

LAMPIRAN A
LISTING PROGRAM

menu.m

```
clear all;
clc;

win1=figure(...
    'units','points',...
    'position',[0 200 768 520],...
    'color',[.8 .8 .9],...
    'menubar','none',...
    'resize','off',...
    'numbertitle','off',...
    'name','PERBANDINGAN
    EFEKTIFITAS ALGORITMA
    BLIND-
    DECONVOLUTION,LUCY-
    RICHARDSON,DAN WIENER-
    FILTER PADA RESTORASI
    CITRA');

layar1=axes('parent',win1,...
    'units','points',...
    'position',[80 305 230 180],...
    'xgrid','off','ygrid','off',...
    'xcolor',[1 1 1],'ycolor',[1 1 1],...
    'fontsize',1,'color',[1 1 1]);

layar2=axes('parent',win1,...
    'units','points',...
    'position',[420 305 230 180],...
    'xgrid','off','ygrid','off',...
    'xcolor',[1 1 1],'ycolor',[1 1 1],...
    'fontsize',1,'color',[1 1 1]);

layar3=axes('parent',win1,...
    'units','points',...
    'position',[10 95 240 180],...
    'xgrid','off','ygrid','off',...
    'xcolor',[1 1 1],'ycolor',[1 1 1],...
    'fontsize',1,'color',[1 1 1]);

layar4=axes('parent',win1,'units','poi
nts',...
    'position',[265 95 240 180],...
    'xgrid','off','ygrid','off',...
    'xcolor',[1 1 1],'ycolor',[1 1 1],...
    'fontsize',1,'color',[1 1 1]);

menu1=uimenu('parent',win1,'Label',
    'File');

menu1_1=uimenu('parent',menu1,'La
bel','Open save file algoritma
Blind-
Deconvolution','Callback','opena
vefileblind');

menu1_2=uimenu('parent',menu1,'La
bel','Open save file algoritma
Lucy-
Richardson','Callback','opensavef
ilelucy');

menu1_3=uimenu('parent',menu1,'La
bel','Open save file algoritma
Wiener-
Filter','Callback','opensavefilewie
ner');

menu1_4=uimenu('parent',menu1,'La
bel','Exit','Callback','close');

menu2=uimenu('parent',win1,'Label',
    'View');

menu2_1=uimenu('parent',menu2,'La
bel','View
Picture','Callback','lihatmenu');

menu3=uimenu('parent',win1,'Label',
    'Algoritma');

menu3_1=uimenu('parent',menu3,'La
bel','Algoritma Blind-
```

```

        Deconvolution','Callback','blind')
        ;

menu3_2=uimenu('parent',menu3,'La
        bel','Algoritma Lucy-
        Richardson','Callback','lucy');

menu3_3=uimenu('parent',menu3,'La
        bel','Algoritma Wiener-
        Filter','Callback','wiener');

frame1=uicontrol('parent',win1,...
        'units','points',...
        'position',[0 0 768 75],...
        'backgroundcolor',[.4 .5 .8],...
        'style','Frame');

label2=uicontrol('parent',win1,...
        'units','points',...
        'position',[10 500 100 15],...
        'style','Text',...
        'backgroundcolor',[.8 .9 .9],...
        'string','Lokasi Gambar',...
        'fontname','arial',...
        'fontsize',10);

label3=uicontrol('parent',win1,...
        'units','points',...
        'position',[150 487 75 10],...
        'style','Text',...
        'backgroundcolor',[.8 .9 .9],...
        'string','Citra Asli',...
        'fontname','arial',...
        'fontsize',10);

label4=uicontrol('parent',win1,...
        'units','points',...
        'position',[475 487 125 10],...
        'style','Text',...
        'backgroundcolor',[.8 .9 .9],...
        'string','Citra Terdegradasi',...
        'fontname','arial',...
        'fontsize',10);

label5=uicontrol('parent',win1,...
        'units','points',...
        'position',[15 277 225 25],...
        'style','Text',...
        'backgroundcolor',[.8 .9 .9],...
        'string','Restorasi Citra
        Menggunakan Algoritma Blind-
        Deconvolution',...
        'fontname','arial',...
        'fontsize',10);

label6=uicontrol('parent',win1,...
        'units','points',...
        'position',[270 277 225 25],...
        'style','Text',...
        'backgroundcolor',[.8 .9 .9],...
        'string','Restorasi Citra
        Menggunakan Algoritma Lucy-
        Richardson,iterasi=2',...
        'fontname','arial',...
        'fontsize',10);

label7=uicontrol('parent',win1,...
        'units','points',...
        'position',[530 277 225 25],...
        'style','Text',...
        'backgroundcolor',[.8 .9 .9],...
        'string','Restorasi Citra
        Menggunakan Algoritma
        Wiener-Filter',...
        'fontname','arial',...
        'fontsize',10);

label8=uicontrol('parent',win1,...
        'units','points',...
        'position',[40 80 75 15],...
        'style','Text',...
        'backgroundcolor',[.8 .9 .9],...
        'string','SNR Blind :',...
        'fontname','arial',...
        'fontsize',10);

label9=uicontrol('parent',win1,...
        'units','points',...
        'position',[295 80 75 15],...
        'style','Text',...
        'backgroundcolor',[.8 .9 .9],...
        'string','SNR Lucy :',...
        'fontname','arial',...

```

```

        'fontsize',10);

label10=uicontrol('parent',win1,...
    'units','points',...
    'position',[550 80 75 15],...
    'style','Text',...
    'backgroundcolor',[.8 .9 .9],...
    'string','SNR Wiener : ',...
    'fontname','arial',...
    'fontsize',10);

label11=uicontrol('parent',win1,...
    'units','points',...
    'position',[660 415 55 15],...
    'style','Text',...
    'backgroundcolor',[.8 .9 .9],...
    'string','SNR : ',...
    'fontname','arial',...
    'fontsize',10);

edit2=uicontrol('parent',win1,...
    'units','points',...
    'position',[120 500 150 15],...
    'style','Edit',...
    'backgroundcolor',[.8 .9 .9],...
    'string','',...
    'fontname','arial',...
    'fontsize',10);

edit3=uicontrol('parent',win1,...
    'units','points',...
    'position',[125 80 75 15],...
    'style','Edit',...
    'backgroundcolor',[.8 .9 .9],...
    'string','',...
    'fontname','arial',...
    'fontsize',10);

edit4=uicontrol('parent',win1,...
    'units','points',...
    'position',[390 80 75 15],...
    'style','Edit',...
    'backgroundcolor',[.8 .9 .9],...
    'string','',...
    'fontname','arial',...
    'fontsize',10);

edit5=uicontrol('parent',win1,...
    'units','points',...
    'position',[640 80 75 15],...
    'style','Edit',...
    'backgroundcolor',[.8 .9 .9],...
    'string','',...
    'fontname','arial',...
    'fontsize',10);

edit6=uicontrol('parent',win1,...
    'units','points',...
    'position',[660 395 75 15],...
    'style','Edit',...
    'backgroundcolor',[.8 .9 .9],...
    'string','',...
    'fontname','arial',...
    'fontsize',10);

tombrowsemenu=uicontrol('parent',win1,...
    'units','points',...
    'position',[290 500 70 15],...
    'style','pushbutton',...
    'callback','browsemenu',...
    'string','BROWSE',...
    'fontname','arial',...
    'fontsize',10);

tomlihatmenu=uicontrol('parent',win1,...
    'units','points',...
    'position',[380 500 100 15],...
    'style','pushbutton',...
    'callback','lihatmenu',...
    'string','LIHAT GAMBAR',...
    'fontname','arial',...
    'fontsize',10);

tomsave=uicontrol('parent',win1,...
    'units','points',...
    'position',[500 500 70 15],...
    'style','pushbutton',...
    'callback','savemenu',...
    'string','Save',...
    'fontname','arial',...
    'fontsize',10);

