

## DAFTAR PUSTAKA

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**Lampiran 1**  
**Citra Asli Kanker Paru-paru**

Citra 1



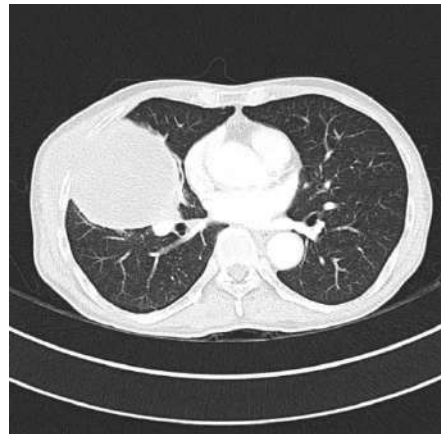
Citra 2



Citra 3



Citra 4



Citra 5

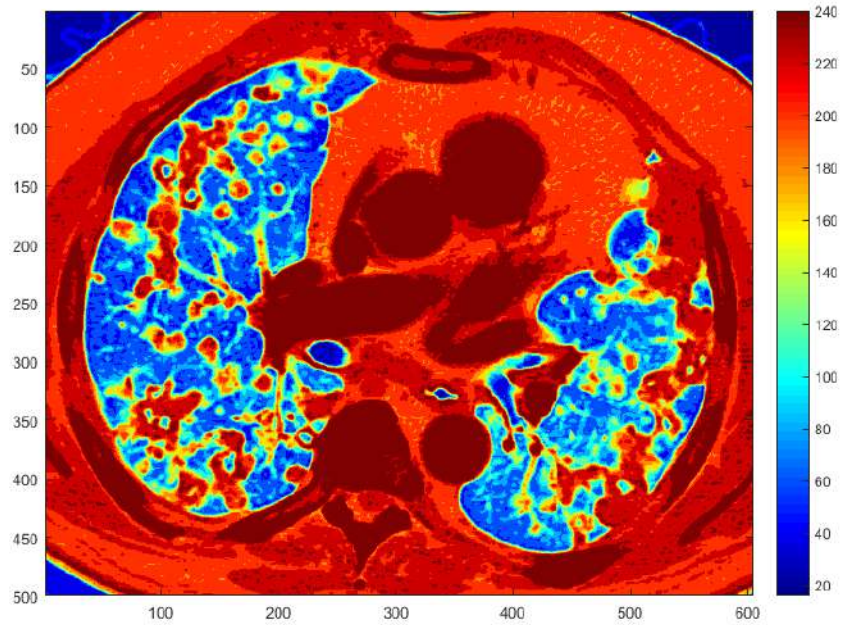


