DIGITAL IMAGE PROCESSING

EXPERIMENT 7

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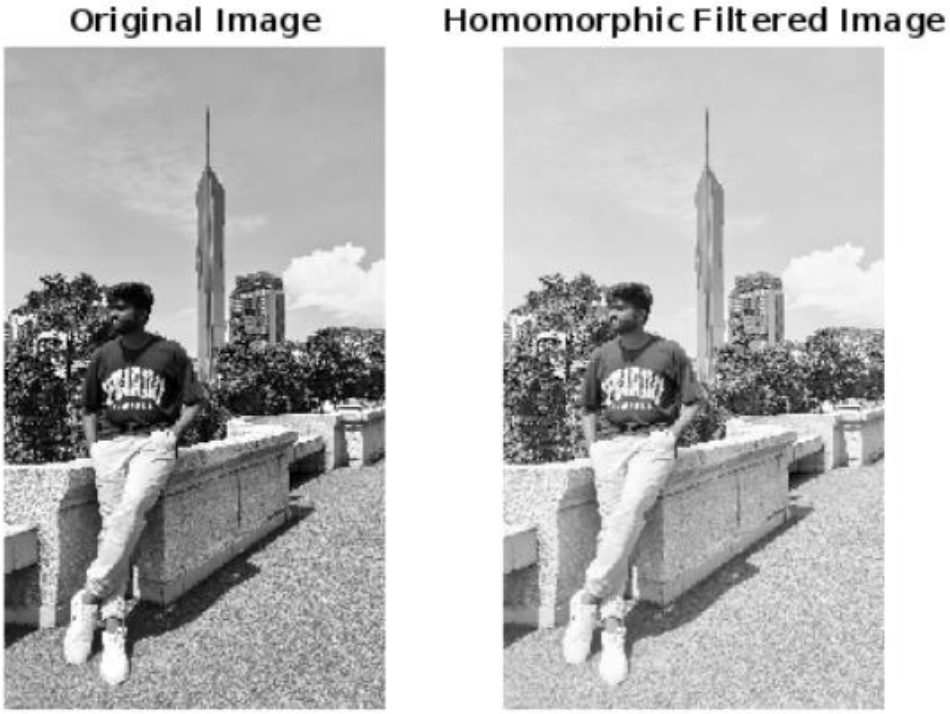
AIM: To apply homomorphic filtering to an image in the Fourier domain to correct non-uniform illumination in an image.

SOFTWARE USED: MATLAB

Code:

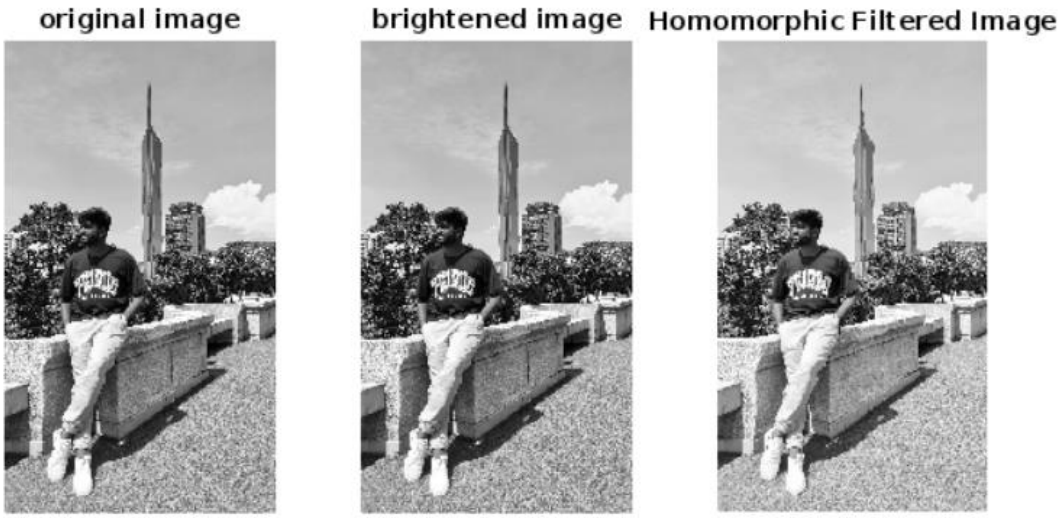
```
clc;  close
all; clear
all;
d = 10;  d2 = d^2;

f = double(rgb2gray(imread("Snapchat-1745094979.jpg")));
l = log(1 + f);  z = fft2(l); [m, n] = size(f); b =
zeros(m, n); h = zeros(m,n); for i = 1:m     for j = 1:n
        b(i, j) = sqrt((i - m / 2)^2 + (j - n / 2)^2);h(i, j) = exp(-b(i,
j)^2 / (2 * d2));                                                end end
L = 0.5;  H = 1.5;filter = L
+ (H - L) * h; s
= z .* filter;
g = abs(ifft2(s)); e =exp(g) - 1; subplot(1, 2, 1);
imshow(f, []); title('Original
Image'); subplot(1, 2, 2); imshow(e, []);
title('Homomorphic Filtered Image');
```

