5/21.

①

Image processing 3.

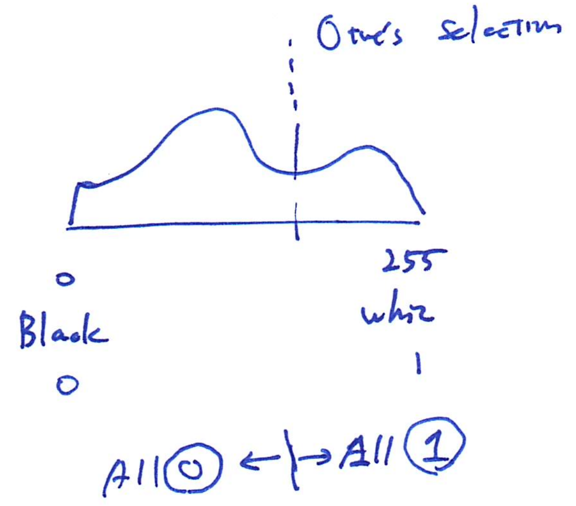
이희준 : 총 임차 이름

임재엽 :

정수진 :

남상철 : 정연동

연기숙 :



- rgb2ind (rgb → 인덱스 이미지)

  no dither : 원본이미지의 가장가까운 색으로 mapping

  ind → [0, 1, 2] 로 구성 nColors = 3

  map → 3×3. 0 → selected R, G, B
  1 → 〃
  2 → 〃

- Entropy : E = entropyfilt (G, nhood)

  G ↑ Gray Image

  nhood ↑ ones (3, 3) or true (fSize)

  → Entropy 값을 주위 8개 cell 과 비교. → 3×3 평균값.

  corner는 symmetric padding. (거울반사)

  entropy filter.

  imshow (RGB, Gray, B/W 구분)

  imagesc

  n×n matrix 를 칼라이미지로 변환

  cell 숫자 범위를 고려하여 칼라, range 결정

  $Entropy \equiv -sum(p .* \log_2(p))$

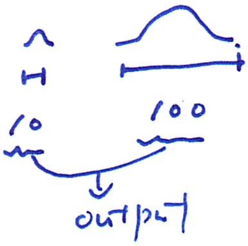
  Entropy ↓ uint8 값을 변환.

  p ↑ normalized histogram (평균, 분산)

  2^8 = 128. 개.

⑧

- Range filter → range를 출력 in nhood [3 by 3] or [5 by 5]



- Std filt. → standard deviation을 출력
  분산

- Gradient [FX, FY] = gradient(F)
  행렬 F의 2차원 수치적 기울기에서 X, Y 성분 반환.
  $FX = \partial F / \partial x$, $FY = \partial F / \partial y$

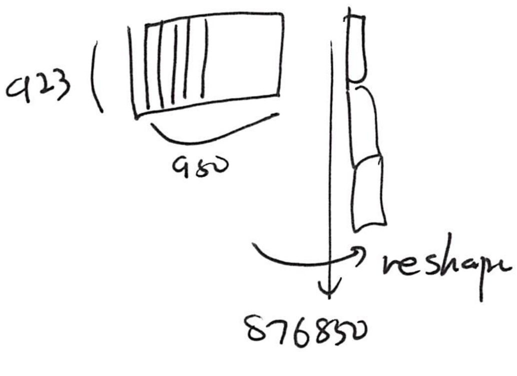
- $$cov(A,B) = \frac{1}{N-1} \sum_{i=1}^{N} (A_i - \mu_A) * (B_i - \mu_B)$$

  $$= \frac{1}{999} \sum_{1}^{999} (R_i - \mu_R) * (G_i - \mu_G)$$

  ~~cov(A,A)~~

$$\begin{bmatrix} cov(R,R) & cov(R,G) & cov(R,B) \\ & cov(G,G) & cov(G,B) \\ // & & cov(B,B) \end{bmatrix}$$

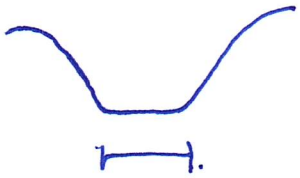
- cat ⇒ concatenate. 배열 결합 3개의 N by M → N×M×3 변환 ⇓ 2차 가능
- reshape(smoothImg, nPix, 3) ⇒ 876850×3
  923×950   876850



reshape.
n×m×3 → k×3

imgPix = 876850×3
roiPix = "
roiIdx = 28172 ×1
roiPix = " ×3
myMean = 1×3.
myStd = max(std(roiPix))
1×3.
↓
1×1
mahDist = 876850×1

- imextendedmin : Regional minima are connected components of pixels with a constant intensity value, whose external boundary pixels all have higher value.
  (Regional Extended Minima)



- edge(S, 'canny').

