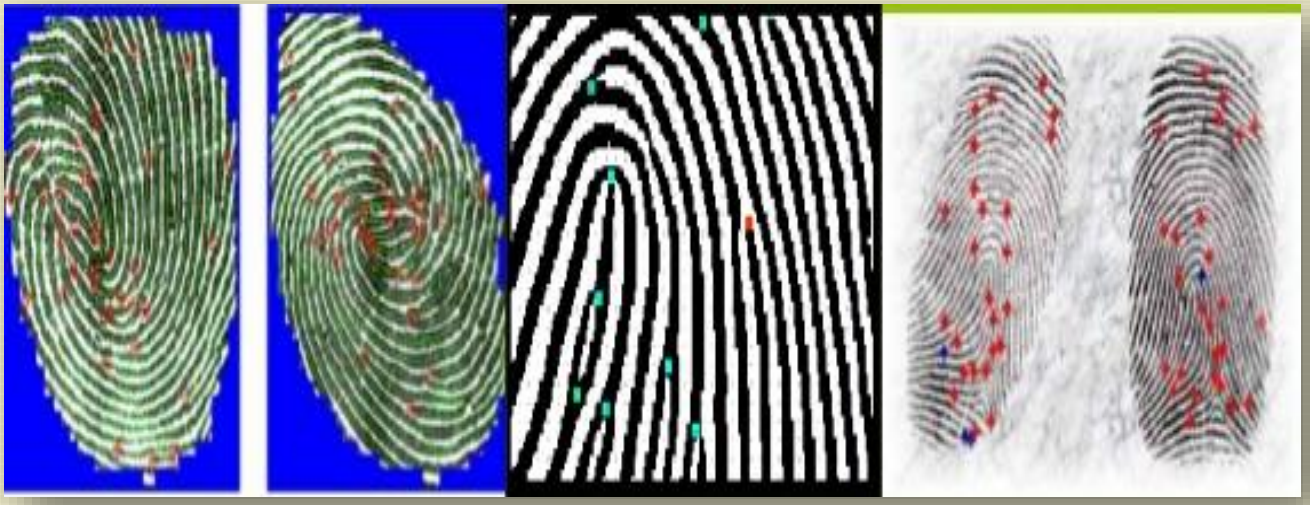
Loop: prints that recurve back to form a loop(65%)

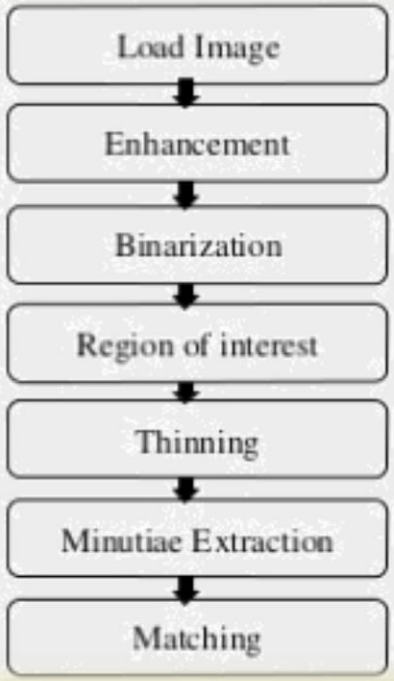
Arch: create a wave like pattern(5%)

Whorl: circular or spiral pattern(30%)

MINUTIAE BASED TECHNIQUE

- Minutiae based technique finds minutiae points and map their relative positions on finger
- Minutiae based representations are storage efficient robust to fingerprint degradation.