Citra 6

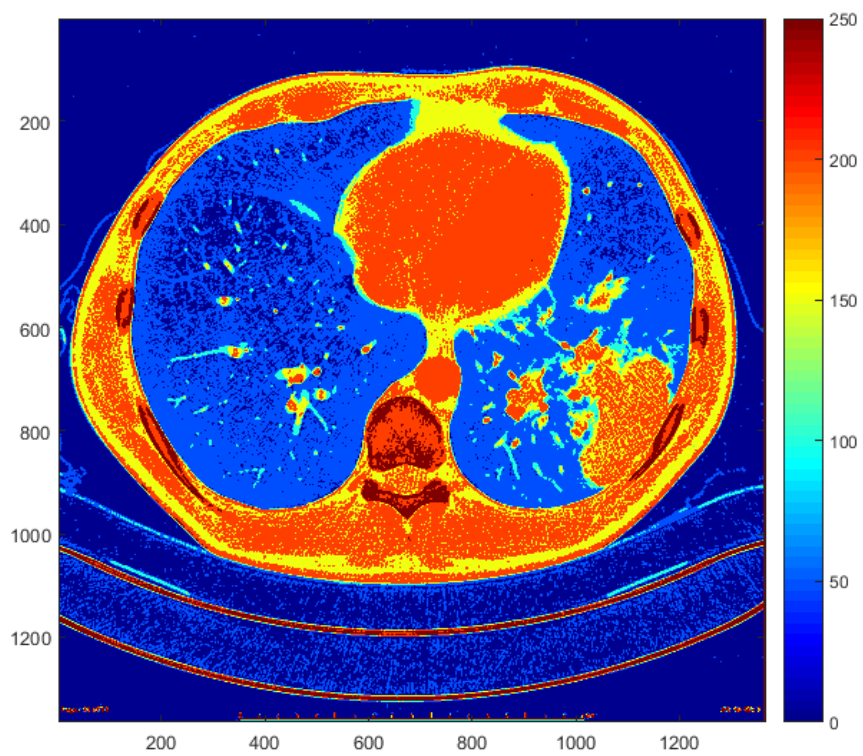


**Lampiran 2**  
**Kontur Citra Kanker Paru-paru**

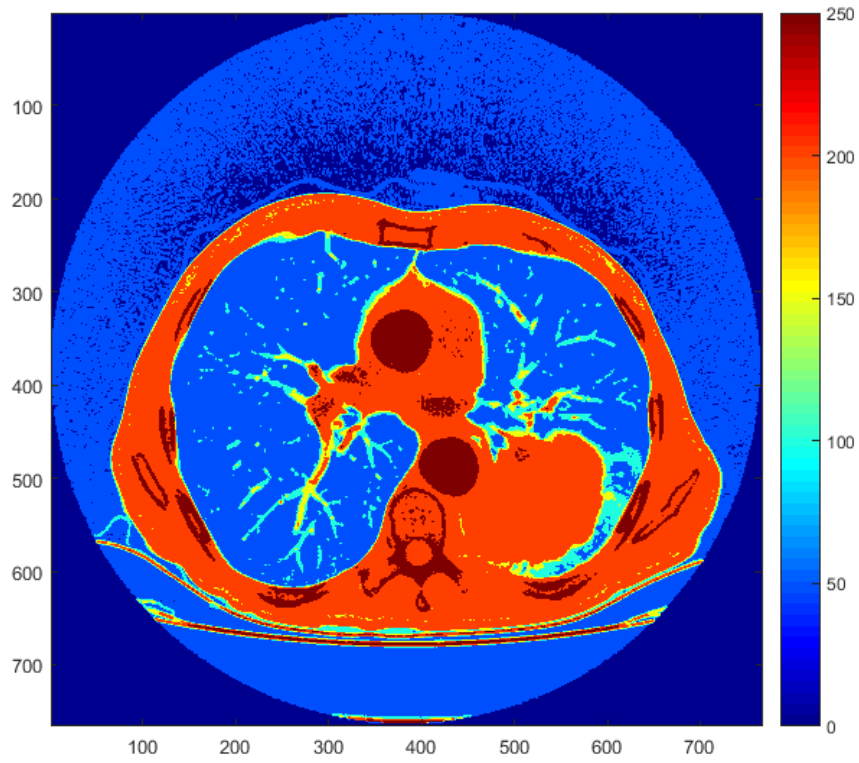
**1. Citra 1**



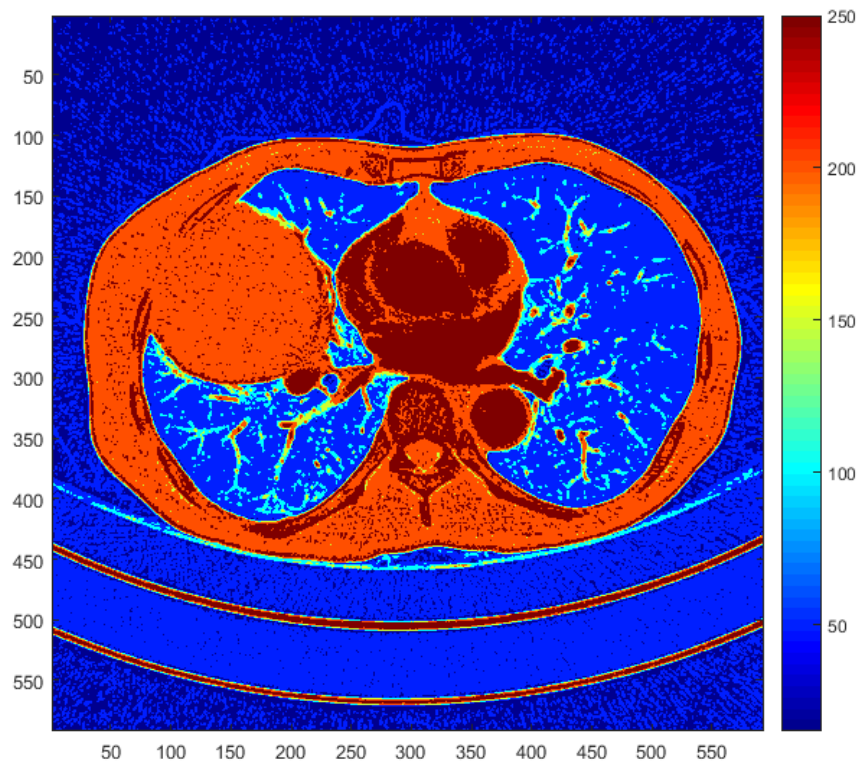
**2. Citra 2**



### 3. Citra 3

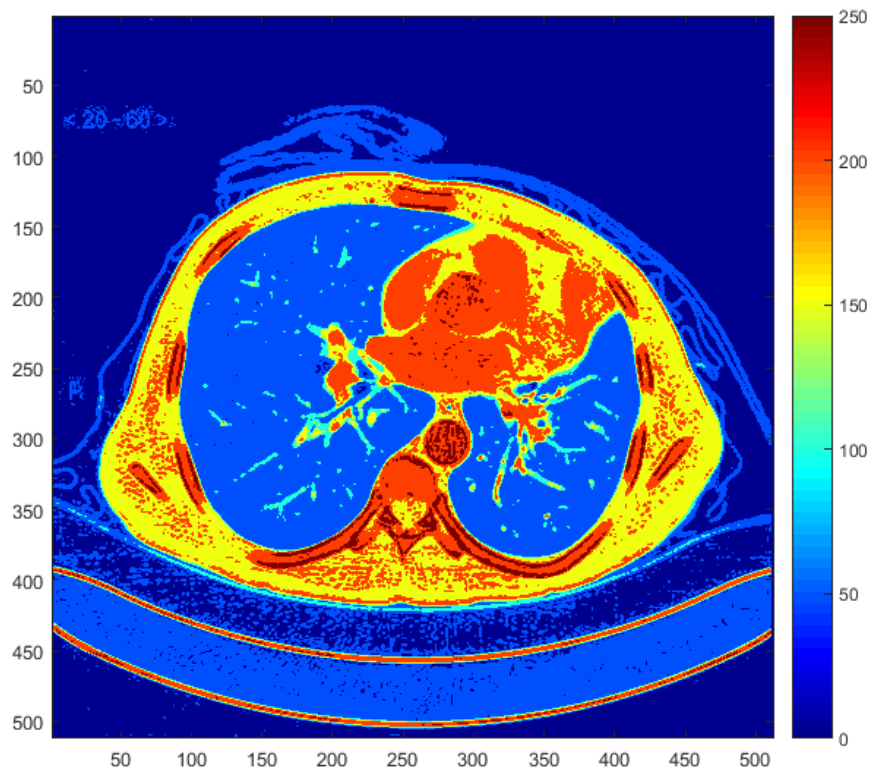


