

BM607 DIP2

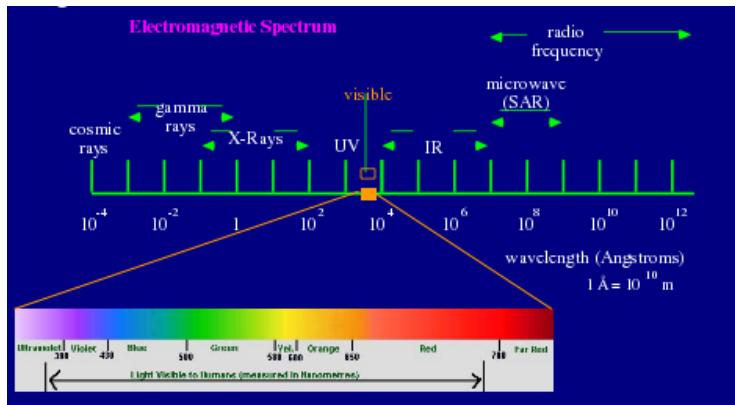
Nurettin Şenyer

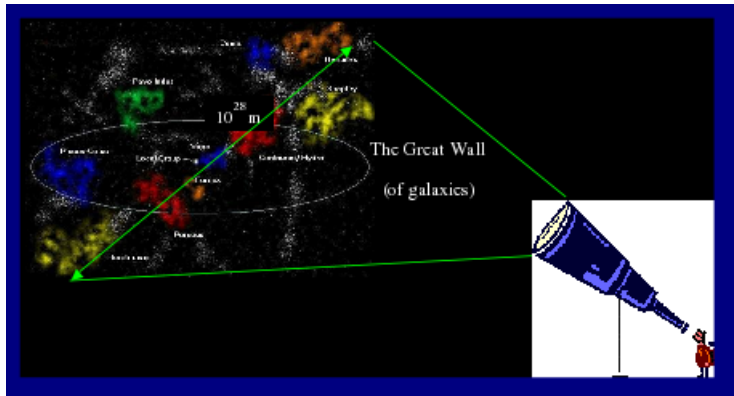
19/x

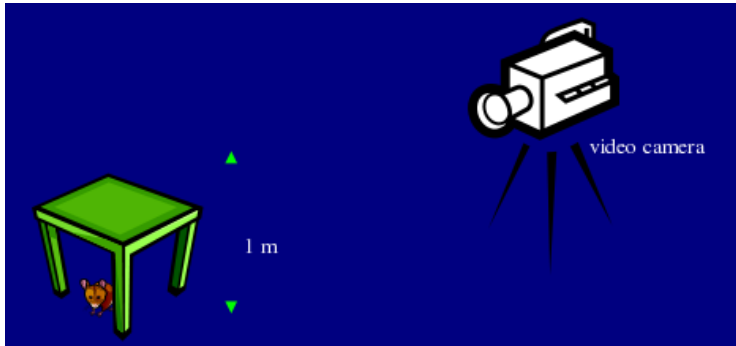
2011

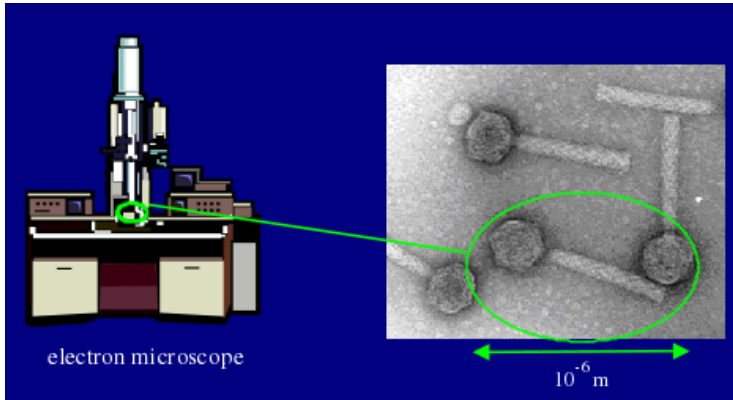
- $f(x, y)$, zuaysal koordinat, parlaklık, ayrık değerli - sayısal görüntü
- piksel: görüntü elemanı; piksel

