2018 Fall Advance Digital Image Processing Homework #2-2

EE 245765
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Problem 2 Zooming and Shrinking (C/C++)

a. Zooming the image with ratio 2:1 raw-column replication. Compare the output with lena512.raw. (Figure, 10%; Discussion, 5%)

Ans

In Figure 1, it is very clear to describe how row-col-replication works to achieve rooming image. Scale step, we multiply row index an column index with scale factor (2 in this case). Row and column replication are simply duplicate the row i and column j to row $i+1$ and column $j+1$.

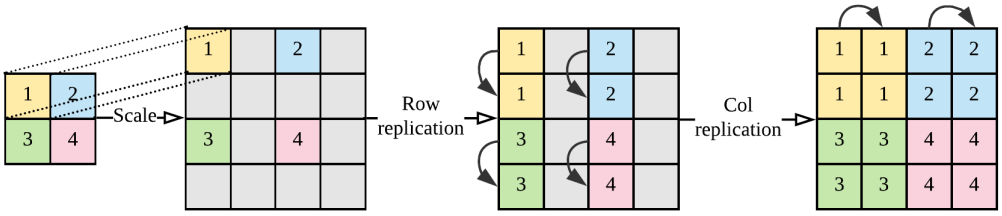

Figure 1: Concept of row-col replication.

Figure two shows the row-col replication result on .

(a) Concept of row-col replication.

(b) Concept of row-col replication.

b. Shrinking the image with ratio 1:2 raw-column deletion. Check your result with or without blurring (using Xnview) your input image before shrinking. (Figure, 10%; Discussion, 5%)

Ans

c. Zooming the image with ratio 2.3 using both nearest-neighboring and bilinear interpolation. Discuss the difference in the output images. (Figure, 10%; Discussion, 5%)

Ans

Problem 3 Isopreference test (C/C++)

Experiment the isopreference test on lena_256.raw and baboon_256.raw images with your programs developed in Problems 1 & 2. Do your experiments and observations match the textbook description? Discuss it. (Discussion, 20%)

Ans

References

[1] Wikipedia. *Mean squared error*[online].
Available from World Wide Web: (https://en.wikipedia.org/wiki/Mean_squared_error).

[2] Wikipedia. *Peak signal-to-noise ratio*[online].
Available from World Wide Web:
(https://en.wikipedia.org/wiki/Peak_signal-to-noise_ratio).