

Biometric Security Systems

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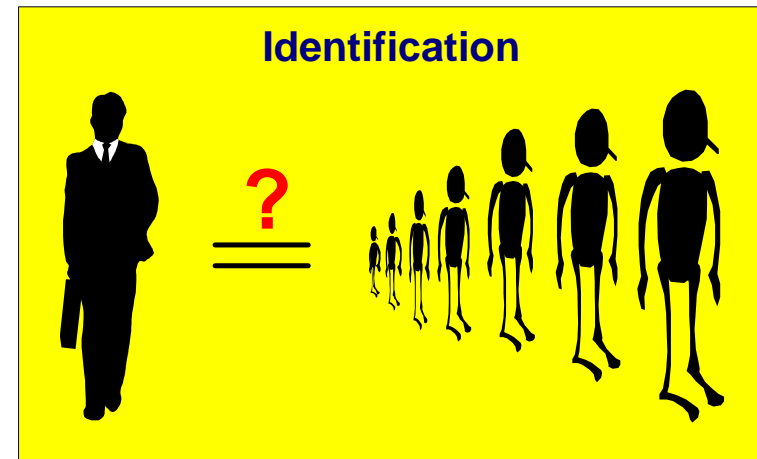


Identity

- Distinction of physical identity from electronic

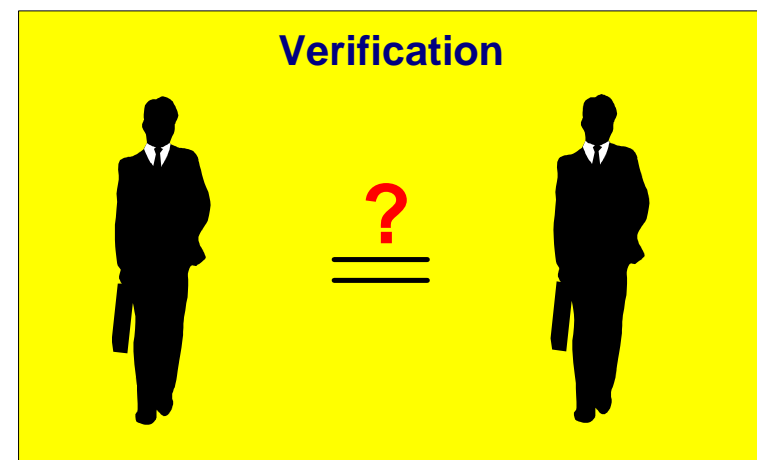
Identification

- Comparison 1:N



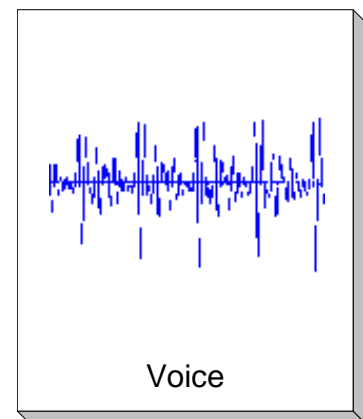
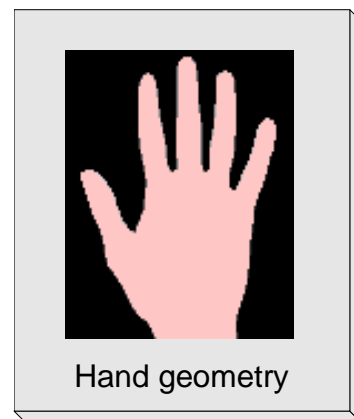
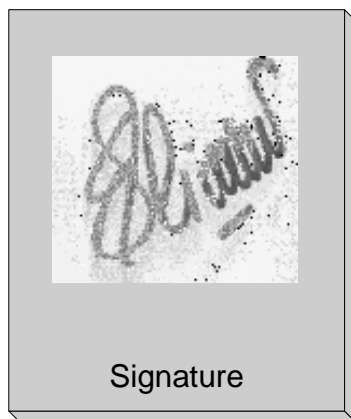
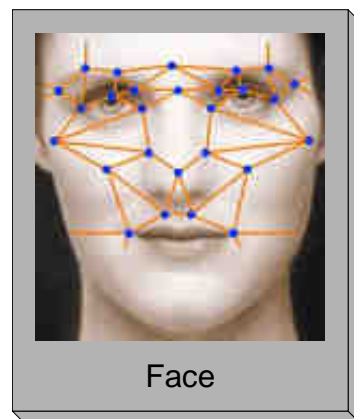
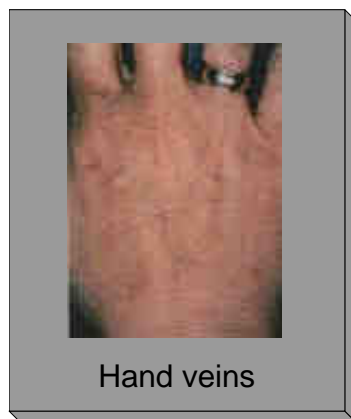
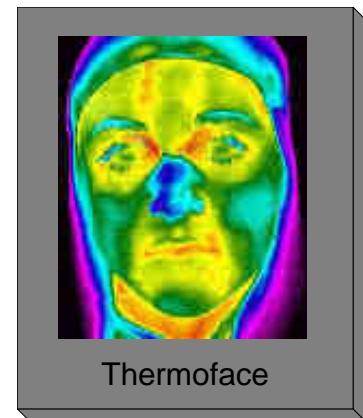
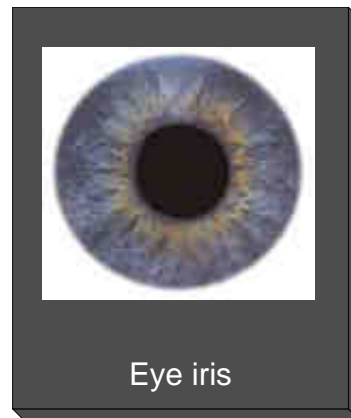
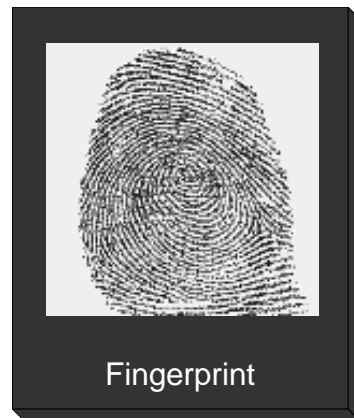
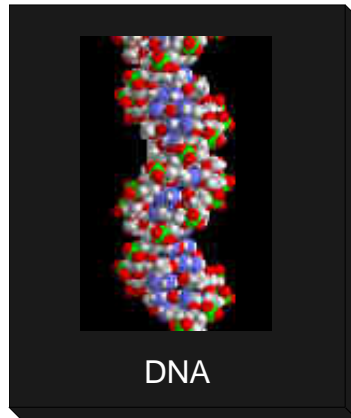
Verification