General structure of Fingerprint Scanners

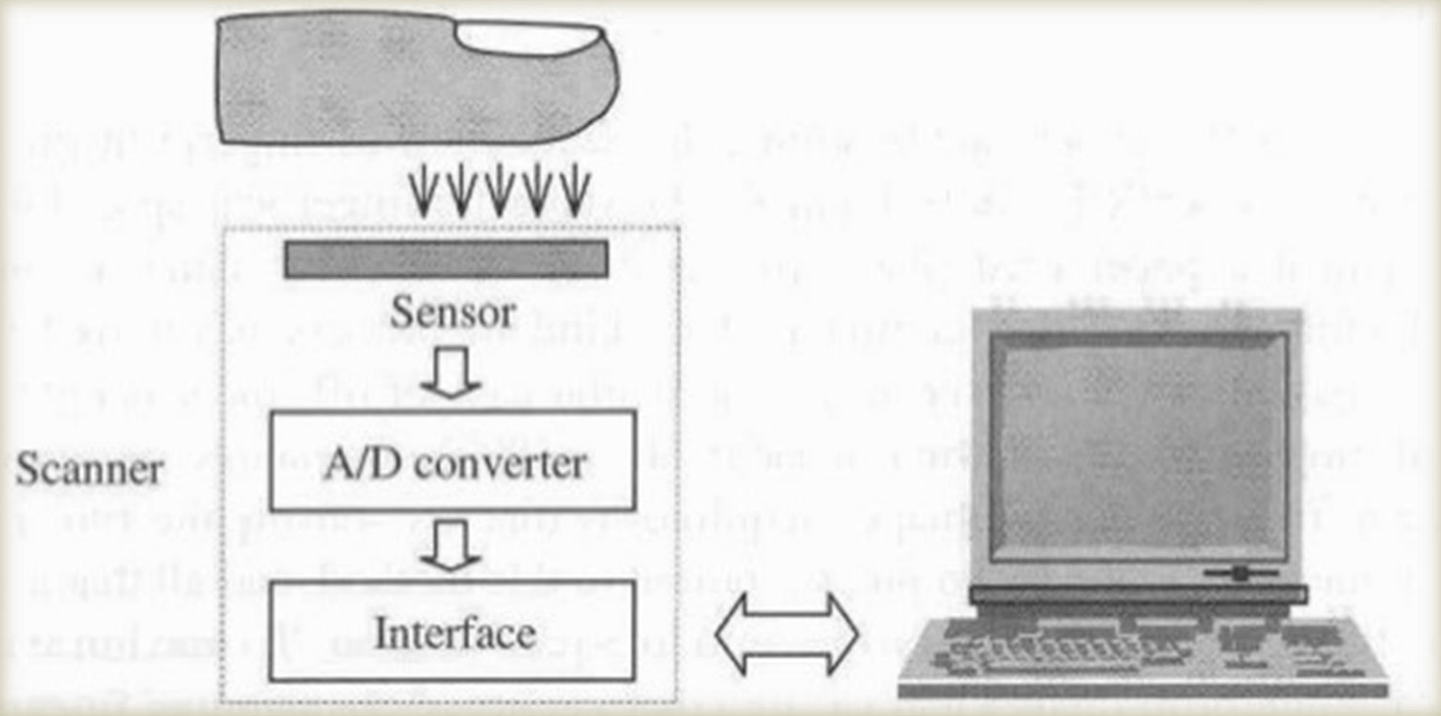
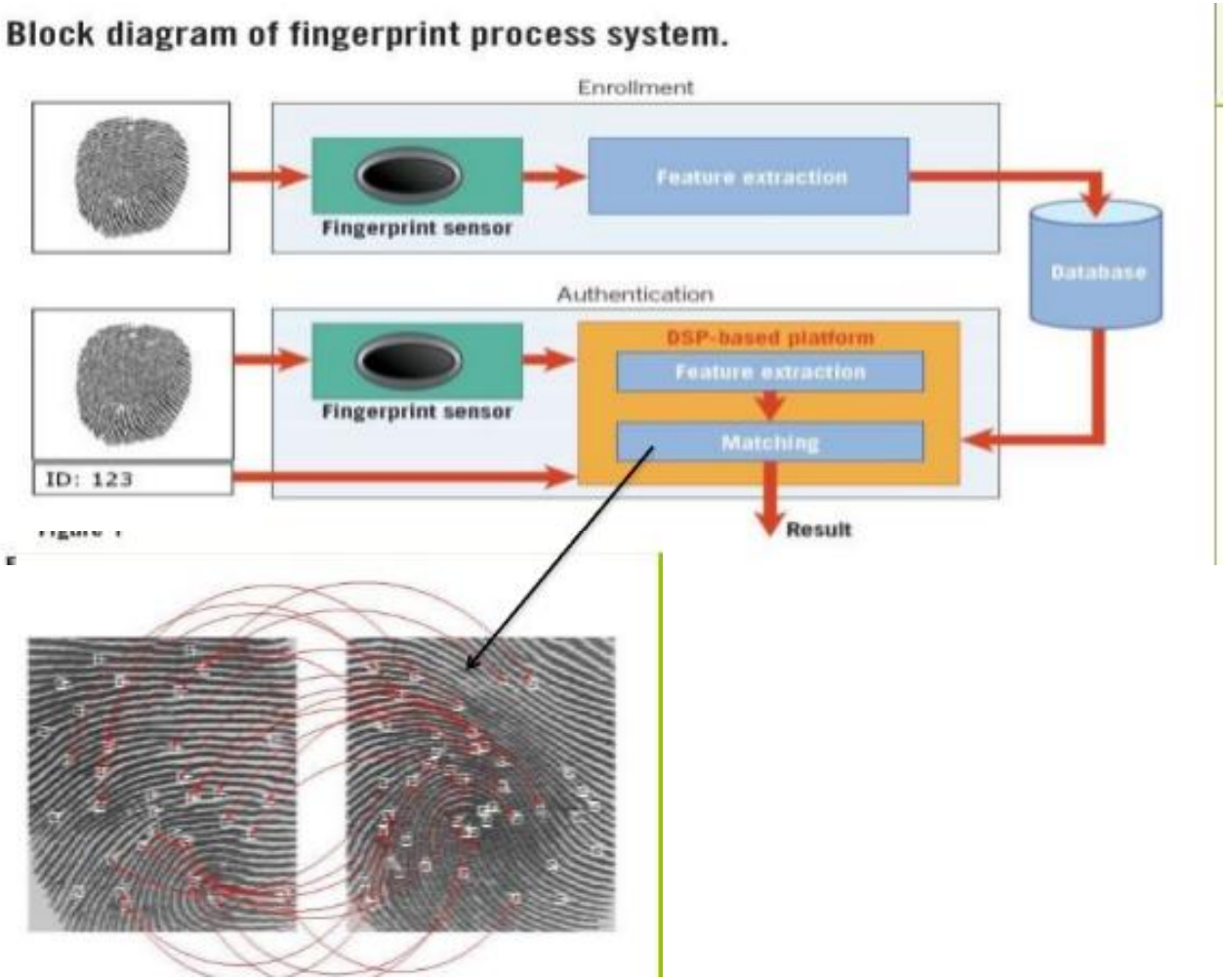