### 4. Citra 4

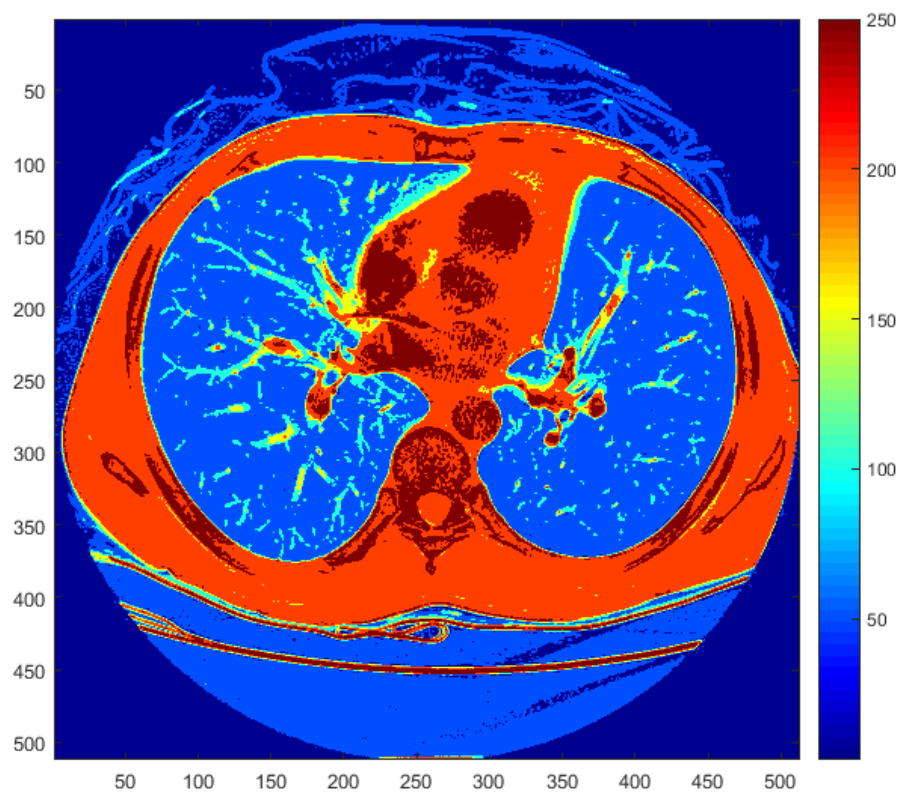




### 5. Citra 5



### 6. Citra 6

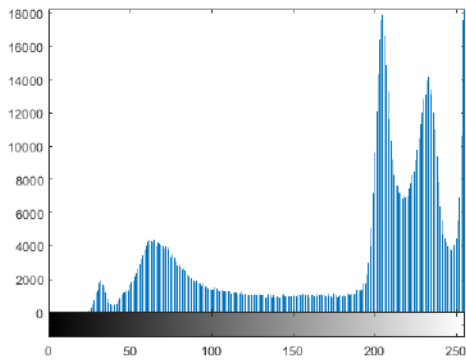


### Lampiran 3

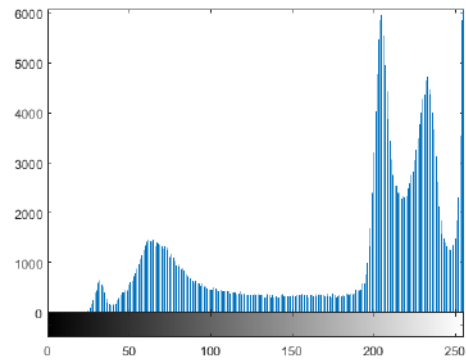
#### *Histogram* Proses Peningkatan Kualitas Citra