- Comparison 1:1



Authorization

- Confirmation of identity

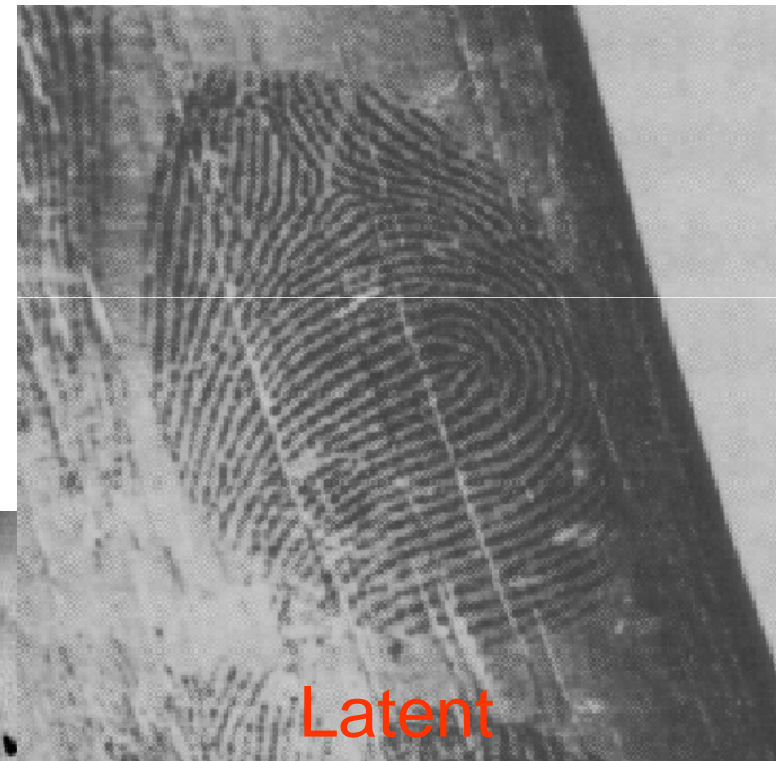
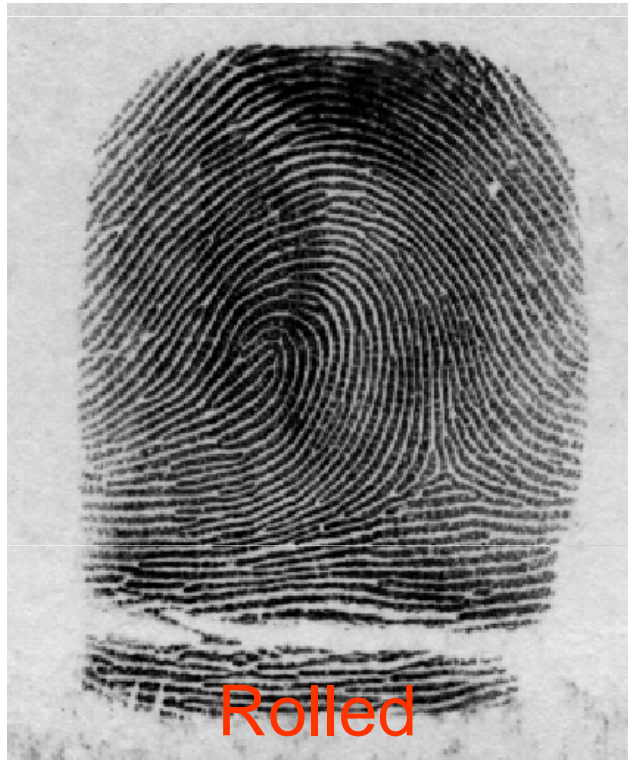


→ There exist 3 types of fingerprints:

→ Rolled (colored)

→ Picked (live)

→ Latent



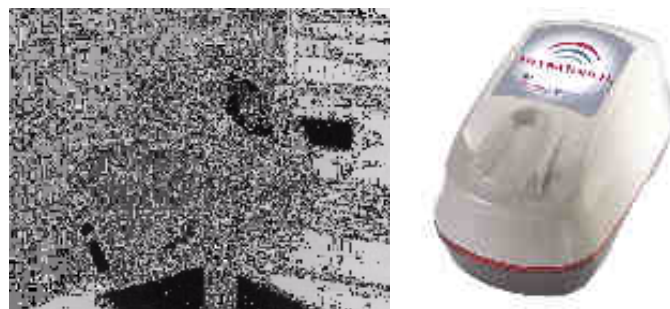
Optical technology



Capacitive technology



Ultrasound technology



E-Field technology



Electro-optical technology



Pressure sensitive technology



Thermal technology





Suprema SFM 3020
(fake – rubber stamp)



Artificial fingerprints (SFinGe)

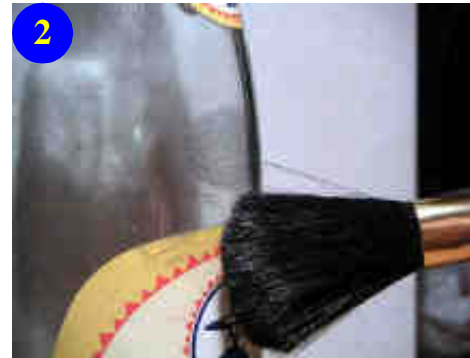


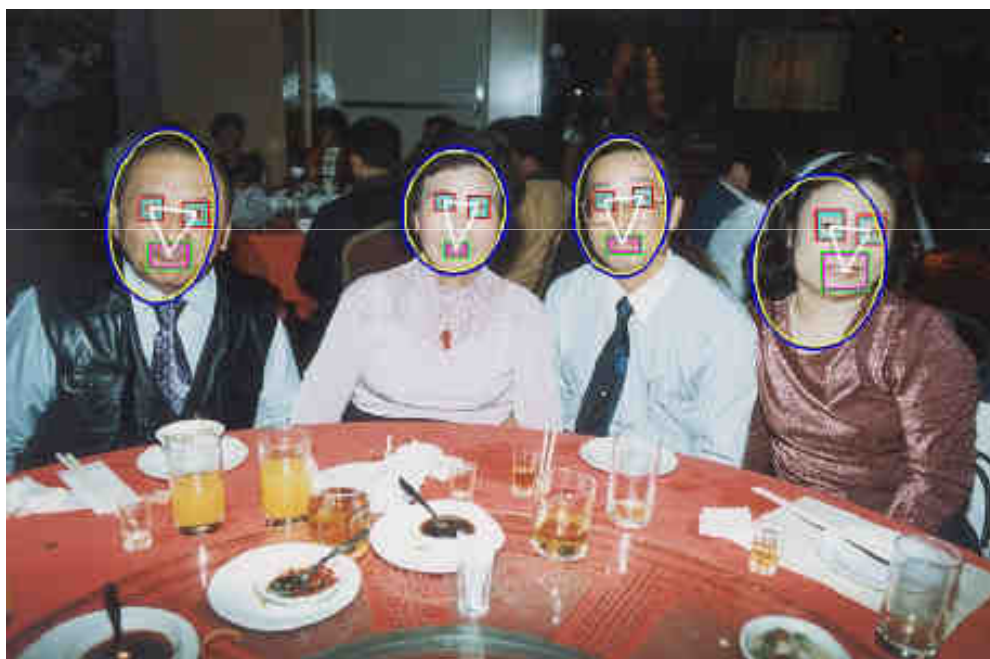
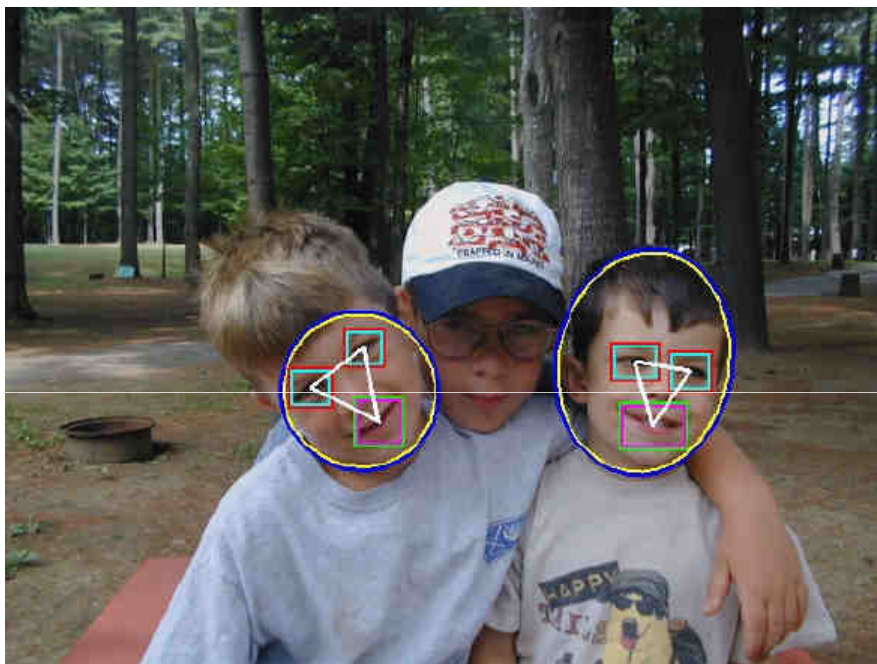
Artificial fingers

