MATLAB Blind Deconvolution

Maimoona Khilji

Institute of Management Science

Course Code: Image Processing and Analysis

Muhammad Saad Rashad

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Task

What is blind deconvolution explain in details. Write a Matlab code.

Blind Deconvolution

Blind deconvolution is the recovery of a sharp version of a blurred image when the blur kernel is unknown.

- It is used when there is no noise, point-spread function and blurring details available.
- Finding out point-spread function is the most difficult task.
- Blind deconvolution restores both image's sharp version and point-spread function.

Syntax:

```
[J, psfr] = deconvblind(I,INITPSF,NUMIT,DAMPAR,WEIGHT)
```

J	Deblurred image
PSF	A restored point-spread function
I	original blurred image
INITPSF	an initial PSF
NUMIT	specifies the number of iterations
DAMPAR	specifies the threshold deviation of the resulting image from the input image I (in terms of the standard deviation of Poisson noise) below which damping occurs
WEIGHT	specifies which pixels in the input image, I, are considered in the restoration

Editor - C:\Users\Maimoona Khilji\Documents\MATLAB\blind.m

blind.m

```
I = imread('camera.jpg');
subplot(1,3,1);
imshow(I);
title('Original image');

PSF = fspecial('motion',13,45);
Blurred = imfilter(I,PSF,'circ','conv');

subplot(1,3,2);
imshow(n);
title('blurred image');

INITPSF = ones(size(PSF));
[J P] = deconvblind(Blurred,INITPSF,50);

%weight
WEIGHT = edge(I,'sobel',.28);
se1 = strel('disk',1);
se2 = strel('line',13,45);
WEIGHT = ~imdilate(WEIGHT,[se1 se2]);
WEIGHT = padarray(WEIGHT(2:end-1,2:end-1),[1 1]);

P1 = P;
P1(find(P1 < 0.01))= 0;
[J2 P2] = deconvblind(Blurred,P1,50,[],double(WEIGHT));
subplot(1,3,3);
imshow(J2)
% title('restore image');
% figure, imshow(J2)
title('Newly Deblurred Image');
```