#### 1. Citra 1

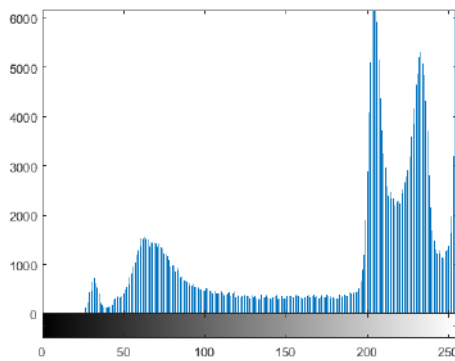
Citra RGB



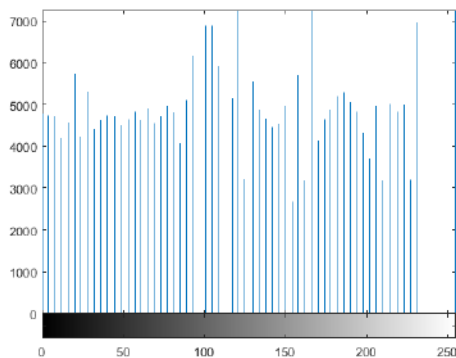
Citra Grayscale



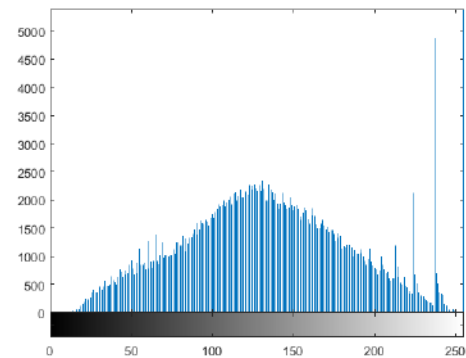
Reduksi *Noise* (Median Filter)



*Histogram Equalization*



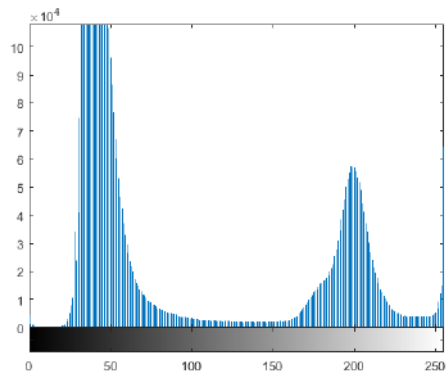
*Contrast Limited Adaptive Histogram Equalization*



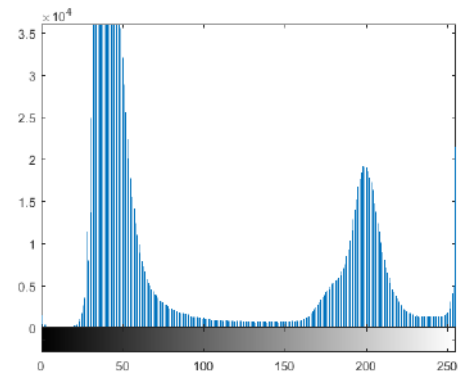


## 2. Citra 2

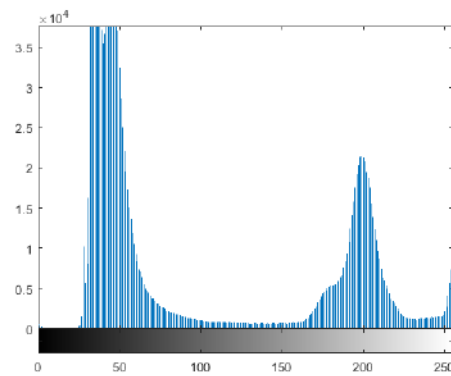
Citra RGB



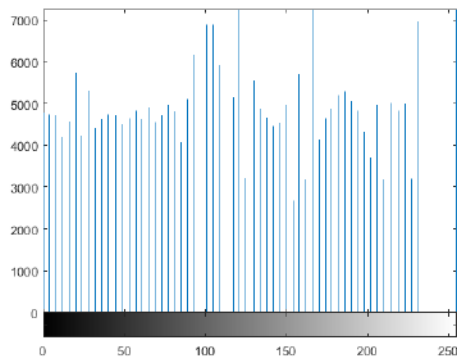
Citra Grayscale



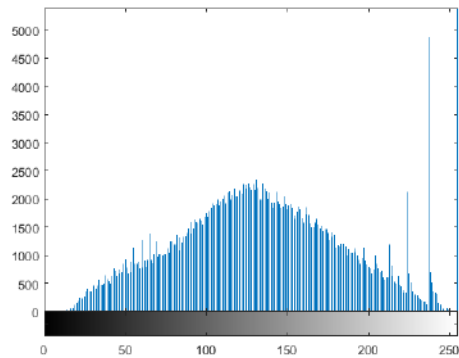
Reduksi *Noise* (Median Filter)