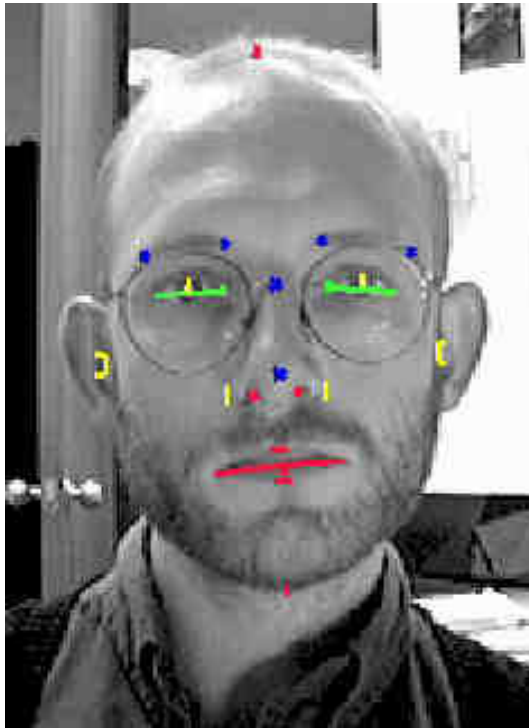


Fake fingerprints of different materials

How to produce a fake finger(print)?







Patch Model

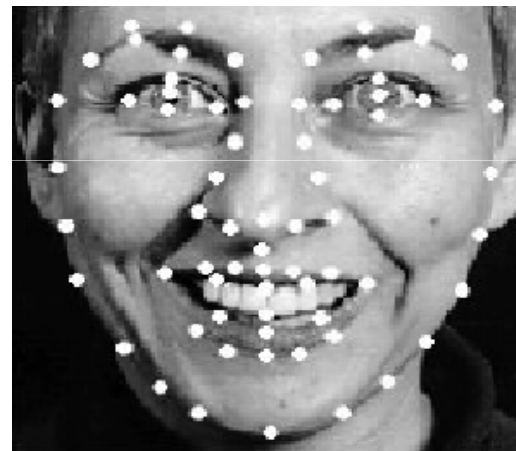
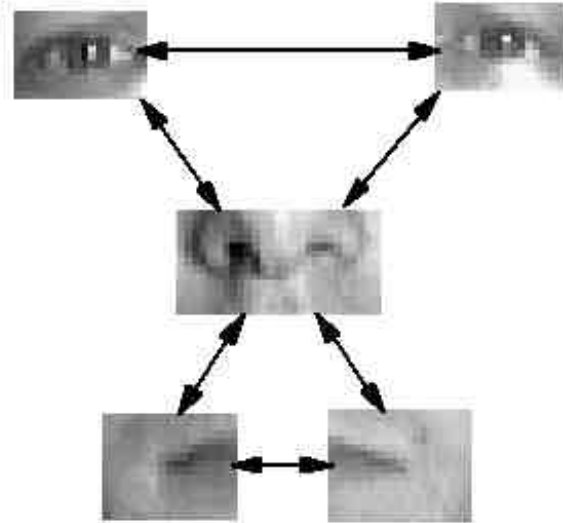
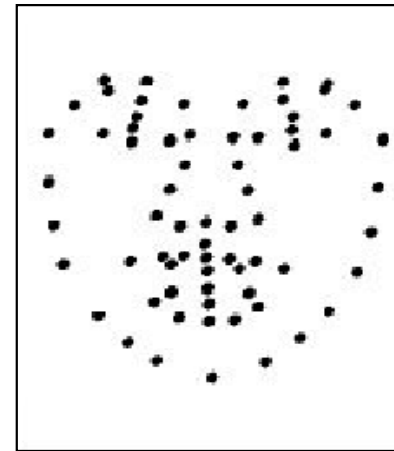


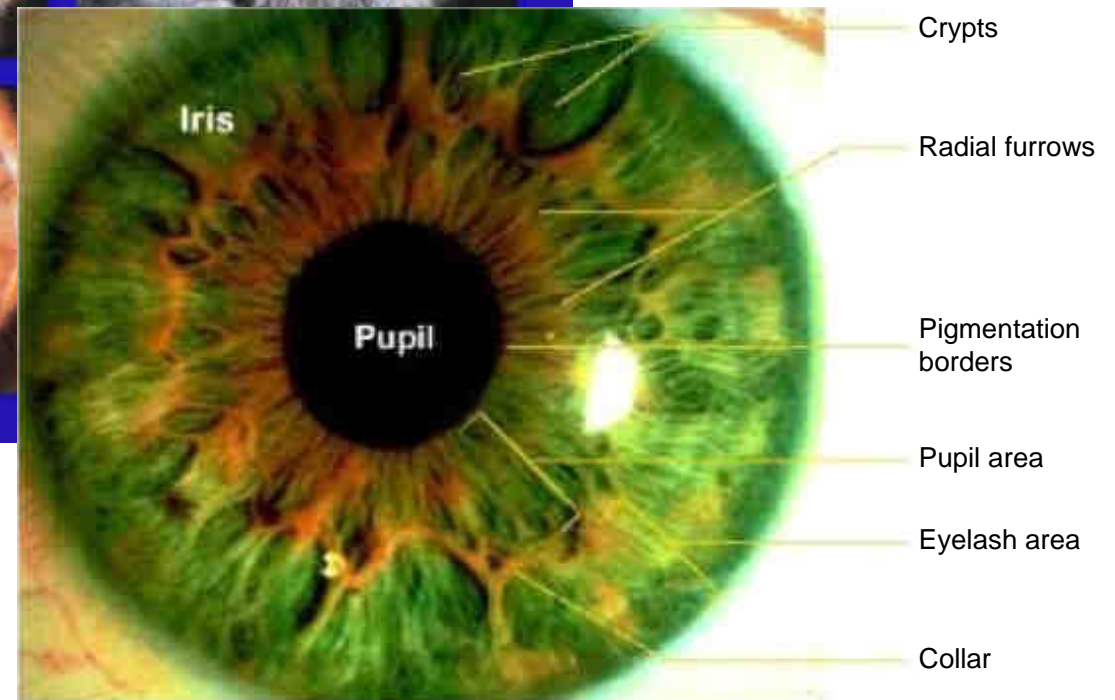
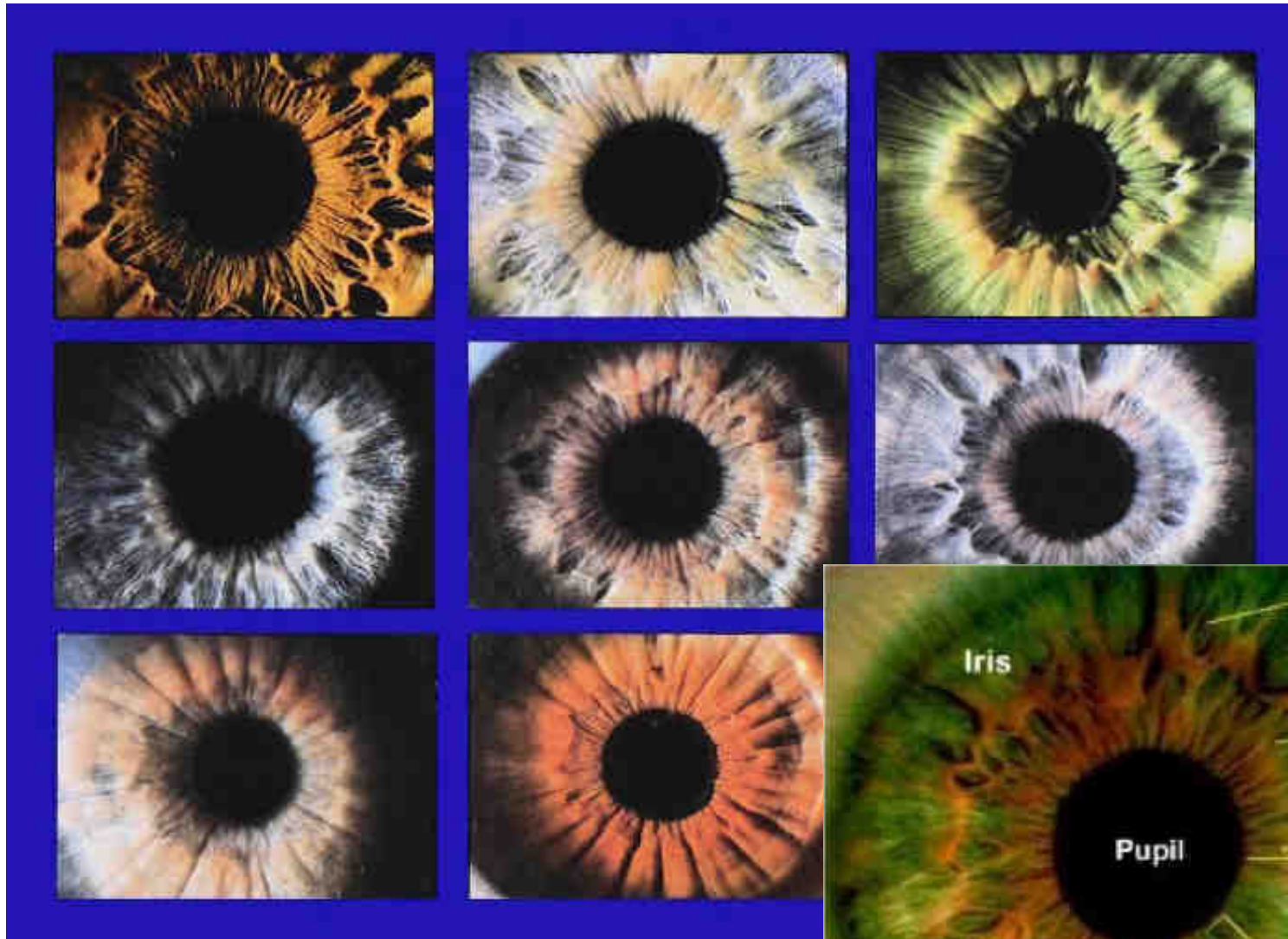
Image with highlighted points