```

```

tomrusakblind=icontrol('parent',win
1,...
'units','points',...
'position',[40 50 150 15],...
'style','pushbutton',...
'callback','rusakblind',...
'string','Rusak Gambar Dengan
Gaussian',...
'fontname','arial',...
'fontsize',10);

```

```

tomrusaklucy=icontrol('parent',win
1,...
'units','points',...
'position',[290 50 200 15],...
'style','pushbutton',...
'callback','rusaklucy',...
'string','Rusak Gambar Dengan
Gaussian dan Noise',...
'fontname','arial',...
'fontsize',10);

```

```

tomrusakwiener=icontrol('parent',w
in1,...
'units','points',...
'position',[535 50 220 15],...
'style','pushbutton',...
'callback','rusakwiener',...
'string','Rusak Gambar Dengan
sudut dan pixel kamera',...
'fontname','arial',...
'fontsize',10);

```

```

tomprosessemuablind=icontrol('par
ent',win1,...
'units','points',...
'position',[75 30 80 15],...
'style','pushbutton',...
'callback','prosessemuablind',...
'string','Proses',...
'fontname','arial',...
'fontsize',10);

```

```

tomprosessemualucy=icontrol('pare
nt',win1,...
'units','points',...
'position',[350 30 80 15],...

```

```

'style','pushbutton',...
'callback','prosessemualucy',...
'string','Proses',...
'fontname','arial',...
'fontsize',10);

```

```

tomprosessemuawiener=icontrol('pa
rent',win1,...
'units','points',...
'position',[610 30 80 15],...
'style','pushbutton',...

'callback','prosessemuawiener',...
'string','Proses',...
'fontname','arial',...
'fontsize',10);

```

```

tomtutup=icontrol('parent',win1,...
'units','points',...
'position',[675 5 80 15],...
'style','pushbutton',...
'string','CLOSE',...
'fontname','arial',...
'fontsize',10,...
'callback','close');

```

browse.m

```

[Fileinput,Pathinput] =
uigetfile({'*.jpg'; '*.bmp'}, 'Pilih
Gambar Sesuka Hati');
lokasi = [Pathinput Fileinput];
set(edit1,'string',lokasi);

```

lihat.m

```

set(win2,'CurrentAxes',layar6);
[a,map] = imread(lokasi);
imshow(a);
set(layar6,...
'xgrid','off','ygrid','off',...
'xcolor',[1 1 1],'ycolor',[1 1 1],...
'fontsize',1,...

```

```

'color',[1 1 1]);

rusak.m

set(win2,'CurrentAxes',layar7);

[e,map] =imread(lokas);
PSF = fspecial('gaussian',7,10);
Blurred =
imfilter(e,PSF,'symmetric','conv');
imshow(Blurred);
set(layar7,...
    'xgrid','off','ygrid','off',...
    'xcolor',[1 1 1],'ycolor',[1 1 1],...
    'fontsize',1,...
    'color',[1 1 1]);

blind.m

clear all;
clc;

win2=figure(...
    'units','points',...
    'position',[0 150 768 490],...
    'color',[.8 .8 .9],...
    'menubar','none',...
    'resize','off',...
    'numbertitle','off',...
    'name','ALGORITMA BLIND
DECONVOLUTION');

frameblind1=uicontrol('parent',win2,..
..
    'units','points',...
    'position',[0 445 768 45],...
    'backgroundcolor',[0 0 0],...
    'style','Frame');

frameblind2=uicontrol('parent',win2,..
..
    'units','points',...
    'position',[0 0 125 445],...
```

```

'backgroundcolor',[.8 .5 .4],...
'style','Frame');

layar6=axes('parent',win2,...
    'units','points',...
    'position',[170 230 240 180],...
    'xgrid','off','ygrid','off',...
    'xcolor',[1 1 1],'ycolor',[1 1 1],...
    'fontsize',1,'color',[1 1 1]);

layar7=axes('parent',win2,...
    'units','points',...
    'position',[470 230 240 180],...
    'xgrid','off','ygrid','off',...
    'xcolor',[1 1 1],'ycolor',[1 1 1],...
    'fontsize',1,'color',[1 1 1]);

layarblind=axes('parent',win2,...
    'units','points',...
    'position',[320 20 240 180],...
    'xgrid','off','ygrid','off',...
    'xcolor',[1 1 1],'ycolor',[1 1 1],...
    'fontsize',1,'color',[1 1 1]);

labelblind1=uicontrol('parent',win2,..
.
    'units','points',...
    'position',[210 450 350 35],...
    'style','Text',...
    'horizontalalignment','center',...
    'string','Restorasi Citra
Menggunakan Algoritma Blind-
Deconvolution',...
    'fontname','arial',...
    'fontsize',14,...
    'fontweight','bold');

labelblind2=uicontrol('parent',win2,..
.
    'units','points',...
    'position',[130 425 100 15],...
    'style','Text',...
    'backgroundcolor',[.8 .9 .9],...
    'string','Lokasi Gambar',...
    'fontname','arial',...
    'fontsize',10);
```

```
labelblind3=uicontrol('parent',win2,..
```

```
.  
    'units','points',...  
    'position',[240 410 100 10],...  
    'style','Text',...  
    'backgroundcolor',[.8 .9 .9],...  
    'string','Citra Asli',...  
    'fontname','arial',...  
    'fontsize',10);
```

```
labelblind4=uicontrol('parent',win2,..
```

```
.  
    'units','points',...  
    'position',[540 410 100 10],...  
    'style','Text',...  
    'backgroundcolor',[.8 .9 .9],...  
    'string','Citra Terdegradasi',...  
    'fontname','arial',...  
    'fontsize',10);
```

```
labelblind5=uicontrol('parent',win2,..
```

```
.  
    'units','points',...  
    'position',[300 200 300 12],...  
    'style','Text',...  
    'backgroundcolor',[.8 .9 .9],...  
    'string','Restorasi Citra  
Menggunakan Algoritma Blind-  
Deconvolution',...  
    'fontname','arial',...  
    'fontsize',10);
```

```
edit1=uicontrol('parent',win2,...  
    'units','points',...  
    'position',[250 425 150 15],...  
    'style','Edit',...  
    'backgroundcolor',[.8 .9 .9],...  
    'string','',...  
    'fontname','arial',...  
    'fontsize',10);
```

```
tombrowse=uicontrol('parent',win2,..
```

```
.  
    'units','points',...  
    'position',[410 425 80 15],...  
    'style','pushbutton',...  
    'callback','browse',...
```

```
'string','browse',...  
'fontname','arial',...  
'fontsize',10);
```

```
tomlihat=uicontrol('parent',win2,...
```

```
'units','points',...  
'position',[10 395 100 15],...  
'style','pushbutton',...  
'callback','lihat',...  
'string','Lihat Gambar',...  
'fontname','arial',...  
'fontsize',10);
```

```
tomrusak=uicontrol('parent',win2,...
```

```
'units','points',...  
'position',[10 365 100 15],...  
'style','pushbutton',...  
'callback','rusak',...  
'string','RUSAK GAMBAR',...  
'fontname','arial',...  
'fontsize',10);
```

```
tomprocess=uicontrol('parent',win2,..
```

```
.  
    'units','points',...  
    'position',[10 335 100 15],...  
    'style','pushbutton',...  
    'callback','blindproses',...  
    'string','Proses',...  
    'fontname','arial',...  
    'fontsize',10);
```

```
tomtutup=uicontrol('parent',win2,...
```

```
'units','points',...  
'position',[10 30 100 15],...  
'style','pushbutton',...  
'string','CLOSE',...  
'fontname','arial',...  
'fontsize',10,...  
'callback','close');
```