- Resmi elde ederken
 - aperturu düzeltmek ve renk dengeleme
 - yansıtmadan resmi yeniden oluşturma: $3d = i2d$, $2d = i3d$
- Gösterirken veya yazarken
 - resim boyutunu ayarlama
 - binary yazıcılar için halftoning
- Saklar ve iletirken
 - sayısal kamerada resmi etkin saklama
 - Mars'dan Dünyaya resim gönderme
- Resimleri iyileştirme ve onarma
 - eski filimlerden çizikleri giderme
 - mr'da tümörün görünürlüğünü arttırma
- Resimden bilgi çıkartma
 - mektuptan posta kodunu okuma
 - ilaçtan barcodu/qrcode okuma
 - havai resimlerden su kirliliğini ölçme









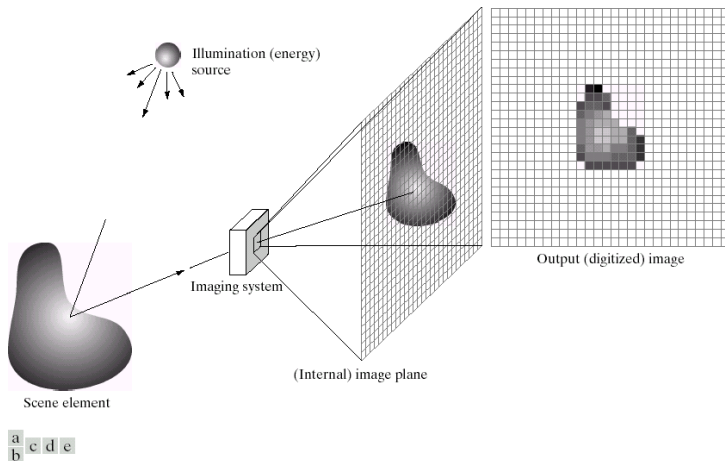
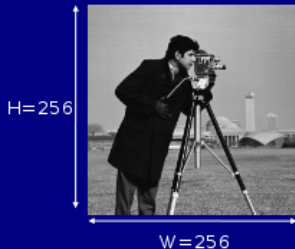


FIGURE 2.15 An example of the digital image acquisition process. (a) Energy ("illumination") source. (b) An element of a scene. (c) Imaging system. (d) Projection of the scene onto the image plane. (e) Digitized image.

Resim: matris

$$A = \begin{bmatrix} a_{11} & a_{12} & \cdots & a_{1n} \\ a_{21} & a_{22} & \cdots & a_{2n} \\ \vdots & \vdots & \cdots & \vdots \\ a_{m1} & a_{m2} & \cdots & a_{mn} \end{bmatrix}$$

188	160	94	153	194	163	132	165
188	153	116	176	187	166	130	169
179	168	171	182	179	170	131	167
177	177	179	177	179	165	131	167
178	178	179	176	182	164	130	171
179	180	180	179	183	169	132	169
179	179	180	182	183	170	129	173
180	179	181	179	181	170	130	169



Divide into
8x8 blocks

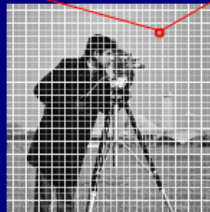
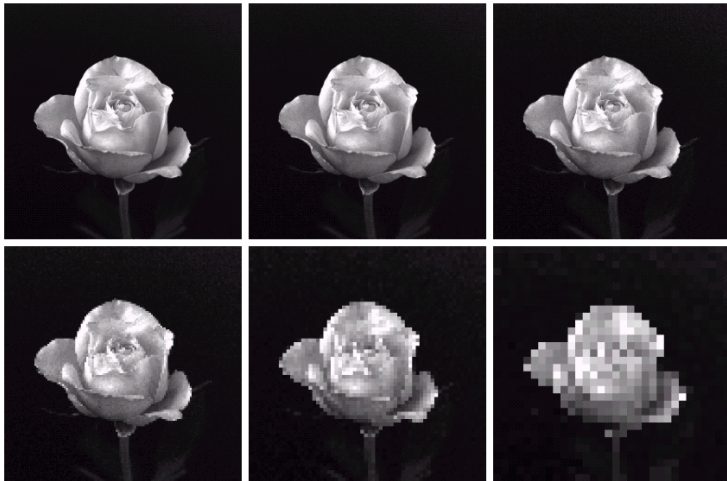




FIGURE 2.19 A 1024×1024 , 8-bit image subsampled down to size 32×32 pixels. The number of allowable gray levels was kept at 256.