IMAGE PROCESSING

- . Captures the fingerprint images and process them with various image processing algorithms.

- This is to obtain the unambiguous skeletal image removing extraneous artifacts and healing other scars, break etc.

Block diagram



Types of Scanners

The two main technologies used to capture fingerprint are:

1. Optical Scanner
2. Capacitive Scanner

Optical Scanner

Use light refracted through a prism. An optical sensor based reader uses light to read and acquire fingerprints

Capacitive Scanner

Capacitive sensors use current to sense a fingerprint and capture it. Detects voltage changes between ridges and valleys

FINGERPRINT SCANNER MOBILE PHONES

- Smartphone manufacturers integrated this biometric facility for security so that outsiders cannot access the data stored in the device.
- It was first implemented by Motorola on Atrix in 2011 followed by Apple and Samsung on iPhone 5s and Galaxy S5.

APPLICATIONS

- ✓ Banking security – ATM security, card transaction
- ✓ Information System Security
- ✓ National ID systems
- ✓ Secure E-commerce
- ✓ Investigative purposes

ADVANTAGES

i. High accuracy
ii. Economical biometric security
iii. Easy to use
iv. Standardized and reduced size of database memory required

REFERENCE

Youtube

Wikipedia

Slideshare.net

Youngwonks.com

THANK YOU