Output

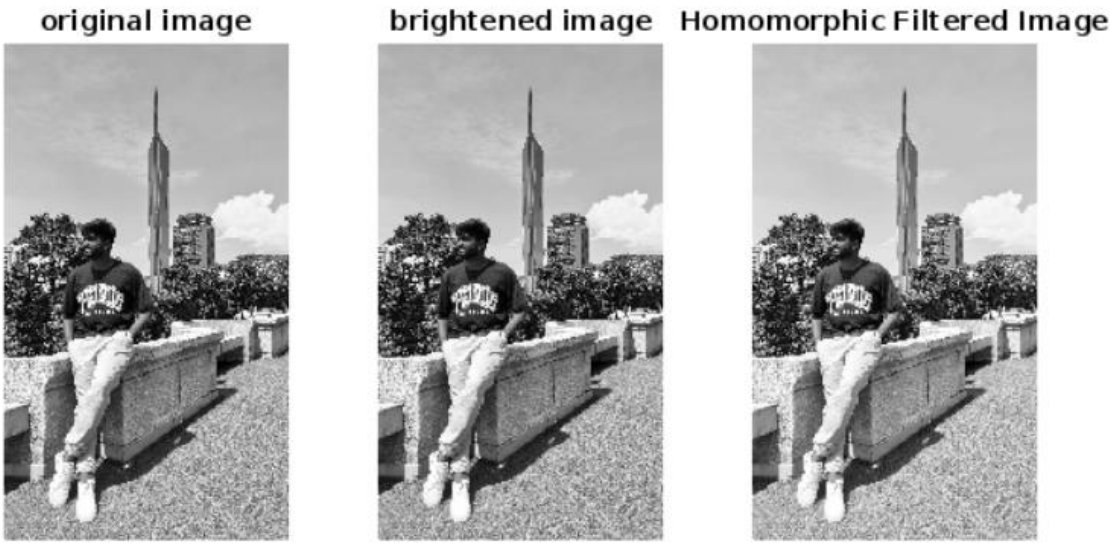


Homomorphic filtering on different Brightness levels:

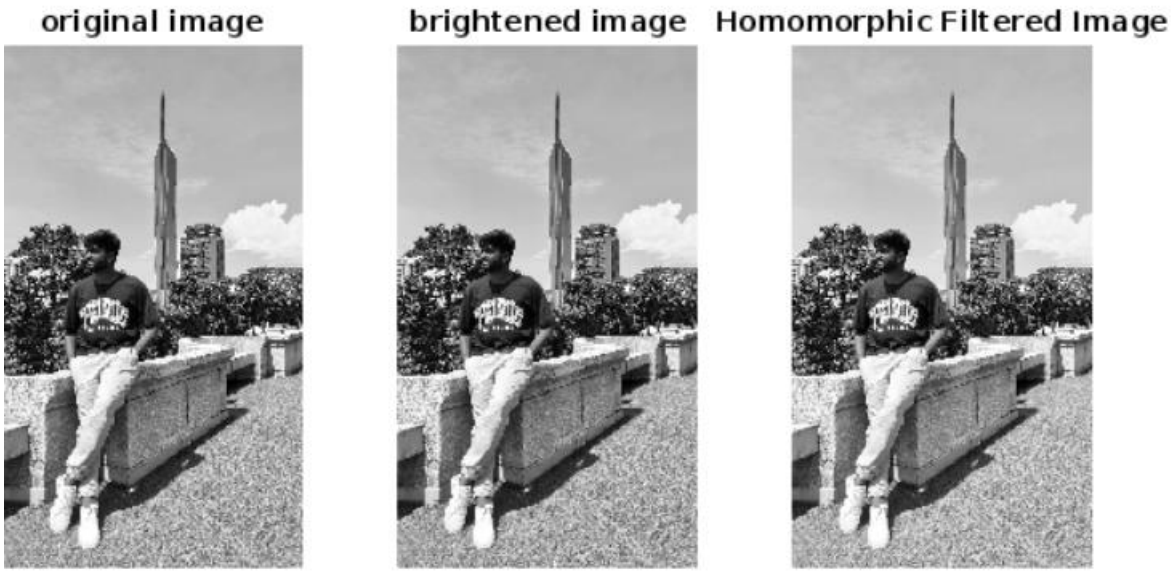
- +50



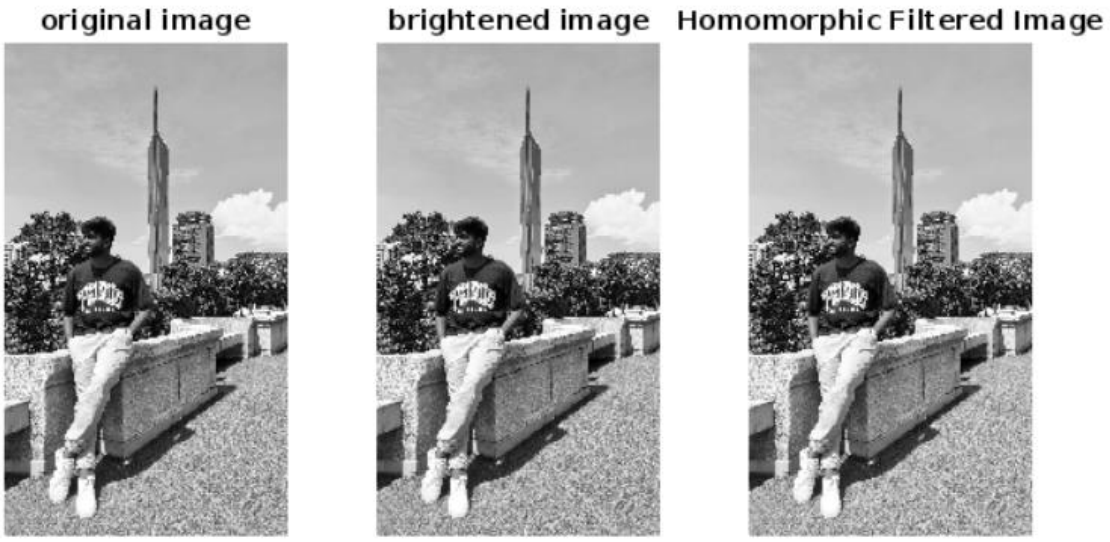
- +100



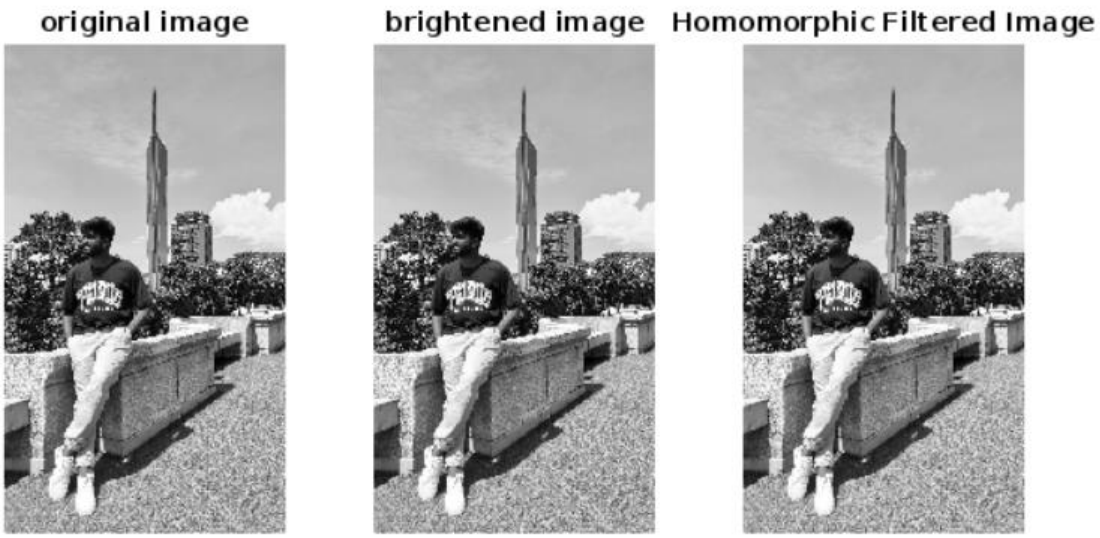
- +200


original image
brightened image
Homomorphic Filtered Image

- +400


original image
brightened image
Homomorphic Filtered Image

- +800


original image
brightened image
Homomorphic Filtered Image