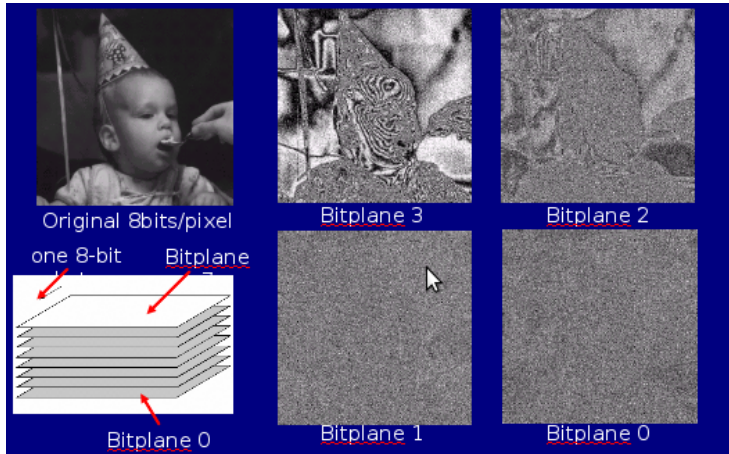
a	b	c
d	e	f

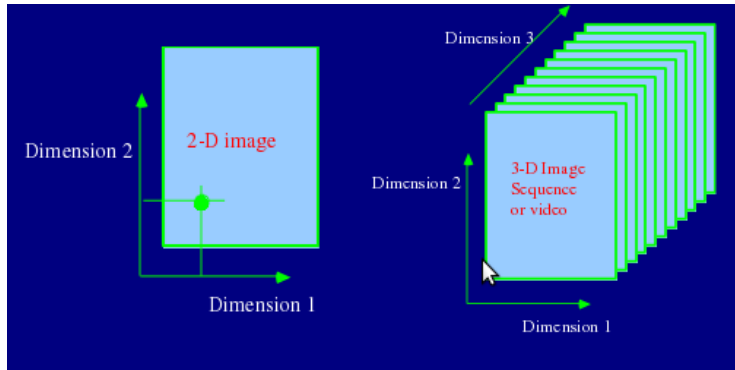
FIGURE 2.20 (a) 1024×1024 , 8-bit image. (b) 512×512 image resampled into 1024×1024 pixels by row and column duplication. (c) through (f) 256×256 , 128×128 , 64×64 , and 32×32 images resampled into 1024×1024 pixels.

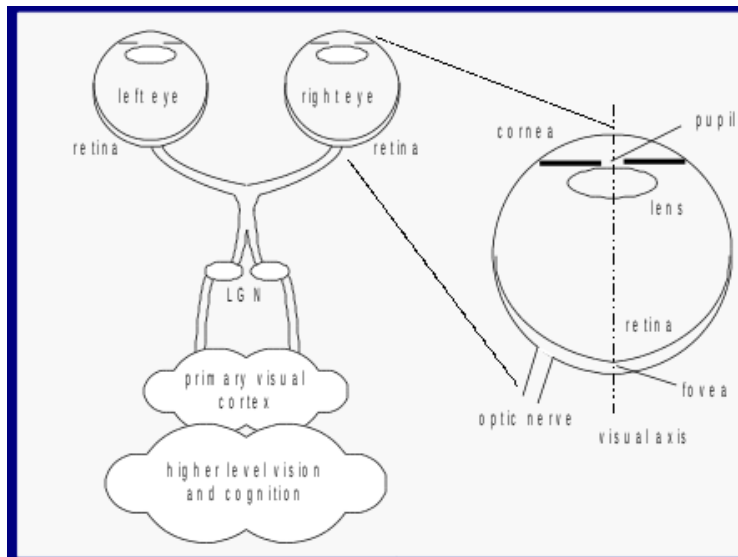
Bitplane



Bitplane



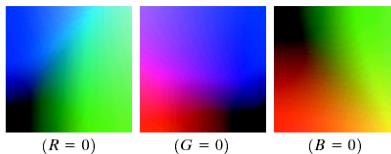
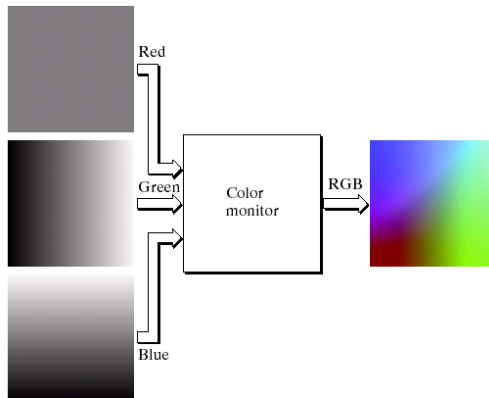