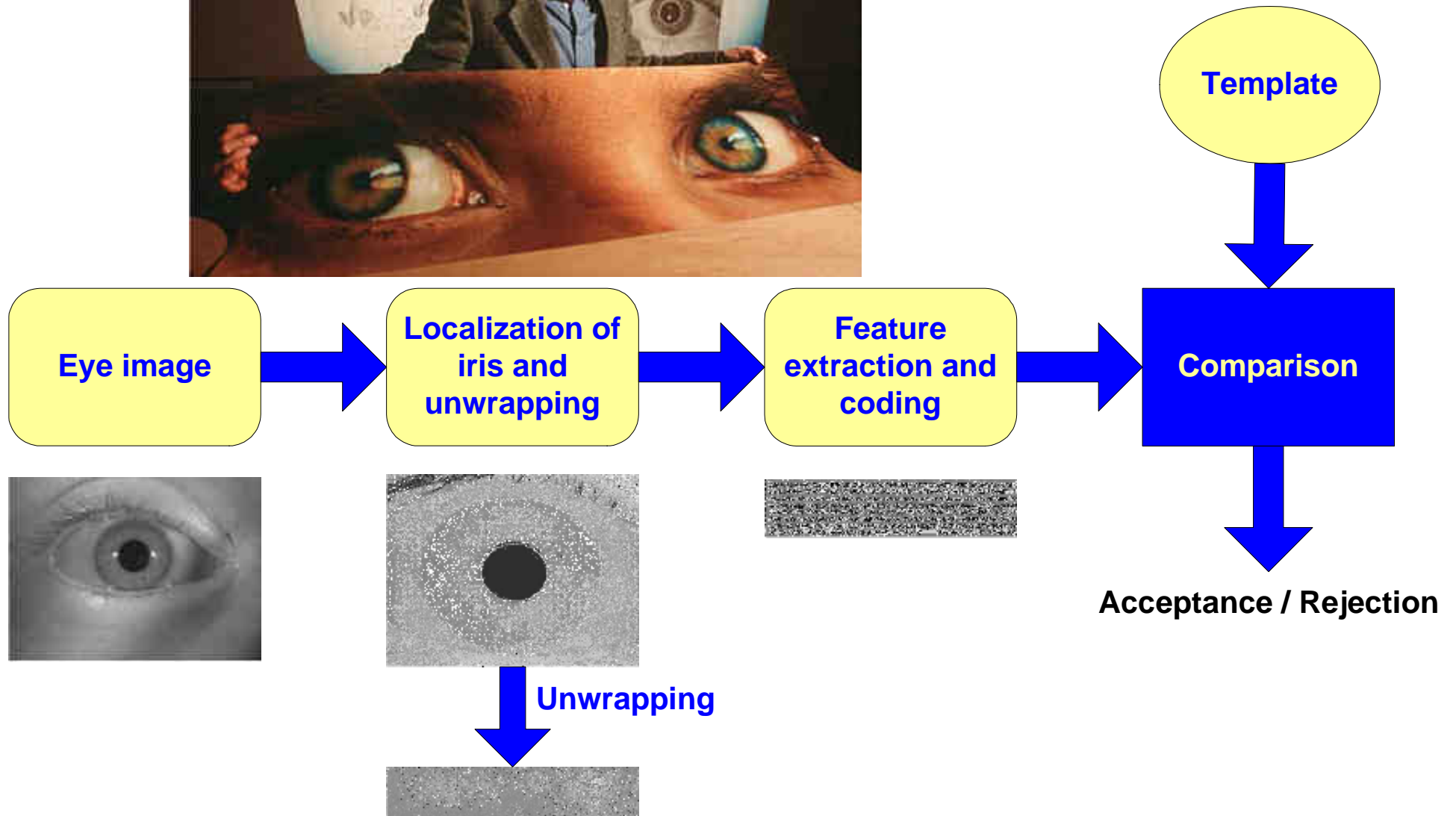


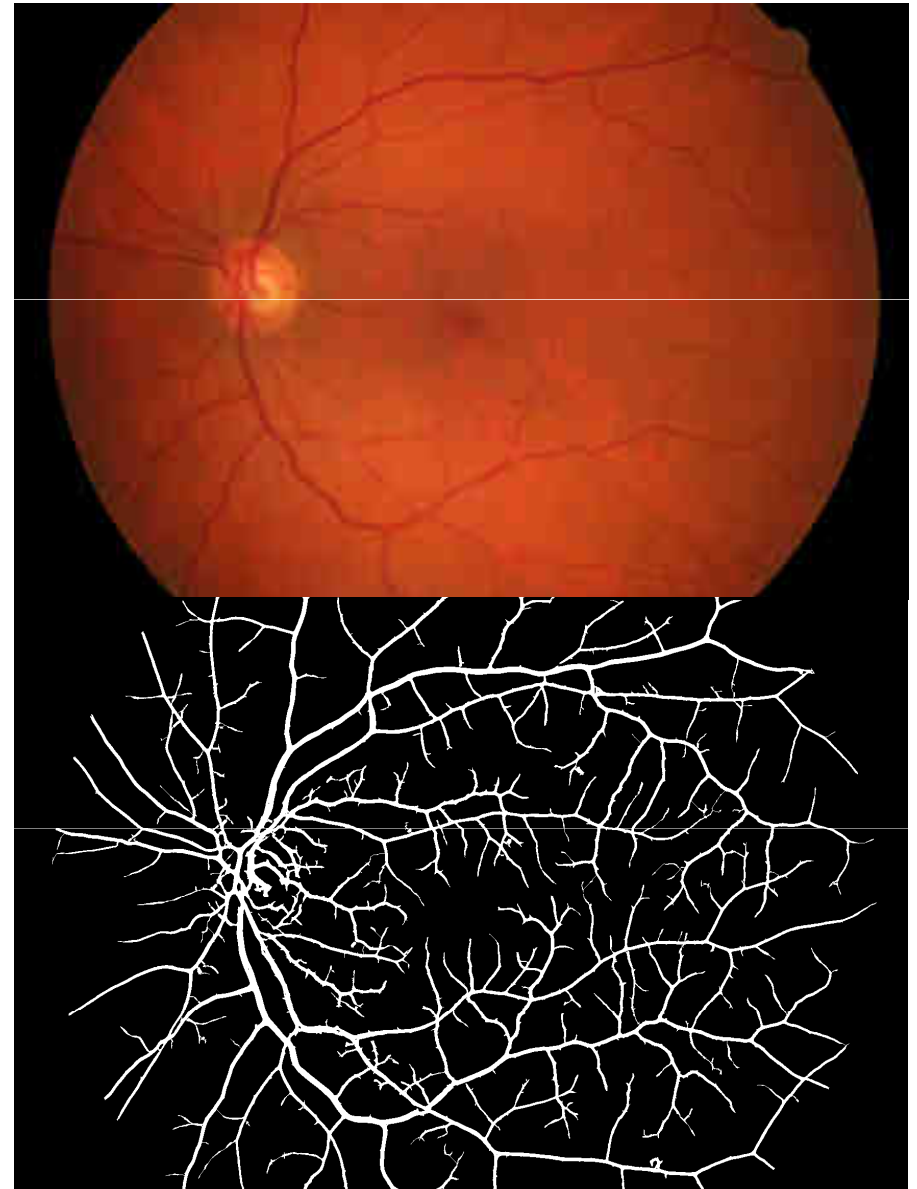
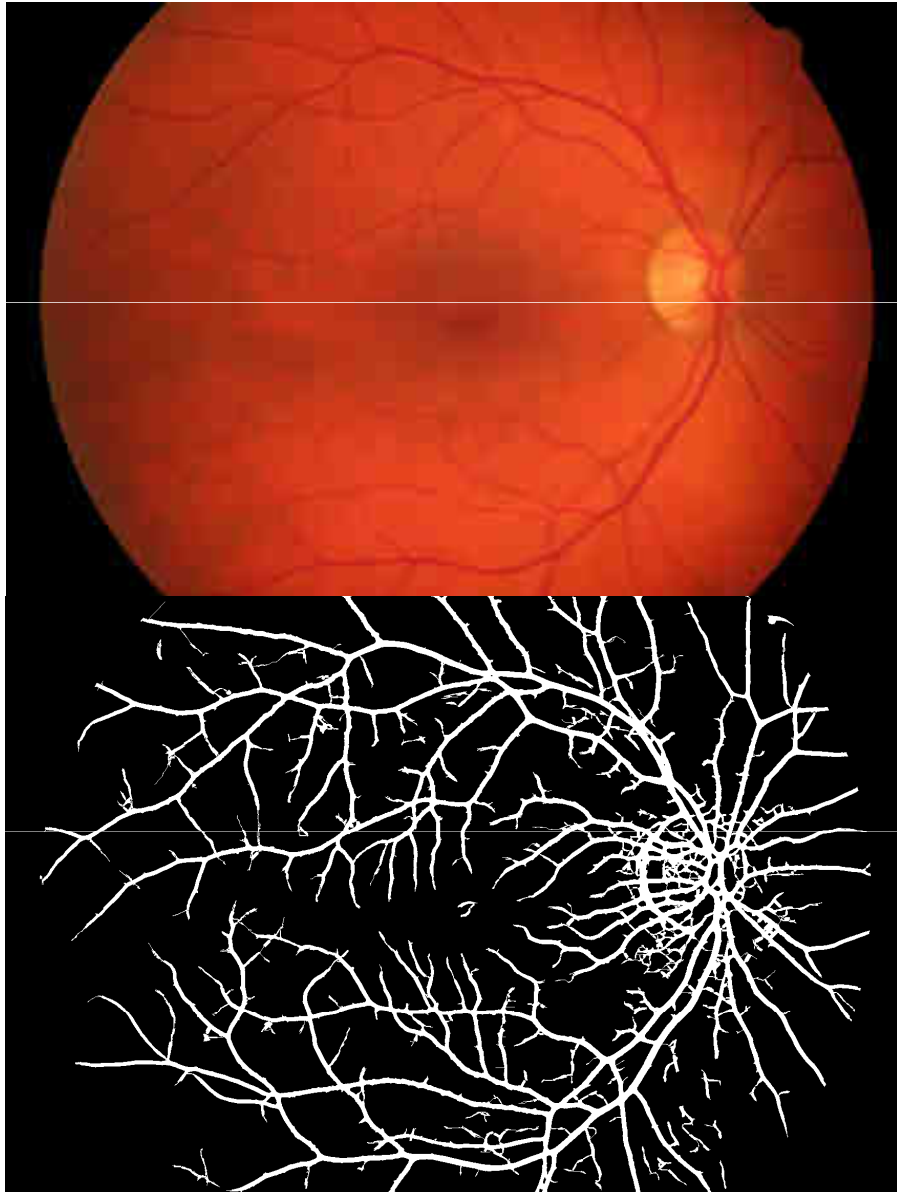
Important points