*Histogram Equalization*

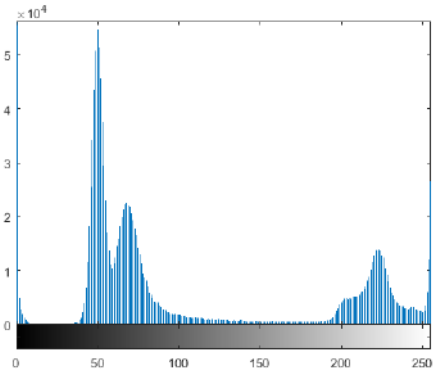


*Contrast Limited Adaptive Histogram Equalization*

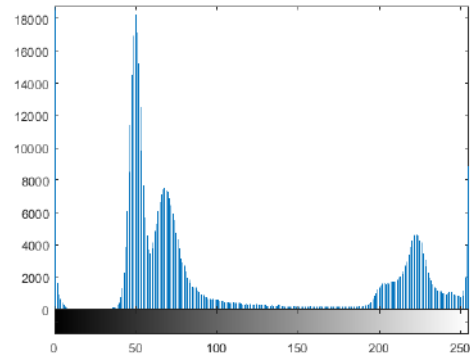


### 3. Citra 3

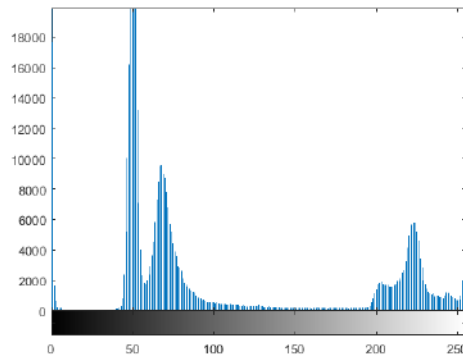
Citra RGB



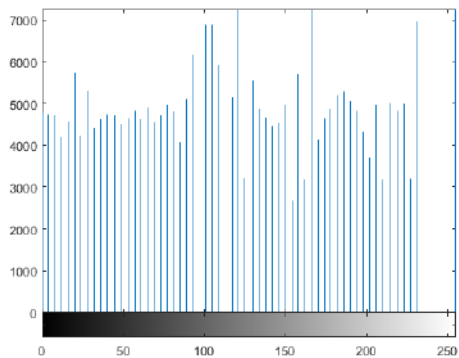
Citra Grayscale



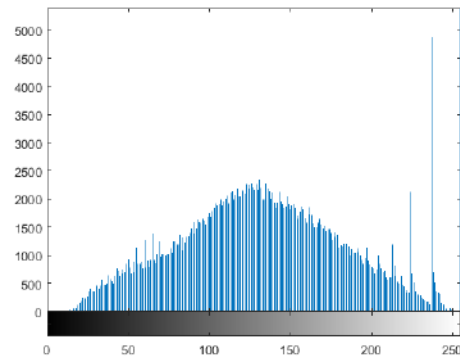
Reduksi *Noise* (Median Filter)



