Homework 3 Grading Criteria

Posted Mar 13, 2019 9:40 PM

Dear ECE569 Students,

Please first check the grading criteria of HW3 below. Feel free to email Yao and me correspondingly for any grading issues.

The score statistics and distribution for HW3 as well as previous items are all available on D2L. You need to click the "distribution" icon, whose shape is like a histogram, near each title of graded item in the grade book.

Our regrading session will be held 2:30-4:30 pm at EEB B10 on next Wednesday, March 20th, after the midterm. If you could not show up at that time and want to talk with us face to face, we might make an extra appointment for you.

Problem 1 (by Yao Zhu):
(a) correct result (3 pts) requirement: match perfectly in each hole, negligible white boundary (1-5 pixels)
must discuss in either discussion or approach:
i) reverse address mapping (2 pts)
ii) rotation, scaling and translation matrix, including forward and inverse, how to calculate them. (9 pts, 3 pts each)
iii) interpolation, why should do interpolation, how to do it (2 pts)
extra credit (+2 pts): side by side shows result before and after interpolation
iv) corner detection of input image (2 pts)
v) how to automatically adjust rotation degree (can't be manually): one of the approach is to use MSE method (2 pts)
extra credit: how to remove explicit white boundary (+2 pts)

Note: extra credit will be added to the maximum credit of this subproblem

(b) correct result (5 pts)
must discuss in either discussion or approach:
i) how to solve 12 coefficients (5 pts)

ii) decomposition of image (5 pts)
iii) how to find 6 control points (5 pts)

(c) correct result: straight line of whiteboard and desk, missing objects in the corner (4 pts)
Must discuss in either discussion approach:
i) how does the distortion happen? （3 pts)
ii) transformation from image coordination to camera coordination (3 pts)
Extra credit: (+2 pts)
How does equation 1 inverse to equation 3?
explain why boundary disappear?

Problem 2 (by Yingpeng Deng)

a)
Description of hit-miss method (3 pts).
12 results (12 pts).
Discussion about general visual features of three techniques (3 pts).
Discussion about the reason(s) for any difference among some results (1 pt).
Discussion about jaggies in results by thinning and skeletonizing (1 pt).
Bonus: Skeletonizing result may not always be one-pixel wide (1 pt); some improvments for the performance of skeletonizing (1 pt).
b)
Descriptions of the designed methods (2 pts).
Defect region result (1 pt), corresponding verification for defect region detection (3 pts) and illustrations of defect region locations (4 pts).
Result(s) after defect elimination (2 pts) and corresponding verification for defect elimination (3 pts).
Bonus: some breaking occurs in result and its derivation (2 pts).
c)
Descriptions of the designed pipelines for preprocessing (3 pts), counting (1 pt) and ranking (2 pts).
Binary maps (2 pts).
Number of rice grains and verification by morphological processes (3 pts).
Size ranking in terms of grain type and corresponding illustration (4 pts).
Bonus: nonmanually stack cropping (1 pts); avoid nontrivial built-in functions (2 pts).

Bonus will be given without exceeding the maximum point of each sub-problem (a, b & c).