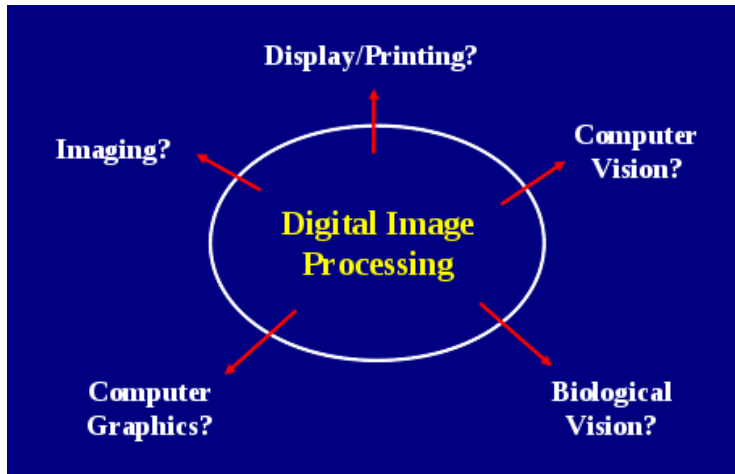


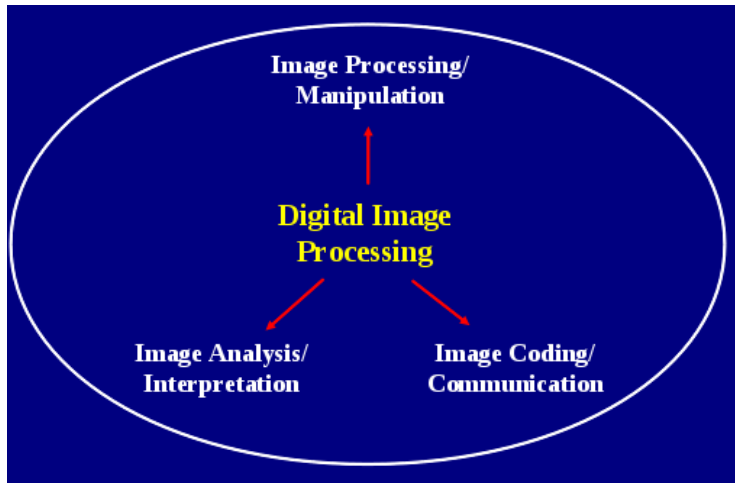
a
b

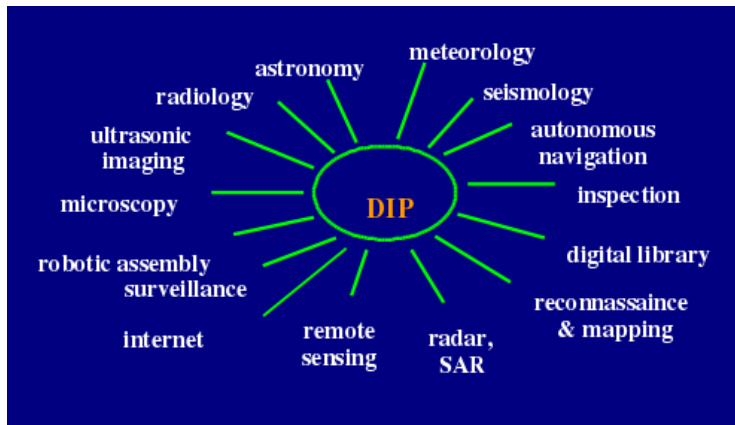
FIGURE 6.9

(a) Generating the RGB image of the cross-sectional color plane ($127, G, B$).
(b) The three hidden surface planes in the color cube of Fig. 6.8.









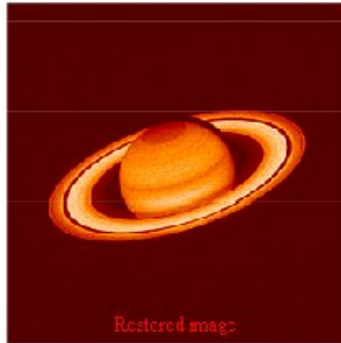
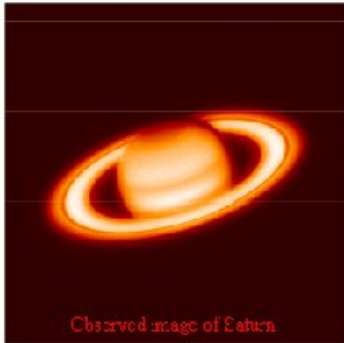
- girişi ve çıkışı resimse - DIP; daraltmaya gerek yok
- seviye: görüntü işleme - görüntü analizi - bilgisayarla görü
- işleme: gürültü azaltma, zıtlık iyileştirme, netleştirme; giriş-çıkışı resim
- analiz: bölütleme, dönüşüm, sınıflandırma; giriş-resim, çıkış-özellik
- görü: nesneleri algılama ve bilişsel işlevler

