HW4 grading criteria and regrading session

Dear all,

HW4 scores have been posted on D2L and grading criteria is attached.

Regrading session for HW4 will be held at **2:30–4:30 pm next Monday (April.1) at EEB B10.** If you are not available at this time, please send an email to either **Yingpeng Deng (for P1) or Yao Zhu (for P2)** to set up an appointment before **11AM this Sunday (Mar.31).** We won't arrange any appointment if you didn't send us email by this time.

Grading criteria:

Problem 1: (by Yingpeng Deng)

a.   Descriptions about calculation and usage of Laws Filters (1 pt).
Give the features with strongest and weakest discriminant power (2 pts) and corresponding justifications (2 pts).
Reduced 3-D feature plot(s) (2 pts).
Classification results based on 3-D and 25-D features and discussion about reasons for possible unpleasant results (4 pts).
Comparison of performances before and after PCA (2 pts); discussion about effectiveness of feature reduction (2 pts).

b.   Description of energy calculation and normalization (2 pts).
Results by different window sizes (10 pts).
Discussions about their performances (4 pts) and effects of different window sizes (4 pts).

c.   Descriptions of used improving techniques (3 pts).
Improved results (8 pts).
Discussion or comparison about results before and after improvement (4 pts).

Bonus: implement K-means algorithm by self (10 pts).
Bonus will be given without exceeding the maximum point of Problem 1.

Problem 2: (by Yao Zhu)

a: (20 pts)

i. Scaling, rotation, translation (2 pts each, 6 total)
ii. Scaling: multi-scale filtering
    rotation, translation: locating key points as extrema of DOG function (2 pts each, 6 total)
iii. by thresholding the gradient magnitudes at a value of 0.1 times the maximum possible gradient value (3 pts)
iv. Speed (3 pts)
v. 8x4x4 + 8x2x2 = 160 (3 pts)

b: (20 pts)
largest scale: L2 norm or radius
i. How to find key point in Fig.1? Where? (10 pts)
ii. How to find key point in Fig.2? (Cosine distance, Euclidean distance) (10 pts)
iii. Orientation of each key point: VLfeat: 4*4, OpenCV: 4*4+2*2 (extra credit 3 pts)

c: (10 pts)
(2.5 pts each)
i. training set key points: how to find them? How many?
ii. K-means form codebook: how? meaning of codebook?
iii. Inference: key points of 8, histogram
iv. Discussion: 8 similar to 0 or 1? Why?