blindproses.m

```
set(win2,'CurrentAxes',layarblind);
```

```

R = a(:,1);
G = a(:,2);
B = a(:,3);

PSF = fspecial('gaussian',7,10);
BlurredR =
imfilter(R,PSF,'symmetric','conv');
BlurredG =
imfilter(G,PSF,'symmetric','conv');
BlurredB =
imfilter(B,PSF,'symmetric','conv');

WEIGHTR = edge(R,'sobel',.3);
WEIGHTG = edge(G,'sobel',.3);
WEIGHTB = edge(B,'sobel',.3);

WEIGHTR = 1-double(WEIGHTR);
WEIGHTR([1:3 end-[0:2]],:) = 0;
WEIGHTR(:,[1:3 end-[0:2]]) = 0;

WEIGHTG = 1-double(WEIGHTG);
WEIGHTG([1:3 end-[0:2]],:) = 0;
WEIGHTG(:,[1:3 end-[0:2]]) = 0;

WEIGHTB = 1-double(WEIGHTB);
WEIGHTB([1:3 end-[0:2]],:) = 0;
WEIGHTB(:,[1:3 end-[0:2]]) = 0;

[JR PR] =
deconvblind(BlurredR,PSF,30,[],WEIGHTR);
[JG PG] =
deconvblind(BlurredG,PSF,30,[],WEIGHTG);
[JB PB] =
deconvblind(BlurredB,PSF,30,[],WEIGHTB);

[p l] = size(JR);
JFTot(1:p,1:l,1) = JR;
JFTot(1:p,1:l,2) = JG;
JFTot(1:p,1:l,3) = JB;

imshow(uint8(JFTot),map);
set(layarblind,...

```

```

'xgrid','off','ygrid','off',...
'xcolor',[1 1 1],'ycolor',[1 1 1],...
'fontsize',1,...
'color',[1 1 1]);

```

lucy.m

```

clear all;
clc;

win2=figure(...
    'units','points',...
    'position',[0 150 768 490],...
    'color',[.8 .8 .9],...
    'menubar','none',...
    'resize','off',...
    'numbertitle','off',...
    'name','ALGORITMA LUCY - RICHARDSON');

framelucy1=uicontrol('parent',win2,...
    .
    'units','points',...
    'position',[0 445 768 45],...
    'backgroundcolor',[.3 .3 .4],...
    'style','Frame');

framelucy2=uicontrol('parent',win2,...
    .
    'units','points',...
    'position',[0 0 125 445],...
    'backgroundcolor',[.8 .5 .4],...
    'style','Frame');

layar6=axes('parent',win2,...
    'units','points',...
    'position',[170 230 240 180],...
    'xgrid','off','ygrid','off',...
    'xcolor',[1 1 1],'ycolor',[1 1 1],...
    'fontsize',1,'color',[1 1 1]);

layar7=axes('parent',win2,...
    'units','points',...
    'position',[470 230 240 180],...
    'xgrid','off','ygrid','off',...

```



```

        'xcolor',[1 1 1],'ycolor',[1 1 1],...
        'fontsize',1,'color',[1 1 1]);

layarlucy=axes('parent',win2,...
    'units','points',...
    'position',[320 20 240 180],...
    'xgrid','off','ygrid','off',...
    'xcolor',[1 1 1],'ycolor',[1 1 1],...
    'fontsize',1,'color',[1 1 1]);

labellucy1=uicontrol('parent',win2,...
    'units','points',...
    'position',[210 450 350 35],...
    'style','Text',...
    'horizontalalignment','center',...
    'string','Restorasi Citra
Menggunakan Algoritma Lucy-
Richardson',...
    'fontname','arial',...
    'fontsize',14,...
    'fontweight','bold');

labellucy2=uicontrol('parent',win2,...
    'units','points',...
    'position',[130 425 100 15],...
    'style','Text',...
    'backgroundcolor',[.8 .9 .9],...
    'string','Lokasi Gambar',...
    'fontname','arial',...
    'fontsize',10);

labellucy3=uicontrol('parent',win2,...
    'units','points',...
    'position',[240 410 100 10],...
    'style','Text',...
    'backgroundcolor',[.8 .9 .9],...
    'string','Citra Asli',...
    'fontname','arial',...
    'fontsize',10);

labellucy4=uicontrol('parent',win2,...
    'units','points',...
    'position',[540 410 100 10],...
    'style','Text',...
    'backgroundcolor',[.8 .9 .9],...
    'string','Citra Terdegradasi',...
    'fontname','arial',...
    'fontsize',10);

    'fontsize',10);

labellucy5=uicontrol('parent',win2,...
    'units','points',...
    'position',[300 200 300 12],...
    'style','Text',...
    'backgroundcolor',[.8 .9 .9],...
    'string','Restorasi Citra
Menggunakan Algoritma Lucy-
Richardson,Iterasi=2',...
    'fontname','arial',...
    'fontsize',10);

edit1=uicontrol('parent',win2,...
    'units','points',...
    'position',[250 425 150 15],...
    'style','Edit',...
    'backgroundcolor',[.8 .9 .9],...
    'string','',...
    'fontname','arial',...
    'fontsize',10);

tombrowse=uicontrol('parent',win2,...
    .
    'units','points',...
    'position',[410 425 80 15],...
    'style','pushbutton',...
    'callback','browse',...
    'string','browse',...
    'fontname','arial',...
    'fontsize',10);

tomlihat=uicontrol('parent',win2,...
    'units','points',...
    'position',[10 395 100 15],...
    'style','pushbutton',...
    'callback','lihat',...
    'string','LIHAT GAMBAR',...
    'fontname','arial',...
    'fontsize',10);

tomrusak=uicontrol('parent',win2,...
    'units','points',...
    'position',[10 365 100 15],...
    'style','pushbutton',...
    'callback','rusak',...
    'string','RUSAK GAMBAR',...

```

```

        'fontname','arial',...
        'fontsize',10);

tomprocess=uicontrol('parent',win2,...
.
    'units','points',...
    'position',[10 335 100 15],...
    'style','pushbutton',...
    'callback','lucyproses',...
    'string','Proses',...
    'fontname','arial',...
    'fontsize',10);

tomtutup=uicontrol('parent',win2,...
    'units','points',...
    'position',[10 30 100 15],...
    'style','pushbutton',...
    'string','CLOSE',...
    'fontname','arial',...
    'fontsize',10,...
    'callback','close');

```

lucyproses.m

```

set(win2,'CurrentAxes',layarlucy);

luc1 = deconvlucy(Blurred,PSF,2);
imshow(luc1);
set(layarlucy,...
    'xgrid','off','ygrid','off',...
    'xcolor',[1 1 1],'ycolor',[1 1 1],...
    'fontsize',1,...
    'color',[1 1 1]);

```

wiener.m

```

clear all;
clc;

win2=figure(...
    'units','points',...
    'position',[0 150 768 490],...
    'color',[.8 .8 .9],...