- metni içeren alanı taramak
- önışleme: gürültü giderimi, binarizasyon
- bölütleme: karakter çıkarımı
- öznitelik çıkarımı
- tanıma

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Hubble Uzay Teleskobundan alınan resmin onarımı





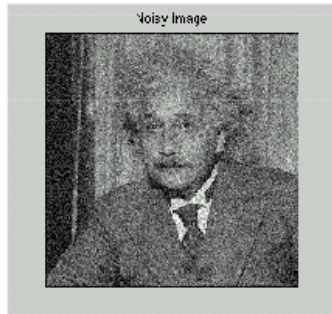
Renkli resim iyileştirme



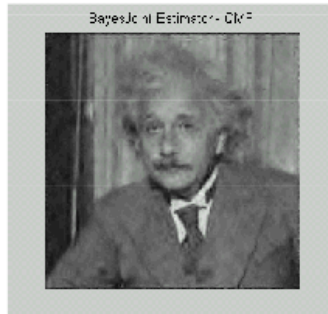
Original



Automatic Enhancement



Degraded image



Noise-reduced image



Photo

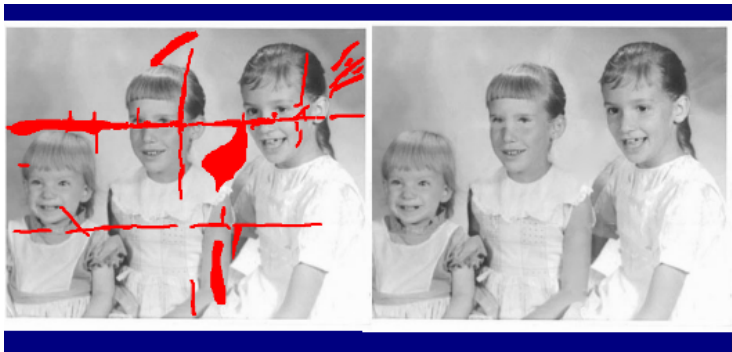


Simulated
color pencils

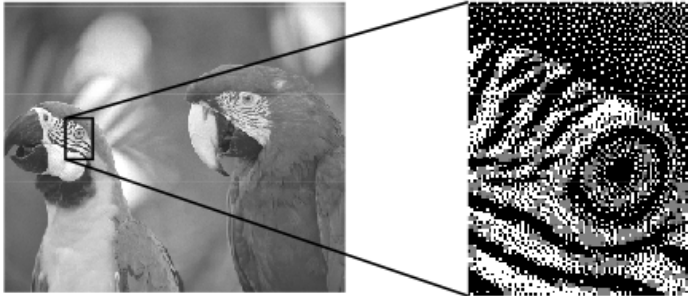


Simulated
oil painting

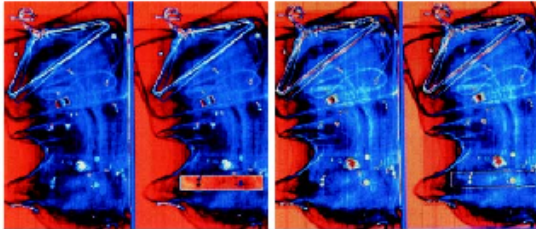
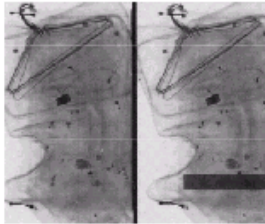
Inpainting



