Experiment 23

Low-Pass Filter

```
clear all;
clc;
close all;
```

Reading image (grayscale)

```
I = imread('myself.jpg');
I = rgb2gray(I);

[M,N] = size(I);
```

Finding D(u,v)

```
D = zeros(size(I));
for u = 1:M
    for v = 1:N
        D(u,v) = ((u-(M/2))^2 + (v-(N/2))^2)^(1/2);
    end
end
```

Finding H(u,v)

```
H = zeros(size(I));
for u = 1:M
    for v = 1:N
        H(u,v) = 1/(1 + (D(u,v)/20)^4);
    end
end
```
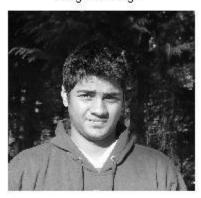
Processing

```
F = fft2(I);
F = fftshift(F);
Y  = F.*H;
Y1 = ifftshift(Y);
y = ifft2(Y1);
```
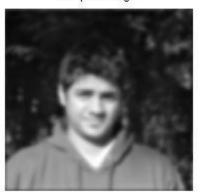
Displaying results

```
subplot(121),imshow(I),title('Original Image');
subplot(122),imshow(uint8(y)),title('Output image');
```

Original Image

Output image

Result

Low Pass Filter allows only low frequencies of the image, and bocks higher freqencies. As our eyes more sensitive to low frequencies, hence the output is not much different to the input.

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