```

```

    'menubar','none',...
    'resize','off',...
    'numbertitle','off',...
    'name','ALGORITMA WIENER
    FILTER');

framewiener1=uicontrol('parent',win
2,...
    'units','points',...
    'position',[0 445 768 45],...
    'backgroundcolor',[.3 .3 .4],...
    'style','Frame');

framewiener2=uicontrol('parent',win
2,...
    'units','points',...
    'position',[0 0 125 445],...
    'backgroundcolor',[.8 .5 .4],...
    'style','Frame');

layar6=axes('parent',win2,...
    'units','points',...
    'position',[170 230 240 180],...
    'xgrid','off','ygrid','off',...
    'xcolor',[1 1 1],'ycolor',[1 1 1],...
    'fontsize',1,'color',[1 1 1]);

layar7=axes('parent',win2,...
    'units','points',...
    'position',[470 230 240 180],...
    'xgrid','off','ygrid','off',...
    'xcolor',[1 1 1],'ycolor',[1 1 1],...
    'fontsize',1,'color',[1 1 1]);

layarwiener=axes('parent',win2,...
    'units','points',...
    'position',[320 20 240 180],...
    'xgrid','off','ygrid','off',...
    'xcolor',[1 1 1],'ycolor',[1 1 1],...
    'fontsize',1,'color',[1 1 1]);

labelwiener1=uicontrol('parent',win2,
...
    'units','points',...
    'position',[210 450 350 35],...
    'style','Text',...
    'horizontalalignment','center',...

```

```

        'string','Restorasi Citra
Menggunakan Algoritma Wiener-
Filter',...
        'fontname','arial',...
        'fontsize',14,...
        'fontweight','bold');

labelwiener2=uicontrol('parent',win2,
...
    'units','points',...
    'position',[130 425 100 15],...
    'style','Text',...
    'backgroundcolor',[.8 .9 .9],...
    'string','Lokasi Gambar',...
    'fontname','arial',...
    'fontsize',10);

labelwiener3=uicontrol('parent',win2,
...
    'units','points',...
    'position',[240 410 100 10],...
    'style','Text',...
    'backgroundcolor',[.8 .9 .9],...
    'string','Citra Asli',...
    'fontname','arial',...
    'fontsize',10);

labelwiener4=uicontrol('parent',win2,
...
    'units','points',...
    'position',[540 410 100 10],...
    'style','Text',...
    'backgroundcolor',[.8 .9 .9],...
    'string','Citra Terdegradasi',...
    'fontname','arial',...
    'fontsize',10);

labelwiener5=uicontrol('parent',win2,
...
    'units','points',...
    'position',[300 200 300 12],...
    'style','Text',...
    'backgroundcolor',[.8 .9 .9],...
    'string','Restorasi Citra
Menggunakan Algoritma Wiener-
Filter',...
    'fontname','arial',...

```

```

        'fontsize',10);

edit1=uicontrol('parent',win2,...
    'units','points',...
    'position',[250 425 150 15],...
    'style','Edit',...
    'backgroundcolor',[.8 .9 .9],...
    'string','',...
    'fontname','arial',...
    'fontsize',10);

tombrowse=uicontrol('parent',win2,...
.
    'units','points',...
    'position',[410 425 80 15],...
    'style','pushbutton',...
    'callback','browse',...
    'string','browse',...
    'fontname','arial',...
    'fontsize',10);

tomlihat=uicontrol('parent',win2,...
    'units','points',...
    'position',[10 395 100 15],...
    'style','pushbutton',...
    'callback','lihat',...
    'string','LIHAT GAMBAR',...
    'fontname','arial',...
    'fontsize',10);

tomrusak=uicontrol('parent',win2,...
    'units','points',...
    'position',[10 365 100 15],...
    'style','pushbutton',...
    'callback','rusak',...
    'string','RUSAK GAMBAR',...
    'fontname','arial',...
    'fontsize',10);

tomprocess=uicontrol('parent',win2,...
.
    'units','points',...
    'position',[10 335 100 15],...
    'style','pushbutton',...
    'callback','wienerproses',...
    'string','Proses',...
    'fontname','arial',...

```

```

        'fontsize',10);

tomttutup=uicontrol('parent',win2,...
    'units','points',...
    'position',[10 30 100 15],...
    'style','pushbutton',...
    'string','CLOSE',...
    'fontname','arial',...
    'fontsize',10,...
    'callback','close');

```

wienerproses.m

```

set(win2,'CurrentAxes',layarwiener);

wnr1 = deconvwnr(Blurred,PSF);

imshow(wnr1);
set(layarwiener,...
    'xgrid','off','ygrid','off',...
    'xcolor',[1 1 1],'ycolor',[1 1 1],...
    'fontsize',1,...
    'color',[1 1 1]);

```

browsemenu.m

```

Fileinputmenu = "";
Pathinputmenu = "";

[Fileinputmenu,Pathinputmenu] =
uigetfile({'*.jpg'; '*.bmp'}, 'Pilih
Gambar');
lokasimenu = [Pathinputmenu
Fileinputmenu];
set(edit2,'string',lokasimenu);

```

lihatmenu.m

```

Fileinputmenu = "";
Pathinputmenu = "";

```

```

[Fileinputmenu,Pathinputmenu] =
uigetfile({'*.jpg'; '*.bmp'}, 'Pilih
Gambar');
lokasimenu = [Pathinputmenu
Fileinputmenu];
set(edit2,'string',lokasimenu);

```

rusakblind.m

```

set(win1,'CurrentAxes',layar2);
[b,map] = imread(lokasimenu);
PSFblind = fspecial('gaussian',7,10);
Blurredblind =
imfilter(b,PSFblind,'symmetric','conv
');
imshow(Blurredblind);title('Citra
Terdegradasi');
set(layar2,...
    'xgrid','off','ygrid','off',...
    'xcolor',[1 1 1],'ycolor',[1 1 1],...
    'fontsize',1,...
    'color',[1 1 1]);

```

```

ub = double(b);
varb = var(ub);
varb2= var(varb);
varb3=var(varb2);
[Mb Nb] = size(ub);

```

```

%SNR degradasi
uaslib = ub;
udegradasib = double(Blurredblind);
ubb= uaslib - udegradasib;
u_2b=times(ubb,ubb);
u_3b=sum(u_2b);
u_4b=sum(u_3b);
u_5b=sum(u_4b);
niueb = u_5b/(Mb * Nb);
SNRb = 10*(log10(varb3/niueb));

```

```

set(edit6,'string',num2str(SNRb));