- bwmorph (E3, 'skel', Inf).

  shrink,
  spur
  clearn
  clean
  drag..

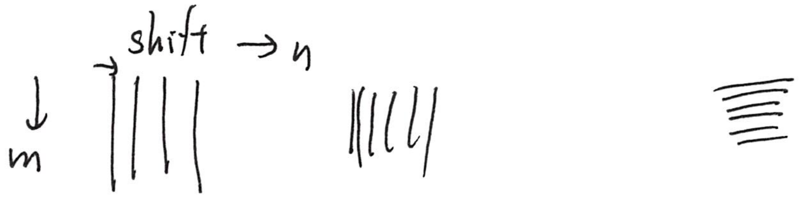
- imcomplement 반전 1→0, 0→1

bwlabel (c) : [L numCC]

L: 연결된 component ⇒ 1, edge ⇒ 0
numCC: [size] 6가지 component.

[841 x992]

- imbothat : bottom-hat filtering.



$\cos\left(\frac{50\pi}{256}n\right)$ $\qquad$ $\cos\left(\frac{50\pi}{256}m\right)$

$\cos\left(\frac{18\pi}{256}n\right)$

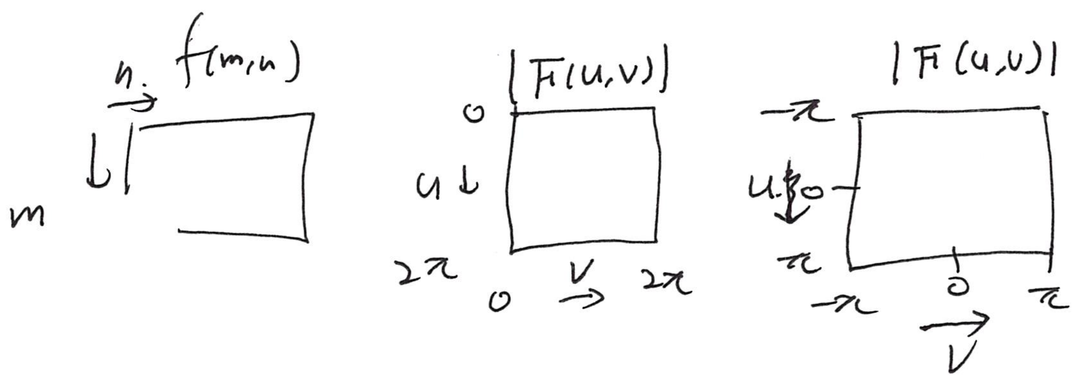
$u=0$

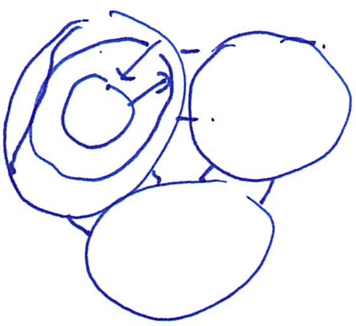
$u = \frac{50\pi}{256}$, $v = 0$.

$u=0$, $v = \frac{18\pi}{256}$ $\qquad$ $v = \frac{50\pi}{256}$

$\cos\left(\frac{50\pi}{256}n\right)\cos\left(\frac{18\pi}{256}m\right)$

$u = \frac{18\pi}{256}$, $v = \frac{50\pi}{256}$





$\frac{1}{\text{wavelength}(\lambda)}$

frequency k.

$k_1 = \frac{2\pi}{\lambda}$.

$k_2 = \frac{2\pi\cdot 2}{\lambda}$

⋮

$k_n = \frac{2\pi n}{\lambda}$

$V(x) = a_1\cos(k_1 x)$

$a_2\cos(k_2 x)$

⋮

$e^{\pm ix} = \cos x \pm i\sin x$.

$\cos x = \frac{1}{2}(e^{ix} + e^{-ix})$

$\sin x = \frac{1}{2i}(e^{ix} - e^{-ix})$

$n<1$ 전체적인 형상 $k\downarrow$

$n>1$ detail $k\uparrow$