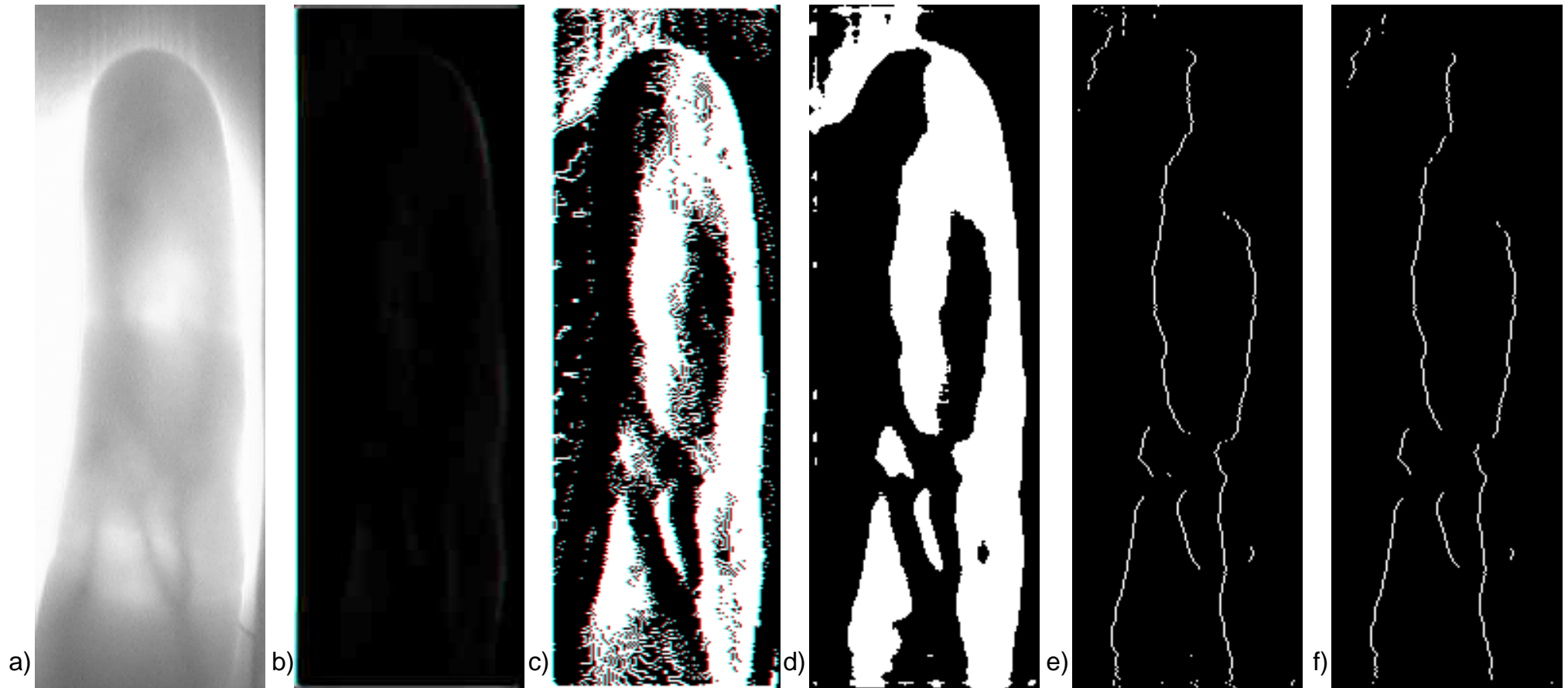


Texture without a form



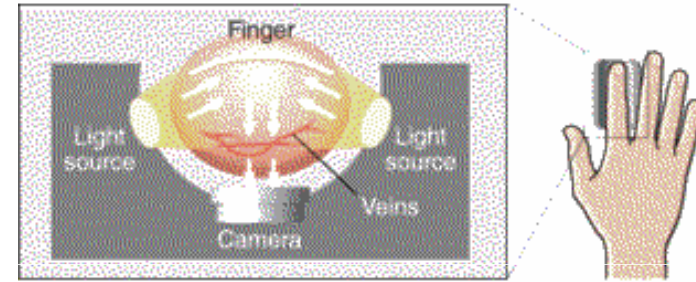




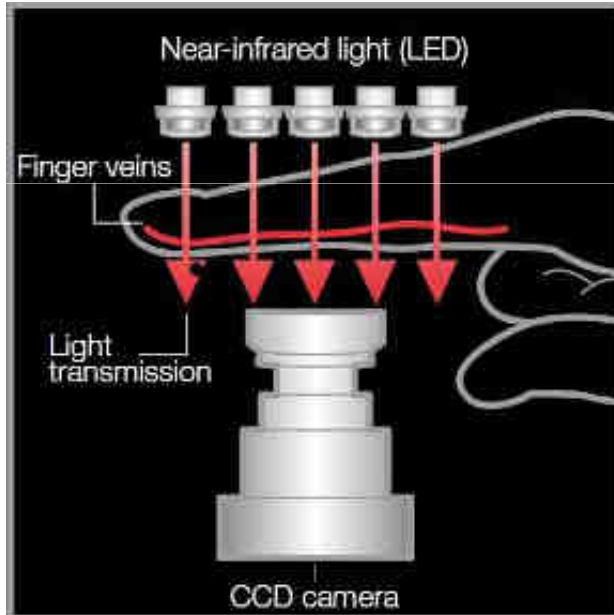


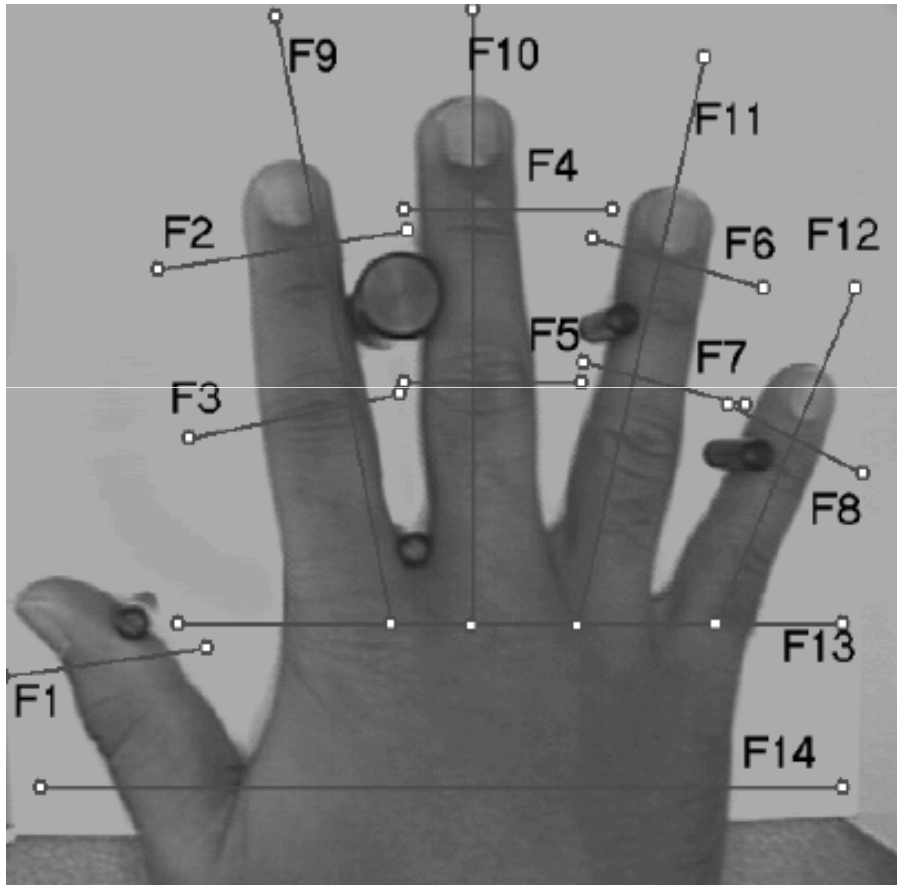


Hitachi