```

prosessemuablind.m

```
set(win1,'CurrentAxes',layar3);
```

```
%algo blind  
[ablind,map] =imread(lokasimenu);
```

```
Rblind = ablind(:,,1);  
Gblind = ablind(:,,2);  
Bblind = ablind(:,,3);
```

```
BlurredRblind =  
imfilter(Rblind,PSFblind,'symmetric'  
, 'conv');  
BlurredGblind =  
imfilter(Gblind,PSFblind,'symmetric'  
, 'conv');  
BlurredBblind =  
imfilter(Bblind,PSFblind,'symmetric'  
, 'conv');
```

```
WEIGHTRblind =  
edge(Rblind,'sobel',,3);  
WEIGHTGblind =  
edge(Gblind,'sobel',,3);  
WEIGHTBblind =  
edge(Bblind,'sobel',,3);
```

```
WEIGHTRblind = 1-  
double(WEIGHTRblind);  
WEIGHTRblind([1:3 end-[0:2]],:) =  
0;  
WEIGHTRblind(:,[1:3 end-[0:2]]) =  
0;
```

```
WEIGHTGblind = 1-  
double(WEIGHTGblind);  
WEIGHTGblind([1:3 end-[0:2]],:) =  
0;  
WEIGHTGblind(:,[1:3 end-[0:2]]) =  
0;
```

```
WEIGHTBblind = 1-  
double(WEIGHTBblind);
```

```
WEIGHTBblind([1:3 end-[0:2]],:) =  
0;  
WEIGHTBblind(:,[1:3 end-[0:2]]) =  
0;
```

```
[JRblind PRblind] =  
deconvblind(BlurredRblind,PSFblind  
,30,[],WEIGHTRblind);  
[JGblind PGblind] =  
deconvblind(BlurredGblind,PSFblind  
,30,[],WEIGHTGblind);  
[JBblind PBblind] =  
deconvblind(BlurredBblind,PSFblind  
,30,[],WEIGHTBblind);
```

```
[p l] = size(JRblind);  
JFTotblind(1:p,1:l,1) = JRblind;  
JFTotblind(1:p,1:l,2) = JGblind;  
JFTotblind(1:p,1:l,3) = JBblind;  
JFTot = uint8(JFTotblind);  
imshow(JFTot,map);  
set(layar3,...  
 'xgrid','off','ygrid','off',...  
 'xcolor',[1 1 1],'ycolor',[1 1 1],...  
 'fontsize',1,...  
 'color',[1 1 1]);
```

```
%algo lucy  
set(win1,'CurrentAxes',layar4);  
luc2 =  
deconvlucy(Blurredblind,PSFblind,2  
);  
imshow(luc2);  
set(layar4,...  
 'xgrid','off','ygrid','off',...  
 'xcolor',[1 1 1],'ycolor',[1 1 1],...  
 'fontsize',1,...  
 'color',[1 1 1]);
```

```
%algo wiener  
set(win1,'CurrentAxes',layar5);  
wnr1 =  
deconvwnr(Blurredblind,PSFblind);  
imshow(wnr1);  
set(layar5,...  
 'xgrid','off','ygrid','off',...  
 'xcolor',[1 1 1],'ycolor',[1 1 1],...
```

```

'fontsize',1,...
'color',[1 1 1]);

%SNR:
ub = double (b);
varb = var(ub);
varb2= var(varb);
varb3=var(varb2);
JFb = double(JFTot);
luc2b = double(luc2);
wnr1b = double(wnr1);
[Mb Nb] = size(ub);

%SNR blind
uasli1 = ub;
urestore1 = JFb;
u1 = uasli1 - urestore1;
u1_2=times(u1,u1);
u1_3=sum(u1_2);
u1_4=sum(u1_3);
u1_5=sum(u1_4);
niue1 = u1_5/(Mb * Nb);
SNR1 = 10*(log10(varb3/niue1));

%SNR Lucy
uasli2 = ub;
urestore2 = luc2b;
u2 = uasli2 - urestore2;
u2_2=times(u2,u2);
u2_3=sum(u2_2);
u2_4=sum(u2_3);
u2_5=sum(u2_4);
niue2 = u2_5/(Mb * Nb);
SNR2 = 10*(log10(varb3/niue2));

%SNR wiener
uasli3 = ub;
urestore3 = wnr1b;
u3 = uasli3 - urestore3;
u3_2=times(u3,u3);
u3_3=sum(u3_2);
u3_4=sum(u3_3);
u3_5=sum(u3_4);
niue3 = u3_5/(Mb * Nb);
SNR3 = 10*(log10(varb3/niue3));

```

```

set(edit3,'string',num2str(SNR1));
set(edit4,'string',num2str(SNR2));
set(edit5,'string',num2str(SNR3));

```

rusaklucy.m

```

set(win1,'CurrentAxes',layar2);
[c,map] =imread(lokasimenu);
PSFlucy = fspecial('gaussian',5,5);
Blurredlucy =
imfilter(c,PSFlucy,'symmetric','conv'
);
V = 0.002;
BlurredNoisylucy =
imnoise(Blurredlucy,'gaussian',0,V);
imshow(BlurredNoisylucy);
set(layar2,...
'xgrid','off','ygrid','off',...
'xcolor',[1 1 1],'ycolor',[1 1 1],...
'fontsize',1,...
'color',[1 1 1]);

ul = double(c);
varl = var(ul);
varl2= var(varl);
varl3=var(varl2);
[Ml Nl] = size(ul)

%SNR degradasi
uasli1 = ul;
udegradasil =
double(BlurredNoisylucy);
ull = uasli1 - udegradasil;
u_2l=times(ull,ull);
u_3l=sum(u_2l);
u_4l=sum(u_3l);
u_5l=sum(u_4l);
niuel = u_5l/(Ml * Nl);
SNRl = 10*(log10(varl3/niuel));

set(edit6,'string',num2str(SNRl));

