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CS 378 / Fall 2009
Homework 1: Content-Aware Image Resizing
File: file1.pdf

Part II, 5)

groceries.jpg: (top) original with both selected seams; original image dimensions: 375 x 500, reduced to 275 x 400 (bottom left) by removing 50 vertical, 50 horizontal, 50 more vertical, and 50 more horizontal seams (still distorted but slightly smoother than removing 100 of each at once); compare to simple resizing (bottom right).
The parts that were carved out first, before distortion became severe, were the smooth floor and the blown-out areas at the top center of the image.
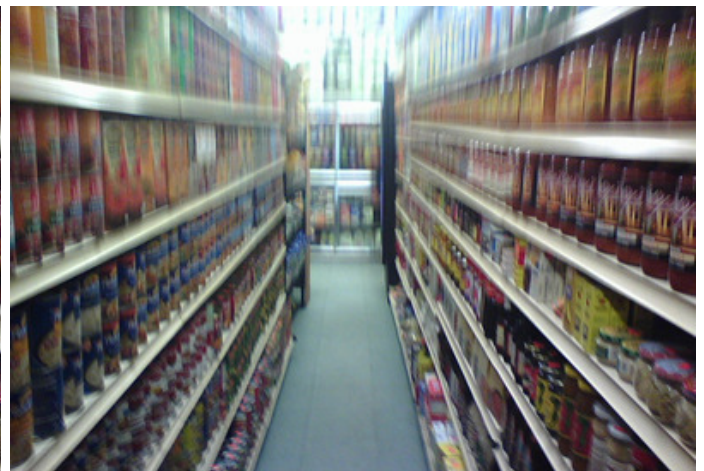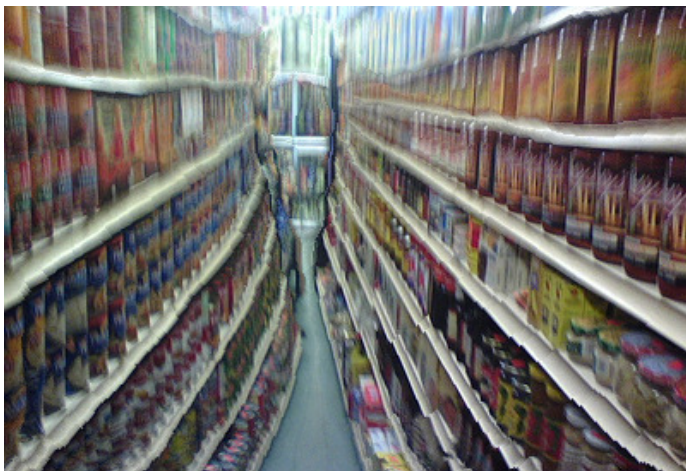
trees.jpg: (top) original with first horizontal and vertical seams shown; (bottom left) result of carving out 200 vertical seams; (bottom right) result of regular resizing. Original size 375 x 500, reduced size 375 x 300.
Seams tend to go along tree barks and shadows, which thins the trees out in the resulting image. Both images look nearly undistorted at first, because in this case it is difficult to judge scale.

heidi_klum.jpg: (top) both seams follow the smoothest paths – along the sand and across the sky and water, avoiding the net. (bottom left) Result of removing 80 vertical, 50 horizontal, and 50 vertical seams; (bottom right) Result of regular resizing. Original image 300 x 400, resized 250 x 270.

This example shows a clear advantage of content-aware image resizing. The resulting image is undistorted and all the important details have been preserved.

dogs.jpg: (top) Original with both seams shown; (bottom left) after removing 150 vertical, 100 horizontal, and 50 vertical seams; (bottom right) regular resizing. Original size 400 x 600, resized 400 x 300.
This could be called a bad outcome.