*Histogram Equalization*

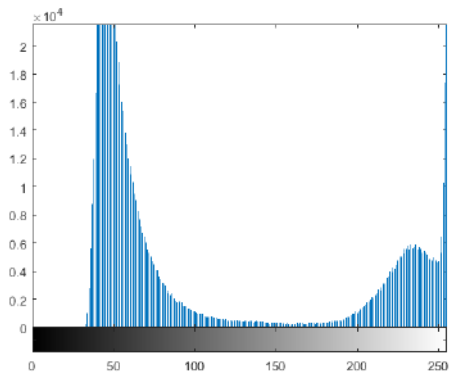


*Contrast Limited Adaptive Histogram Equalization*

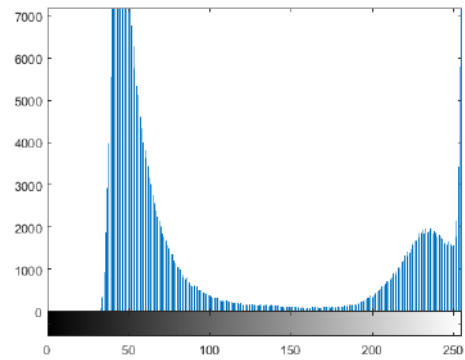


#### 4. Citra 4

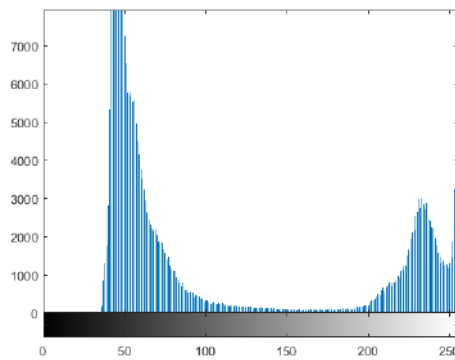
Citra RGB



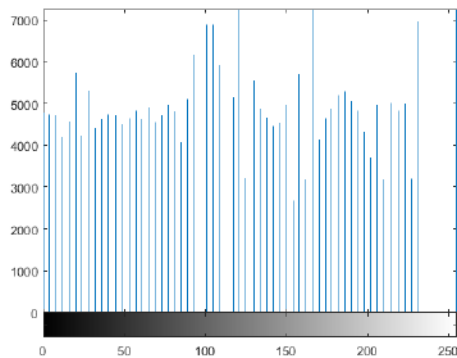
Citra Grayscale



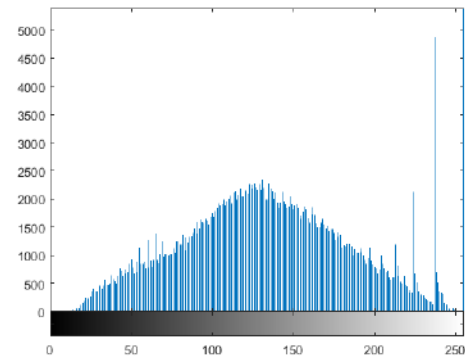
Reduksi *Noise* (Median Filter)



*Histogram Equalization*

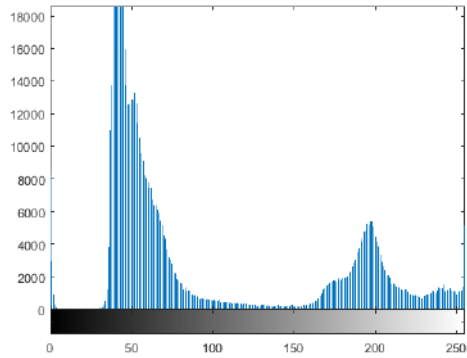


*Contrast Limited Adaptive Histogram Equalization*

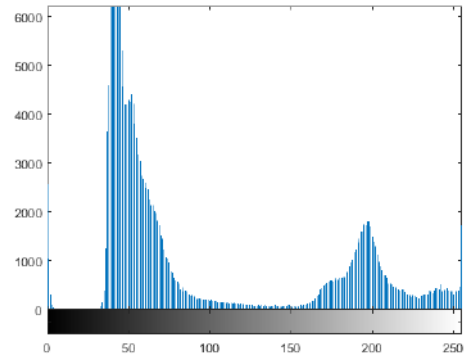


## 5. Citra 5

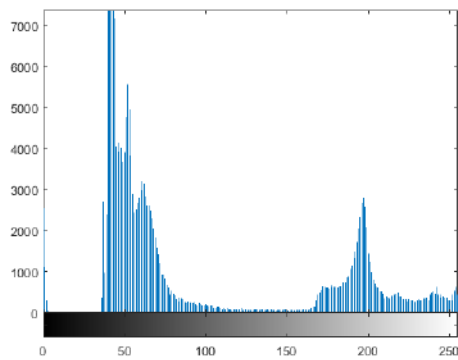
Citra RGB



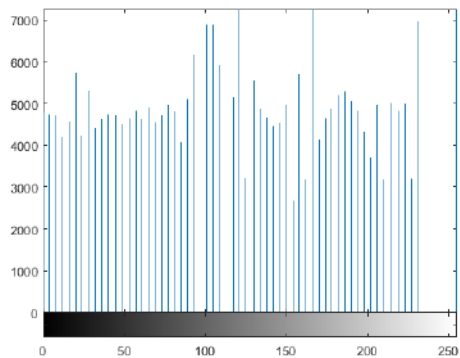
Citra Grayscale



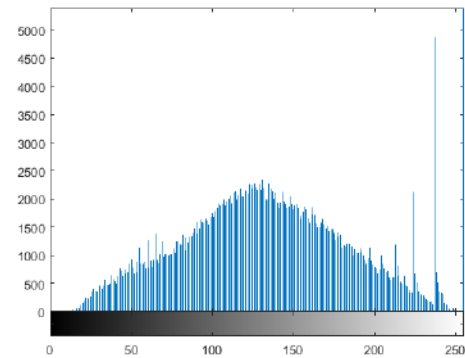
Reduksi *Noise* (Median Filter)