```

prosessemualucy

```
set(win1,'CurrentAxes',layar3);
%algo blind
Rlucy = a(:, :, 1);
Glucy = a(:, :, 2);
Blucy = a(:, :, 3);

%rusak dengan algo lucy
PSFlucy = fspecial('gaussian',5,5);
BlurredRlucy =
imfilter(Rlucy,PSFlucy,'symmetric','
conv');
BlurredGlucy =
imfilter(Glucy,PSFlucy,'symmetric','
conv');
BlurredBlucy =
imfilter(Blucy,PSFlucy,'symmetric','
conv');
V = 0.002;
BlurredNoisyRlucy =
imnoise(BlurredRlucy,'gaussian',0,V
);
BlurredNoisyGlucy =
imnoise(BlurredGlucy,'gaussian',0,V
);
BlurredNoisyBlucy =
imnoise(BlurredBlucy,'gaussian',0,V
);

WEIGHTRlucy =
edge(Rlucy,'sobel',.3);
WEIGHTGlucy =
edge(Glucy,'sobel',.3);
WEIGHTBlucy =
edge(Blucy,'sobel',.3);

WEIGHTRlucy = 1-
double(WEIGHTRlucy);
WEIGHTRlucy([1:3 end-[0:2]], :) =
0;
WEIGHTRlucy(:, [1:3 end-[0:2]]) =
0;

WEIGHTGlucy = 1-
double(WEIGHTGlucy);
```

```
WEIGHTGlucy([1:3 end-[0:2]], :) =
0;
WEIGHTGlucy(:, [1:3 end-[0:2]]) =
0;

WEIGHTBlucy = 1-
double(WEIGHTBlucy);
WEIGHTBlucy([1:3 end-[0:2]], :) =
0;
WEIGHTBlucy(:, [1:3 end-[0:2]]) =
0;

[JRlucy PRLucy] =
deconvblind(BlurredNoisyRlucy,PSF
lucy,30,[],WEIGHTRlucy);
[JGlucy PGlucy] =
deconvblind(BlurredNoisyGlucy,PS
Flucy,30,[],WEIGHTGlucy);
[JBlucy PBlucy] =
deconvblind(BlurredNoisyBlucy,PSF
lucy,30,[],WEIGHTBlucy);

[p l] = size(JRlucy);
JFTotlucy(1:p,1:l,1) = JRlucy;
JFTotlucy(1:p,1:l,2) = JGlucy;
JFTotlucy(1:p,1:l,3) = JBlucy;
JFTot = uint8(JFTotlucy);
imshow(JFTot);
set(layar3,...
'xgrid','off','ygrid','off',...
'xcolor',[1 1 1],'ycolor',[1 1 1],...
'fontsize',1,...
'color',[1 1 1]);

%algo lucy
set(win1,'CurrentAxes',layar4);
DAMPAR = im2uint8(3*sqrt(V));
luc2 =
deconvlucy(BlurredNoisylucy,PSFlu
cy,2,DAMPAR);
imshow(luc2);
set(layar4,...
'xgrid','off','ygrid','off',...
'xcolor',[1 1 1],'ycolor',[1 1 1],...
'fontsize',1,...
'color',[1 1 1]);
```

```
%algo wiener
set(win1,'CurrentAxes',layar5);
wnr1 =
deconvwnr(BlurredNoisylucy,PSFlu
cy);
imshow(wnr1);
set(layar5,...
    'xgrid','off','ygrid','off',...
    'xcolor',[1 1 1],'ycolor',[1 1 1],...
    'fontsize',1,...
    'color',[1 1 1]);
```

```
%SNR:
ul = double(c);
varl = var(ul);
varl2= var(varl);
varl3=var(varl2);
Jf1 = double(JFTot);
luc3l = double(luc2);
wnr1l = double(wnr1);
[Ml Nl] = size(ul);
```

```
%SNR blind
uasli4 = ul;
urestore4 = Jf1;
u4 = uasli4 - urestore4;
u4_2=times(u4,u4);
u4_3=sum(u4_2);
u4_4=sum(u4_3);
u4_5=sum(u4_4);
niue4 = u4_5/(Ml * Nl);
SNR4 = 10*(log10(varl3/niue4));
```

```
%SNR lucy
uasli5 = ul;
urestore5 = luc3l;
u5 = uasli5 - urestore5;
u5_2=times(u5,u5);
u5_3=sum(u5_2);
u5_4=sum(u5_3);
u5_5=sum(u5_4);
niue5 = u5_5/(Ml * Nl);
SNR5 = 10*(log10(varl3/niue5));
```

```
%SNR wiener
uasli6 = ul;
```

```
urestore6 = wnr1l;
u6 = uasli6 - urestore6;
u6_2=times(u6,u6);
u6_3=sum(u6_2);
u6_4=sum(u6_3);
u6_5=sum(u6_4);
niue6 = u6_5/(Ml * Nl);
SNR6 = 10*(log10(varl3/niue6));
```

```
set(edit3,'string',num2str(SNR4));
set(edit4,'string',num2str(SNR5));
set(edit5,'string',num2str(SNR6));
```

rusakwiener

```
set(win1,'CurrentAxes',layar2);
[d,map] =imread(lokasimenu);
LEN = 9;
THETA = 0;
PSFwiener =
fspecial('motion',LEN,THETA);
Blurredwiener =
imfilter(d,PSFwiener,'circular','conv')
;
imshow(Blurredwiener);
set(layar1,...
    'xgrid','off','ygrid','off',...
    'xcolor',[1 1 1],'ycolor',[1 1 1],...
    'fontsize',1,...
    'color',[1 1 1]);
```

```
uw = double(d);
varw = var(uw);
varw2= var(varw);
varw3=var(varw2);
[Mw Nw] = size(uw);
```

```
%SNR degradasi
uasliw = uw;
udegradasiw =
double(Blurredwiener);
uww = uasliw - udegradasiw;
u_2w=times(uww,uww);
u_3w=sum(u_2w);
u_4w=sum(u_3w);
```



```

u_5w=sum(u_4w);
niuew = u_5w/(Mw * Nw);
SNRw = 10*(log10(varw3/niuew));

set(edit6,'string',num2str(SNRw));

```

prosessemuawienner

```

%algo blind
set(win1,'CurrentAxes',layar3);

[awiener,map] =imread(lokasimenu);
Rwiener = awiener(:,,1);
Gwiener = awiener(:,,2);
Bwiener = awiener(:,,3);

%rusak dengan algo wiener
LEN = 9;
THETA = 0;
PSFwiener =
fspecial('motion',LEN,THETA);
BlurredRwiener =
imfilter(Rwiener,PSFwiener,'circular'
,'conv');
BlurredGwiener =
imfilter(Gwiener,PSFwiener,'circular'
,'conv');
BlurredBwiener =
imfilter(Bwiener,PSFwiener,'circular'
,'conv');

WEIGHTRwiener =
edge(Rwiener,'sobel',.3);
WEIGHTGwiener =
edge(Gwiener,'sobel',.3);
WEIGHTBwiener =
edge(Bwiener,'sobel',.3);

WEIGHTRwiener = 1-
double(WEIGHTRwiener);
WEIGHTRwiener([1:3 end-[0:2]],:)
= 0;
WEIGHTRwiener(:,[1:3 end-[0:2]])
= 0;

```

```

WEIGHTGwiener = 1-
double(WEIGHTGwiener);
WEIGHTGwiener([1:3 end-[0:2]],:)
= 0;
WEIGHTGwiener(:,[1:3 end-[0:2]])
= 0;

```

```

WEIGHTBwiener = 1-
double(WEIGHTBwiener);
WEIGHTBwiener([1:3 end-[0:2]],:)
= 0;
WEIGHTBwiener(:,[1:3 end-[0:2]])
= 0;

```

```

[JRwiener PRwiener] =
deconvblind(BlurredRwiener,PSFwiener,30,[],WEIGHTRwiener);
[JGwiener PGwiener] =
deconvblind(BlurredGwiener,PSFwiener,30,[],WEIGHTGwiener);
[JBwiener PBwiener] =
deconvblind(BlurredBwiener,PSFwiener,30,[],WEIGHTBwiener);

```

```

[p l] = size(JRwiener);
JFTotwiener(1:p,1:l,1) = JRwiener;
JFTotwiener(1:p,1:l,2) = JGwiener;
JFTotwiener(1:p,1:l,3) = JBwiener;
JFTot = uint8(JFTotwiener);
imshow(JFTot,map);
set(layar3,...
'xgrid','off','ygrid','off',...
'xcolor',[1 1 1],'ycolor',[1 1 1],...
'fontsize',1,...
'color',[1 1 1]);

```

```

%algo lucy
set(win1,'CurrentAxes',layar4);
luc2 =
deconvlucy(Blurredwiener,PSFwiener,2);
imshow(luc2);
set(layar4,...
'xgrid','off','ygrid','off',...
'xcolor',[1 1 1],'ycolor',[1 1 1],...
'fontsize',1,...

