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LAMPIRAN

Lampiran 1 Program Matlab untuk pemrosesan citra dengan transformasi Fourier dan filter Gaussian high-pass

```
clear;
clc;
image = imread('bunga.jpg');
% Konversi ke ruang warna YCbCr
imageA = rgb2ycbcr(image);
y = imageA(:,:,1);
cb = imageA(:,:,2);
cr = imageA(:,:,3);
% Gunakan FFT
F = fft2(y);
Fsh = fftshift(F);
[h, w, ~] = size(Fsh);
% Buat Gaussian High Pass Filter
sigma = 0.1; %standar deviasi
[x, y] = meshgrid(-floor(w/2):floor((w-1)/2), -
floor(h/2):floor((h-1)/2));
gaussianLowPass = exp(-(x.^2 + y.^2) / (2*sigma^2));
gaussianHighPass = 1 - gaussianLowPass;
% Gunakan Gaussian Low Pass Filter
GLPF = Fsh .* gaussianLowPass;
%Gambar Log Transformed
X = Fsh;
S2=log(1+abs(X));
% Invers FFT
FF = ifftshift(GLPF);
f  = ifft2(FF);
% Kombinasikan saluran dan ubah kembali ke ruang warna RGB
Y = zeros(size(imageA));
Y(:,:,1) = f;
Y(:,:,2) = cb;
Y(:,:,3) = cr;
hasil_1  = ycbcr2rgb(uint8(Y));
% Menampilkan gambar hasil
subplot(2,3,1); imshow(image); title('Citra Asli');
subplot(2,3,2); imshow(F);title('Citra hasil TFD');
subplot(2,3,3); imshow(abs(Fsh),[]);title('Citra hasil TFD
Terpusat');
subplot(2,3,4); imshow(S2,[]);title('Citra dengan log TFD');
subplot(2,3,5); imshow(hasil_1,[]), title('Citra hasil dengan
Filtering');
```

Lampiran 2 Program Matlab untuk pemrosesan citra dengan transformasi Fourier dan filter Gaussian low-pass

```
clear;
clc;
image = imread('bunga.jpg');
```

```
% Konversi ke ruang warna YCbCr
imageA = rgb2ycbcr(image);
y = imageA(:,:,1);
cb = imageA(:,:,2);
cr = imageA(:,:,3);
% Gunakan FFT
F = fft2(y);
Fsh = fftshift(F);
[h, w, ~] = size(Fsh);
% Buat Gaussian Low Pass Filter
sigma = 30; % Standar deviasi
[x, y] = meshgrid(-floor(w/2):floor((w-1)/2), -
floor(h/2):floor((h-1)/2));
gaussianLowPass = exp(-(x.^2 + y.^2) / (2*sigma^2 + eps));
% Gunakan Gaussian Low Pass Filter
GLPF = Fsh .* gaussianLowPass;
%Gambar Log Transformed
X = Fsh;
S2=log(1+abs(X));
% Invers FFT
FF = ifftshift(GLPF);
f  = ifft2(FF);
% Kombinasikan saluran dan ubah kembali ke ruang warna RGB
Y = zeros(size(imageA));
Y(:,:,1) = f;
Y(:,:,2) = cb;
Y(:,:,3) = cr;
hasil_1  = ycbcr2rgb(uint8(Y));
% Menampilkan gambar hasil
subplot(2,3,1); imshow(image); title('Citra Asli');
subplot(2,3,2); imshow(F);title('Citra hasil TFD');
subplot(2,3,3); imshow(abs(Fsh),[]);title('Citra hasil TFD
Terpusat');
subplot(2,3,4); imshow(S2,[]);title('Citra dengan log TFD');
subplot(2,3,5); imshow(gaussianLowPass);title('Gaussian Low
Pass Filter');
subplot(2,3,6); imshow(hasil_1,[]), title('Citra hasil dengan
Filtering');
```