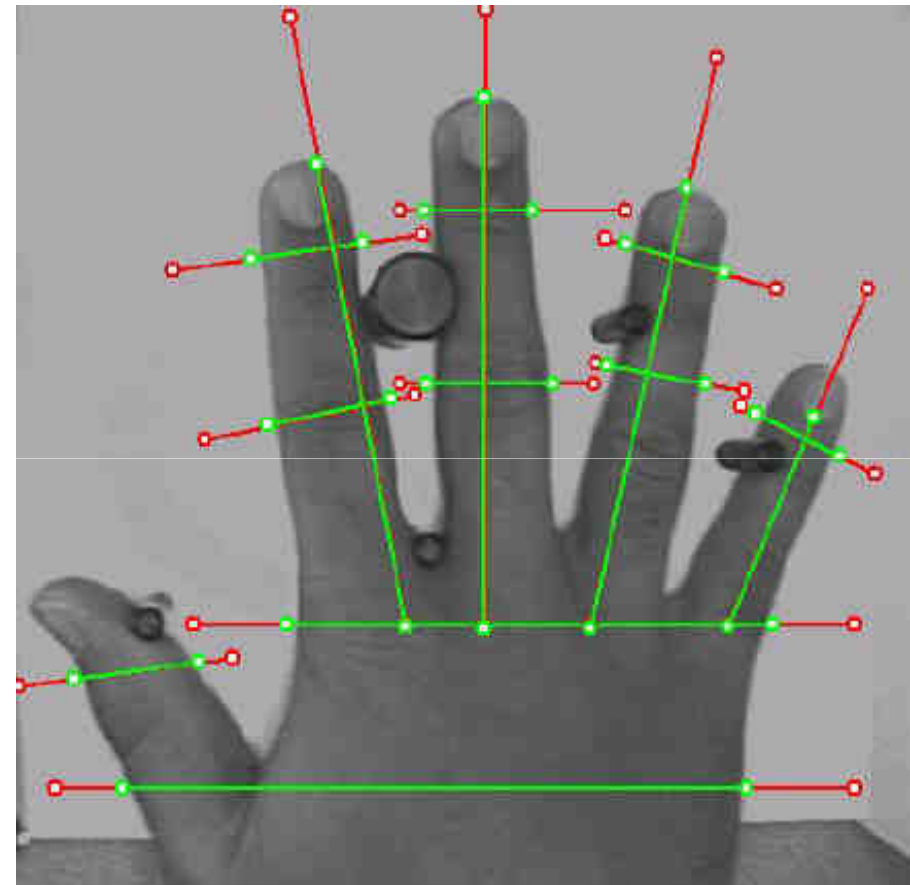
Bioaccez

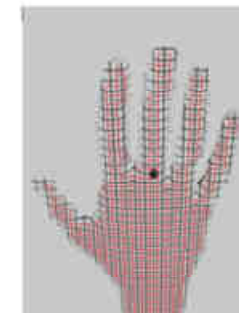
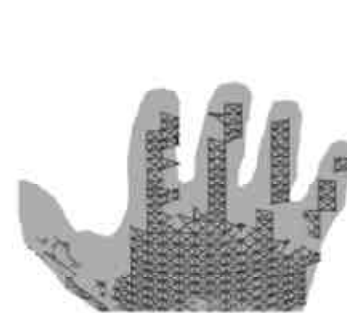
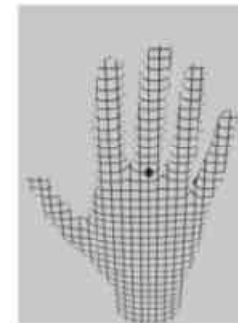
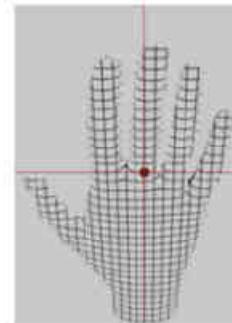