```

```

'color',[1 1 1]);

%algo wiener
set(win1,'CurrentAxes',layar5);
wnr1 =
deconvwnr(Blurredwiener,PSFwiene
r);
imshow(wnr1);
set(layar5,...
    'xgrid','off','ygrid','off',...
    'xcolor',[1 1 1],'ycolor',[1 1 1],...
    'fontsize',1,...
    'color',[1 1 1]);

%SNR
uw = double(d);
varw = var(uw);
varw2= var(varw);
varw3=var(varw2);
JFw = double(JFTot);
luc2w = double(luc2);
wnr1w = double(wnr1);
[Mw Nw] = size(uw);

%SNR degradasi
uasli = uw;
udegradasi = double(Blurredwiener);
u = uasli - udegradasi;
u_2=times(u,u);
u_3=sum(u_2);
u_4=sum(u_3);
u_5=sum(u_4);
niue = u_5/(Mw * Nw);
SNR = 10*(log10(varb3/niue));

%SNR blind
uasli7 = uw;
urestore7 = JFw;
u7 = uasli7 - urestore7;
u7_2=times(u7,u7);
u7_3=sum(u7_2);
u7_4=sum(u7_3);
u7_5=sum(u7_4);
niue7 = u7_5/(Mw * Nw);
SNR7 = 10*(log10(varw3/niue7));

%SNR Lucy

```

```

uasli8 = uw;
urestore8 = luc2w;
u8 = uasli8 - urestore8;
u8_2=times(u8,u8);
u8_3=sum(u8_2);
u8_4=sum(u8_3);
u8_5=sum(u8_4);
niue8 = u8_5/(Mw * Nw);
SNR8 = 10*(log10(varw3/niue8));

%SNR wiener
uasli9 = uw;
urestore9 = wnr1w;
u9 = uasli9 - urestore9;
u9_2=times(u9,u9);
u9_3=sum(u9_2);
u9_4=sum(u9_3);
u9_5=sum(u9_4);
niue9 = u9_5/(Mw * Nw);
SNR9 = 10*(log10(varw3/niue9));

set(edit3,'string',num2str(SNR7));
set(edit4,'string',num2str(SNR8));
set(edit5,'string',num2str(SNR9));

```

savemenu.m

```

Fileoutputmenu = "";
Pathoutputmenu = "";
[Fileoutputmenu, Pathoutputmenu,
filterindex] = uiputfile('gambar hasil',
'Simpan Gambar');
file1 = [Pathoutputmenu
Fileoutputmenu ' blind' '.carlez'];
save(file1,'JFTot','map');
file2 = [Pathoutputmenu
Fileoutputmenu ' lucy' '.carlez'];
save(file2,'luc2','map');
file3 = [Pathoutputmenu
Fileoutputmenu ' wiener' '.carlez'];
save(file3,'wnr1','map');

```

opensavefileblind

```

Filesavemenu = "";
Pathsavemenu = "";
[Filesavemenu Pathsavemenu] =
uigetfile('.carlez','Buka Gambar yang
telah di save');
lokasisave = [Pathsavemenu
Filesavemenu];
load('-mat',lokasisave);
figure;imshow(JFTot,map);

```

opensavefilelucy

```

Filesavemenu = "";
Pathsavemenu = "";
[Filesavemenu Pathsavemenu] =
uigetfile('.carlez','Buka Gambar yang
telah di save');
lokasisave = [Pathsavemenu
Filesavemenu];
load('-mat',lokasisave);
figure;imshow(luc2,map);

```

opensavefilewiener

```

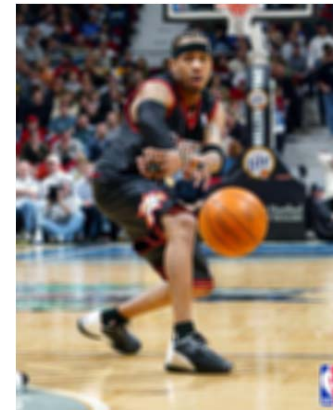
Filesavemenu = "";
Pathsavemenu = "";
[Filesavemenu Pathsavemenu] =
uigetfile('.carlez','Buka Gambar yang
telah di save');
lokasisave = [Pathsavemenu
Filesavemenu];
load('-mat',lokasisave);
figure;imshow(wnr1,map);

```

LAMPIRAN B
CITRA ASLI,
CITRA TERDEGRADASI
DAN
CITRA HASIL RESTORASI



Citra asli_1



Citra terdegradasi(*gaussian*)



Citra hasil restorasi menggunakan algoritma *Blind-Deconvolution* dengan perusak *gaussian*



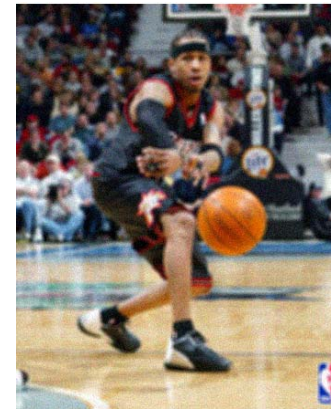
Citra hasil restorasi menggunakan algoritma *Lucy-Richardson* dengan perusak *gaussian*



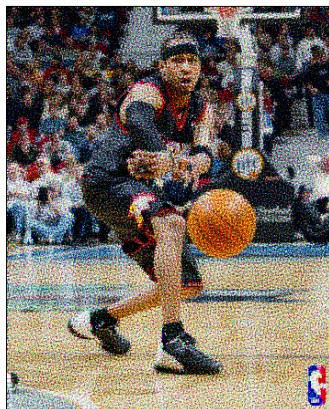
Citra hasil restorasi menggunakan algoritma *Wiener-Filter* dengan perusak *gaussian*



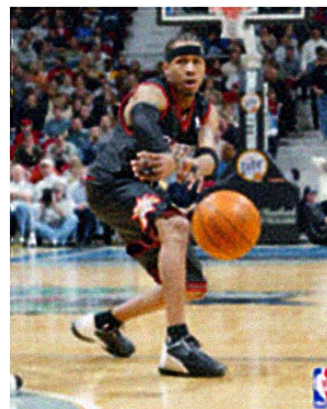
Citra asli_1



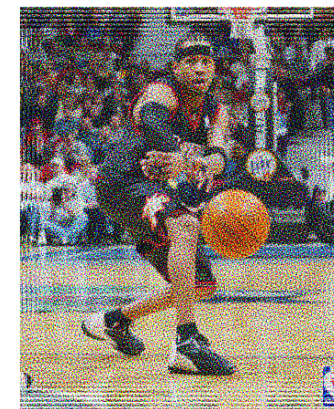
Citra terdegradasi(*gaussian* dan *noise*)



Citra hasil restorasi menggunakan algoritma *Blind-Deconvolution* dengan perusak *gaussian* dan *noise*



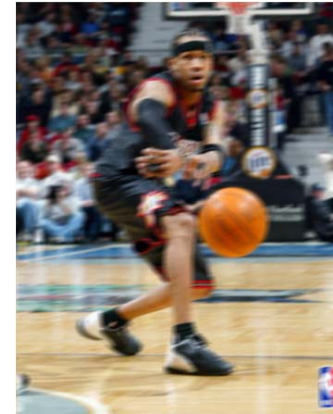
Citra hasil restorasi menggunakan algoritma *Lucy-Richardson* dengan perusak *gaussian* dan *noise*



Citra hasil restorasi menggunakan algoritma *Wiener-Filter* dengan perusak *gaussian* dan *noise*



Citra asli_1



Citra terdegradasi(sudut dan piksel kamera)



Citra hasil restorasi menggunakan algoritma *Blind-Deconvolution* dengan perusak sudut&piksel kamera



Citra hasil restorasi menggunakan algoritma *Lucy-Richardson* dengan perusak sudut&piksel kamera



Citra hasil restorasi menggunakan algoritma *Wiener-Filter* dengan perusak sudut&piksel kamera



