

CS6640 22 Sept '20

Quiz 3

Q3 Grades; text histogram; ~~mag~~ ~~ori~~
see Week 5 Powerpoint

A1

A1 Grades

main issues: answer questions or aspects directly & put title, page #15

Q1: say done

Q2: performance measure; want output whose pixel values provide segmentation

Q3 show equations & how derived; show answer

Q4. should show slices in report

matlab:

indent headers

follow header exactly

72 character max per line

don't put reads or writes or clears off close

A2: only graded on log, esp KL-div & hist-color
main issues: if hist doesn't work; or others don't work

Quiz 4 Thursday 24 Sept '20

A3; start now ~~*~~

Wenzberg

mag, ori 626, 348 mag & ori

CS6640 Week 5

Tools:

bwlabel
 gradient
 mag, ori

Texture: see Computer Vision 2012 / data / bwdata

Laws Texture measures: Energy

local masks (kernels)

Will use 2D masks generated from 1D kernels

L5	[1 4 6 4 1]	Level
E5	[-1 -2 0 2 1]	Edge
S5	[-1 0 2 0 -1]	Spot
R5	[1 -4 6 -4 1]	Ripple

16 2D masks:

- L5 L5 E5 L5
- L5 E5 E5 E5
- L5 S5 E5 S5
- L5 R5 E5 R5

Step 1 subtract local average at each pixel (15x15)
 $F_k \quad k=1:16$

Step 2 Apply 16 masks

Step 3 Texture energy map E_P

$$E_k(r,c) = \sum_{j=-7}^7 \sum_{i=-7}^7 |F_k(i,j)|$$

Step 4 9 Energy maps:

- L5E5 / E5L5, L5R5 / R5L5, E5S5 / S5E5, average pair
- S5S5, R5R5, L5S5 / S5L5, E5E5,
- E5R5 / R5E5, S5R5 / R5S5

Classes / Segmentation

produces q -tuple (vector) at each pixel
use those to classify

A3

Problem 1 straight forward ; report what you find
poly fit + poly val try to explain it

Suppose Prewitt $k \times k$ is

$$\begin{bmatrix} -1 & & 1 & 0 & \dots & 0 \\ -1 & \dots & -1 & 0 & & 0 \\ -1 & & -1 & 0 & & 0 \\ \vdots & & \vdots & \vdots & \vdots & \vdots \\ -1 & & -1 & 0 & & 0 \end{bmatrix}$$

$s = \frac{k-1}{2}$ $s = \frac{k-1}{2}$

① Analysis: find $a_1 k^2 + a_2 k + a_3$ for 1D + 2D
(merge * + +)

② Timings issues:

* How is convolution achieved?
imfilter, conv2, your own

* Impact of OS + HW?

multiple runs for fixed k
mean + variance [confidence interval]

* Rate of M, N

needs to be large enough to show trend