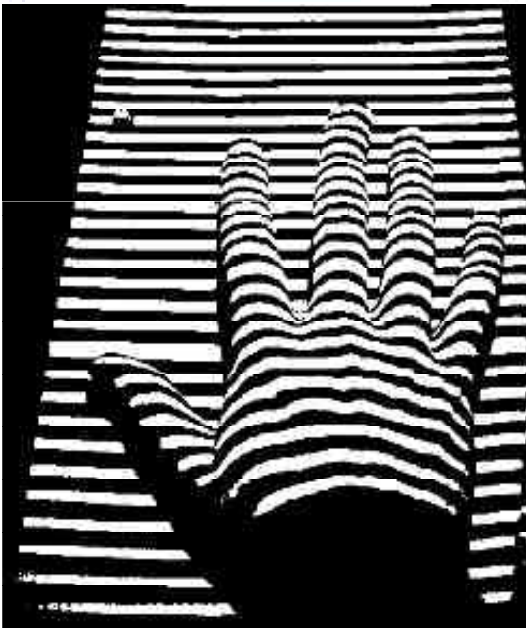
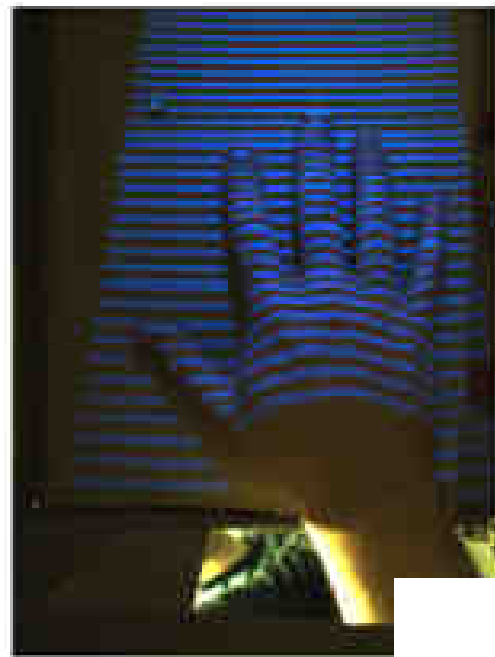




Positions of measurements

Extracted Features







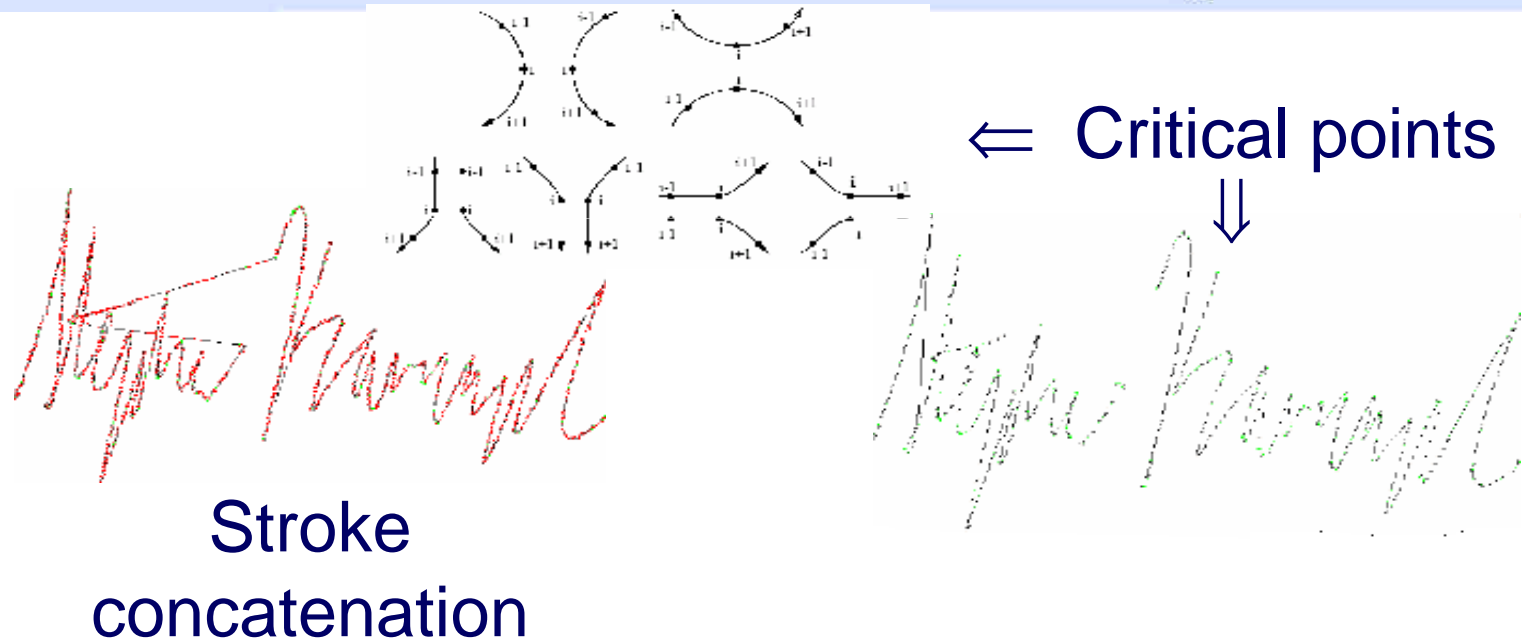
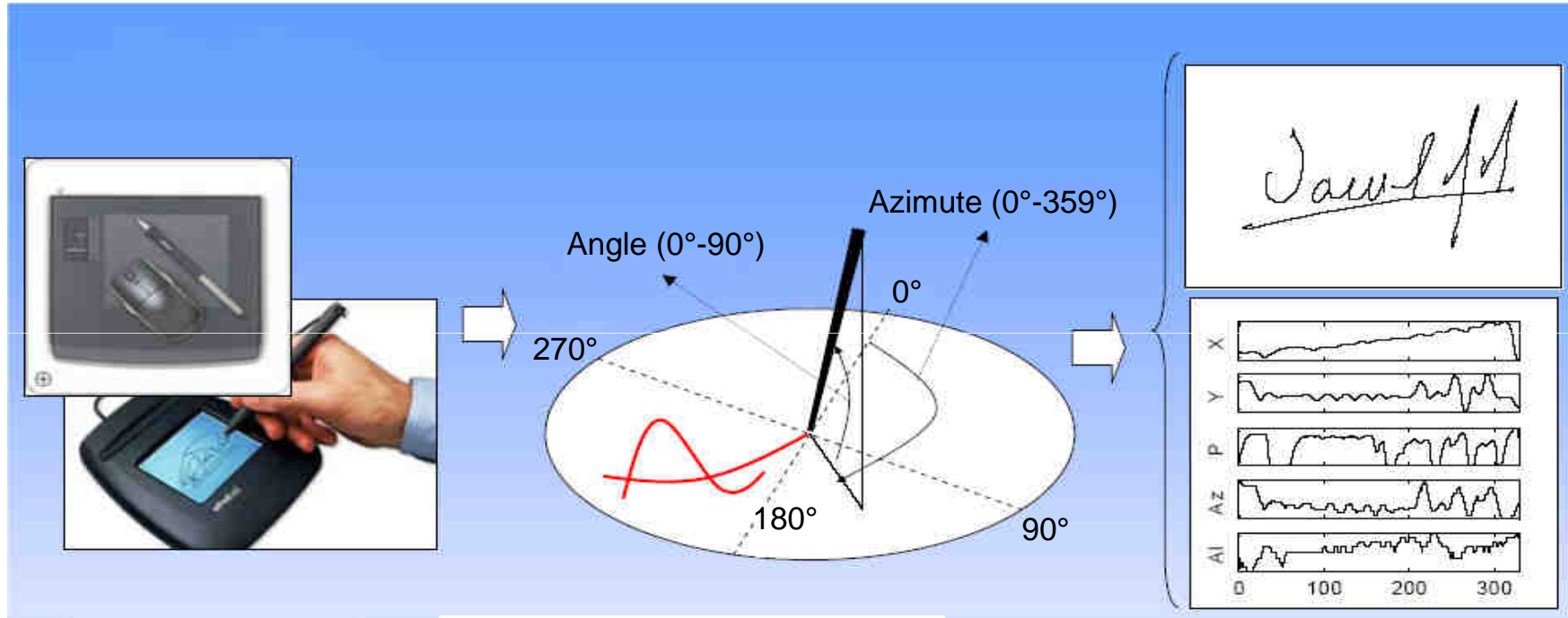
FLIR ThermoCAM E300