Halftoning



Sözde renkler



Çocuk Çene kemiği, Etiler, 2004

Havai resimler



source: INRIA, Sophia-Antipolis, France

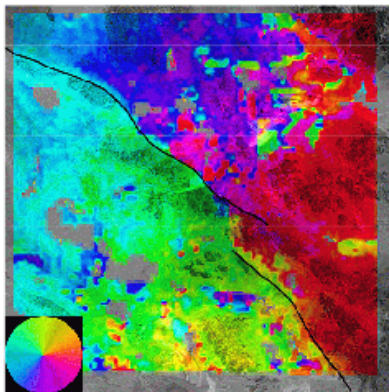


Image shows the ground displacement due to Landers earthquake in CA, 1992

Source: JPL, Pasadena, QUAKEFINDER project

Face Detection



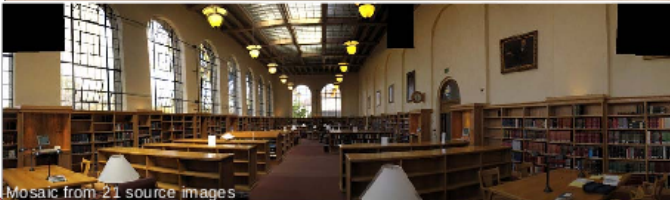
source: Henry Chang, Ulises Robles, EE368 class project, spring 2000



Mosaic from 33
source images

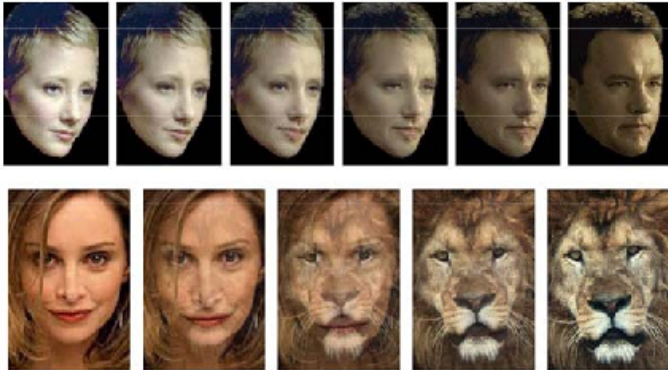


Mosaic from 21 source images



source: M. Borgmann, L. Meunier, EE368 class project, spring 2000.

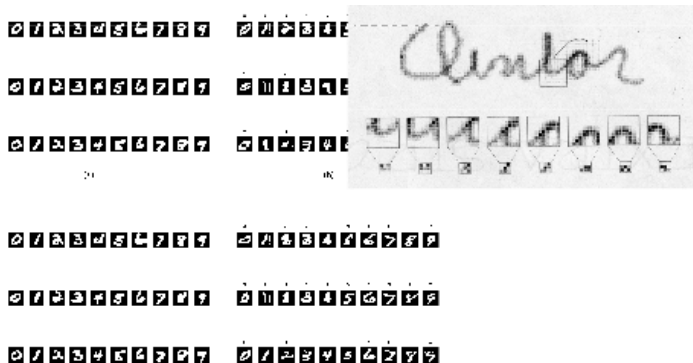
Biçim bozma/dönüştürme



Source: Yi-Wen Liu and Yu-Li Hsieh, EE368 class project, spring 2006.

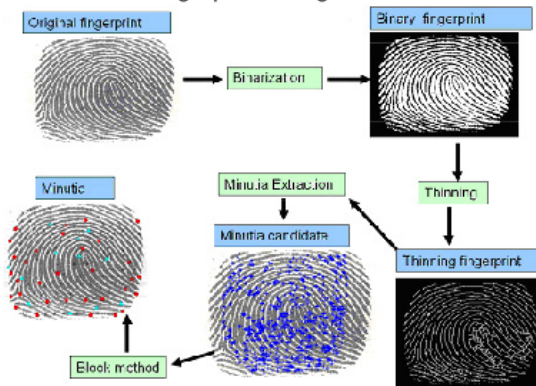




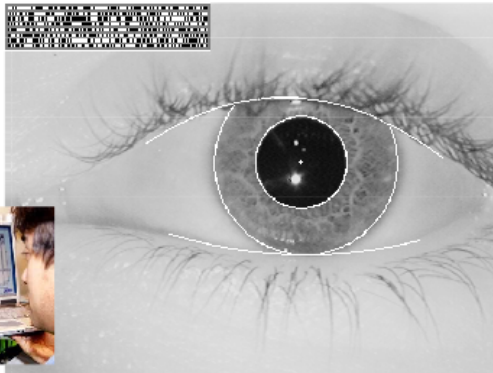


Biometrics: Fingerprint recognition

FBI's
Integrated
Automated
Fingerprint
Identification
System
IAFIS



Biometrics: Iris recognition



Source: J. Daugman, U. Cambridge

Qr-kodlar