skydiver.jpg: (top) original with both seams shown; (bottom left) after removing 400 vertical and 150 horizontal seams; (bottom right) regular resizing. Original image 600 x 400, resized 200 x 250.
This image lends itself very well to resizing by a factor of 2 to 3 with almost no noticeable distortion.
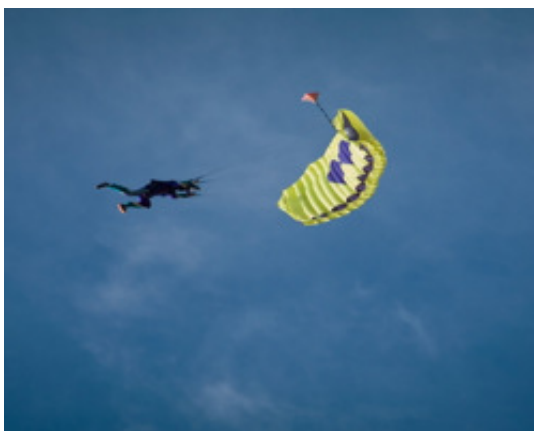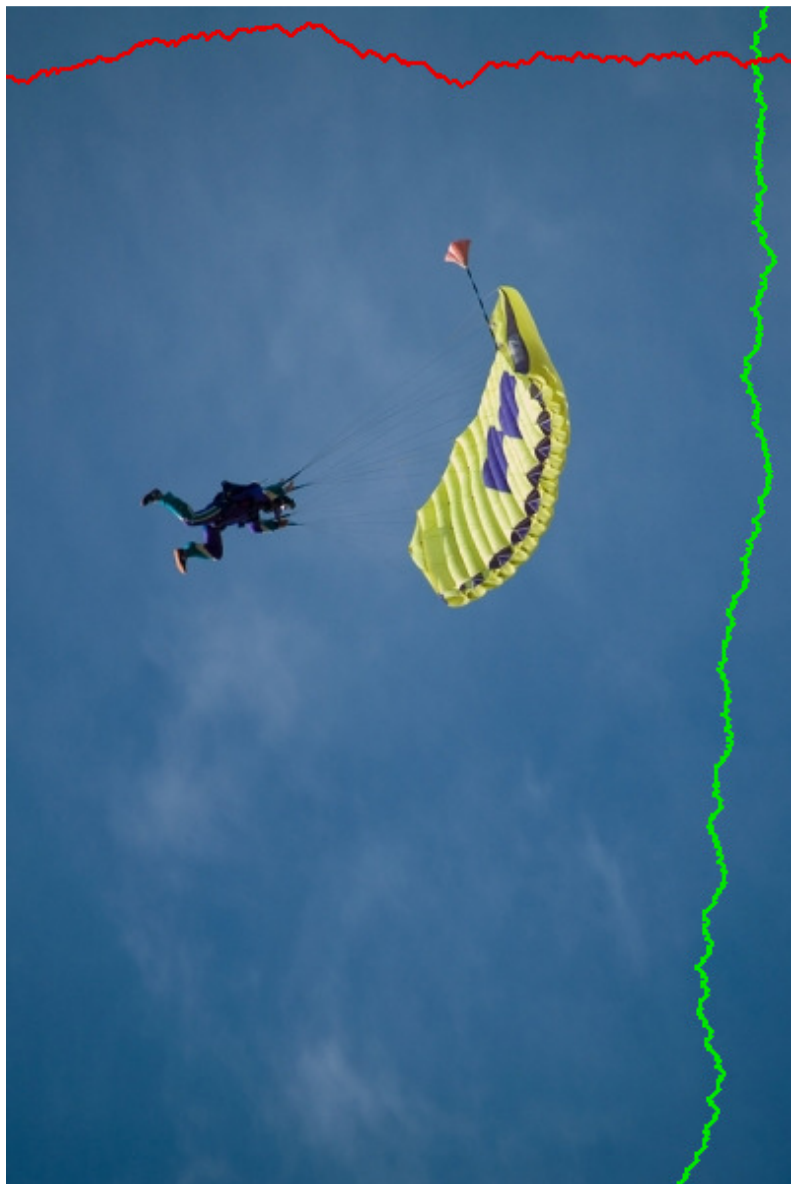
(Image credits: images on last two were taken by me.)