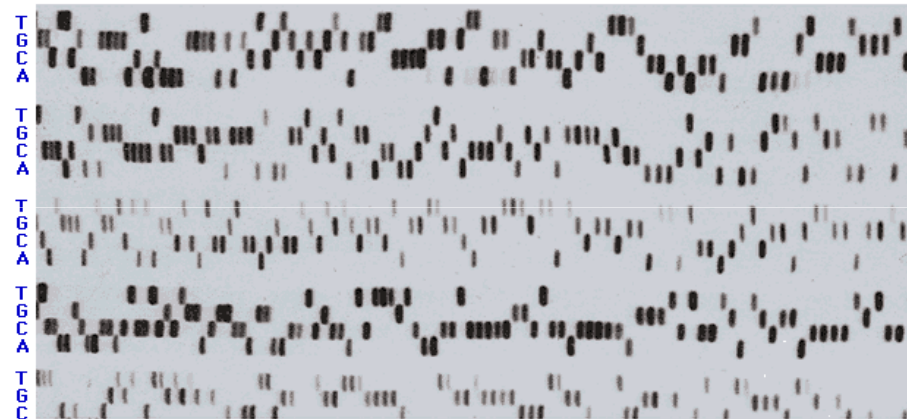
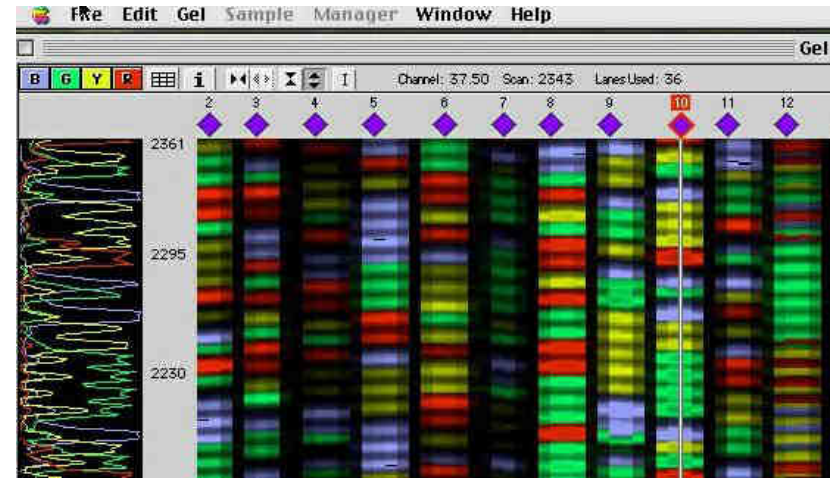
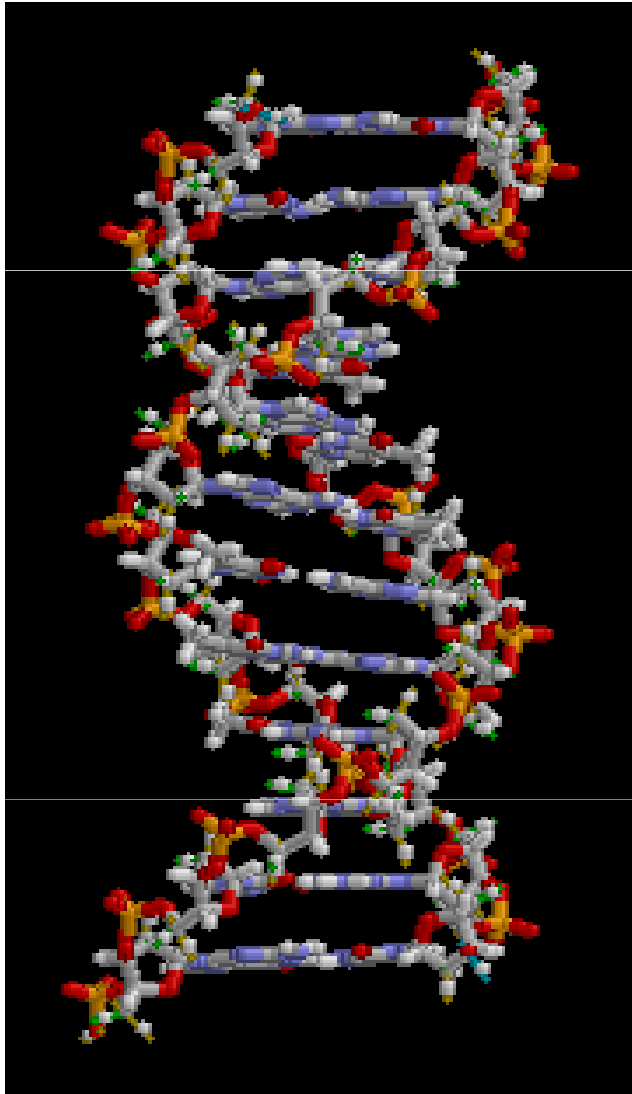


Optris PI200



http://astro.swarthmore.edu/ir/ir_basics.html





Thank you for your attention.