*Histogram Equalization*

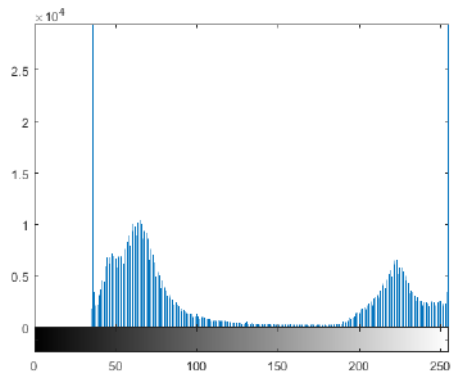


*Contrast Limited Adaptive Histogram Equalization*

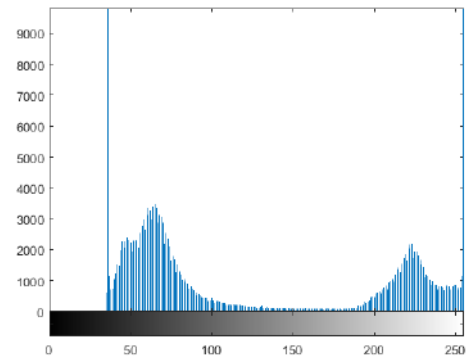


## 6. Citra 6

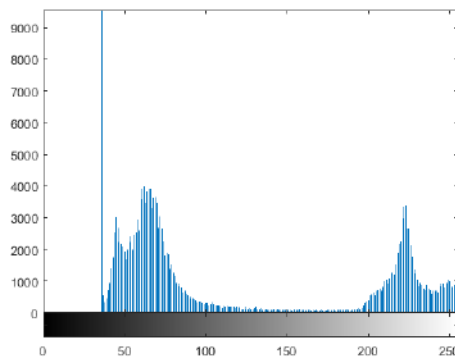
Citra RGB



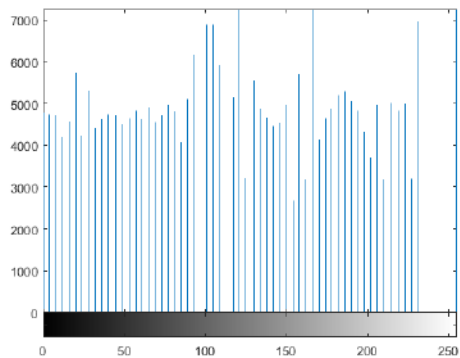
Citra Grayscale



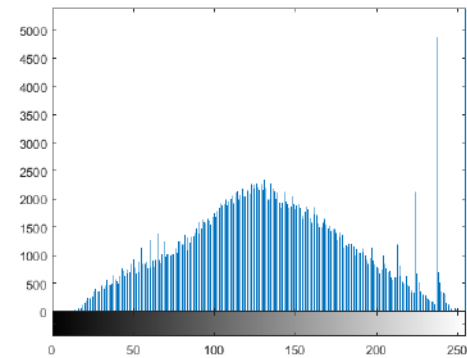
Reduksi *Noise* (Median Filter)



