

CS4363/5363 Computer Vision

Spring 2021

Filtering

1. Change `correlate2d(image,filt)` to work with both gray-level and color images. The current function expect `image` and `filt` to be 2D arrays. Modify the function to apply `filt` separately to every channel of `image` if `image` is a color image. If the function should return an array with the same number of dimensions as `image`.
2. Repeat the previous question but now use the `correlate2d` function from `scipy.signal`.
3. Extend edge finding to color images. The function should apply the filter separately to every channel and then return a 2D array containing the magnitudes of the changes in the image (that is, each pixel i,j should contain the norm of the intensity changes at position i,j , in the direction given by the filter (vertical or horizontal)).
4. Modify the image sharpening for color images described in the slides by replacing the mean filter by a gaussian filter.