*Histogram Equalization*

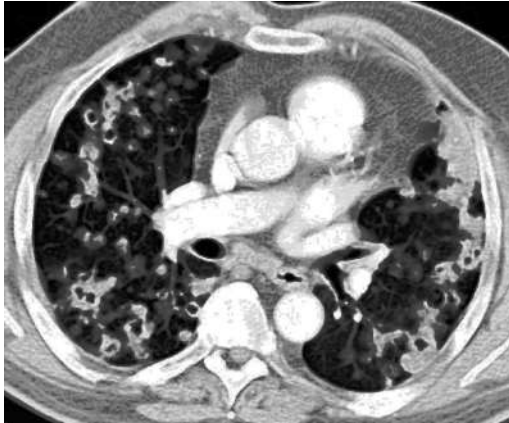


*Contrast Limited Adaptive Histogram Equalization*

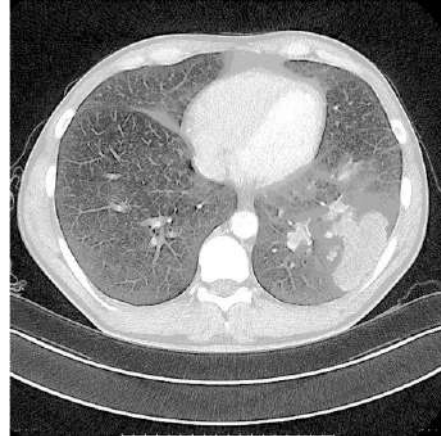


**Lampiran 4**  
**Citra Hasil (*Histogram Equalization*)**

Citra 1



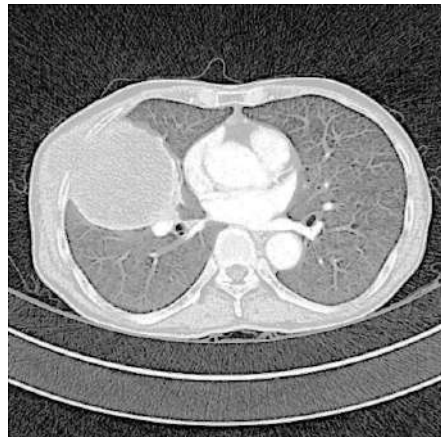
Citra 2



Citra 3



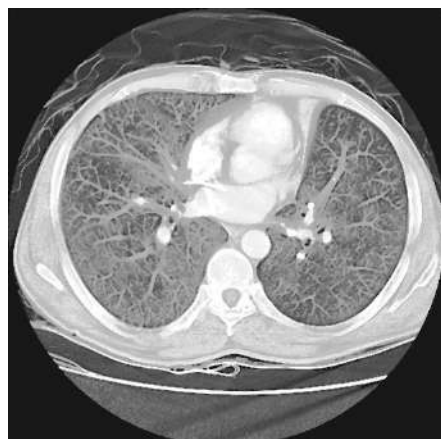
Citra 4



Citra 5



Citra 6



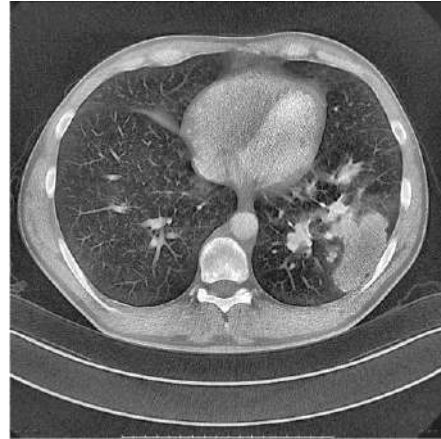
**Lampiran 5**

**Citra Hasil (*Contrast Limited Adaptive Histogram Equalization*)**

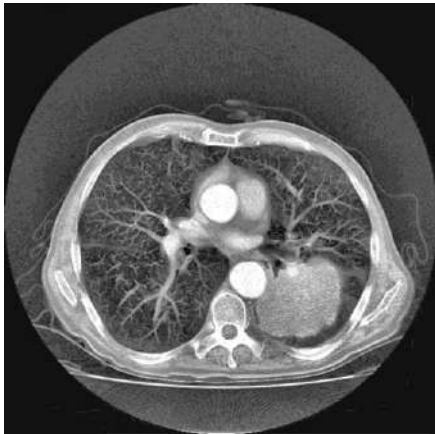
Citra 1



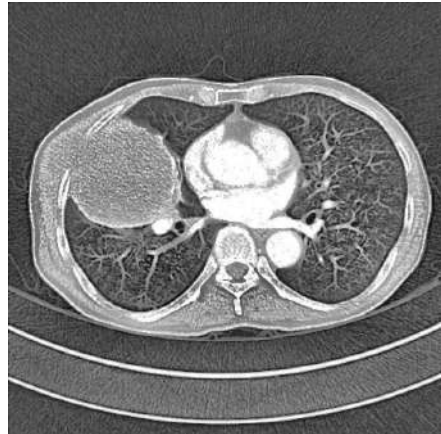
Citra 2



Citra 3



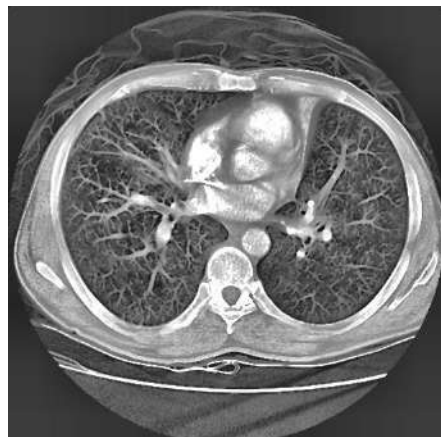
Citra 4



Citra 5



Citra 6





## Lampiran 6

### Program Pengolahan Citra

#### Memasukkan citra

```
clc
clear

A=imread('gambar.jpg');
figure(1), imshow(A), title('Citra Asli');
figure(2,) imhist(A);
```

#### Konversi citra RGB ke citra grayscale

```
% Konversi RGB ke Grayscale
B=rgb2gray(A);
figure(3), imshow(B), title('Citra Grayscale');
figure(4), imhist(B);
imwrite(B, 'gambar-1.jpg');
```

#### Reduksi Noise (Median Filter)

```
% Reduksi Noise (Median Filter)
C=medfilt2(B, [3 3]);
figure(5), imshow(C), title('Median Filter');
figure(6), imhist(C);
imwrite(C, 'gambar-2.jpg');
```

#### *Histogram Equalization*

```
% Contrast Enhancement (Histogram Equalization)
D=histeq(C);
figure(7), imshow(D), title ('Histogram Equalization');
figure(8) imhist(D);
imwrite(D, 'gambar-3.jpg');
```

#### *Contrast Limited Adaptive Histogram Equalization*

```
% Contrast Enhancement (CLAHE)
D=adapthisteq(C, 'cliplimit', 0.02, 'Distribution', 'rayleigh');
figure(7), imshow(D), title ('CLAHE');
figure(8) imhist(D);
imwrite(D, 'gambar-3.jpg')
```

## Lampiran 7

### Fungsi MSE dan PSNR

#### Menghitung MSE

```
%hitungmse - fungsi untuk menghitung
%nilai mse dari dua buah citra
function NilaiMSE=HitungMSE(Citra,CitraRef);
[tinggi,lebar]=size(Citra);
NilaiSSE=sum(sum((double(Citra)-double(CitraRef)).^2));
NilaiMSE=NilaiSSE/(tinggi*lebar);
```

#### Menghitung PSNR

```
function nilaiPSNR=HitungPSNR(NilaiBit,NilaiMSE);
nilaiPSNR=10*log(10)*(NilaiBit/sqrt(NilaiMSE));
```