Citra asli_2



Citra terdegradasi (*gaussian*)



Citra hasil restorasi menggunakan
algoritma *Blind-Deconvolution*
dengan perusak *gaussian*



Citra hasil restorasi menggunakan
algoritma *Lucy-Richardson*
dengan perusak *gaussian*



Citra hasil restorasi menggunakan
algoritma *Wiener-Filter*
dengan perusak *gaussian*



Citra asli_2



Citra terdegradasi(*gaussian* dan *noise*)



Citra hasil restorasi menggunakan
algoritma *Blind-Deconvolution*
dengan merusak *gaussian* dan *noise*



Citra hasil restorasi menggunakan
algoritma *Lucy-Richardson*
dengan merusak *gaussian* dan *noise*



Citra hasil restorasi menggunakan
algoritma *Wiener-Filter*
dengan merusak *gaussian* dan *noise*



Citra asli_2



Citra terdegradasi(sudut dan piksel kamera)



Citra hasil restorasi menggunakan algoritma *Blind-Deconvolution* dengan perusak sudut&piksel kamera



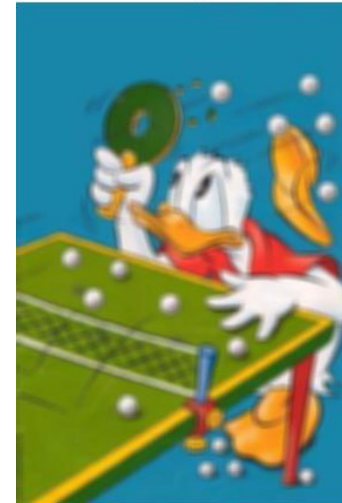
Citra hasil restorasi menggunakan algoritma *Lucy-Richardson* dengan perusak sudut&piksel kamera



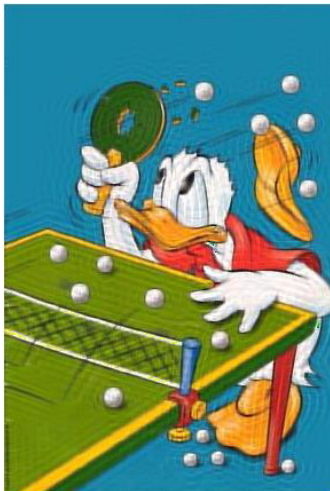
Citra hasil restorasi menggunakan algoritma *Wiener-Filter* dengan perusak sudut&piksel kamera



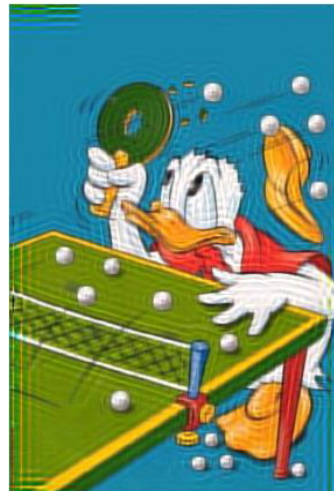
Citra asli_3



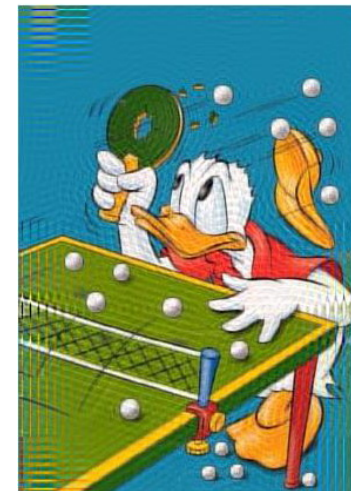
Citra terdegradasi (*gaussian*)



Citra hasil restorasi menggunakan
algoritma *Blind-Deconvolution*
dengan perusak *gaussian*



Citra hasil restorasi menggunakan
algoritma *Lucy-Richardson*
dengan perusak *gaussian*



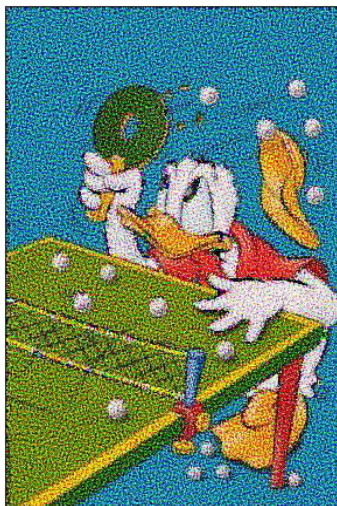
Citra hasil restorasi menggunakan
algoritma *Wiener-Filter*
dengan perusak *gaussian*



Citra asli_3



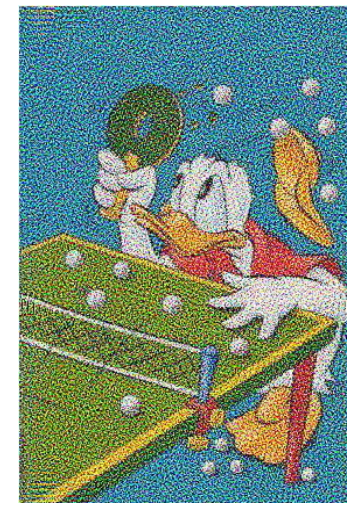
Citra terdegradasi(*gaussian* dan *noise*)



Citra hasil restorasi menggunakan algoritma *Blind-Deconvolution* dengan merusak *gaussian* dan *noise*



Citra hasil restorasi menggunakan algoritma *Lucy-Richardson* dengan merusak *gaussian* dan *noise*



Citra hasil restorasi menggunakan algoritma *Wiener-Filter* dengan merusak *gaussian* dan *noise*



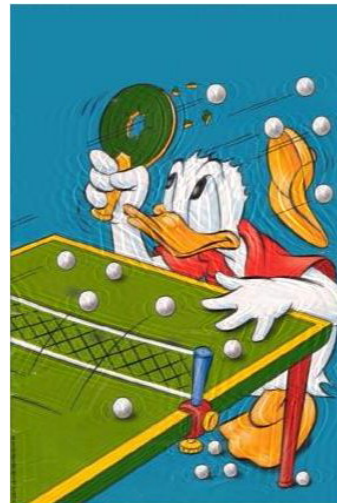
Citra asli_3



Citra terdegradasi(sudut dan piksel kamera)



Citra hasil restorasi menggunakan algoritma *Blind-Deconvolution* dengan perusak sudut&piksel kamera



Citra hasil restorasi menggunakan algoritma *Lucy-Richardson* dengan perusak sudut&piksel kamera



Citra hasil restorasi menggunakan algoritma *Wiener-Filter* dengan perusak sudut&piksel kamera



Citra asli_4



Citra terdegradasi (*gaussian*)



Citra hasil restorasi menggunakan
algoritma *Blind-Deconvolution*
dengan perusak *gaussian*



Citra hasil restorasi menggunakan
algoritma *Lucy-Richardson*
dengan perusak *gaussian*



Citra hasil restorasi menggunakan
algoritma *Wiener-Filter*
dengan perusak *gaussian*



Citra asli_4



Citra terdegradasi(*gaussian* dan *noise*)



Citra hasil restorasi menggunakan
algoritma *Blind-Deconvolution*
dengan perusak *gaussian* dan *noise*



Citra hasil restorasi menggunakan
algoritma *Lucy-Richardson*
dengan perusak *gaussian* dan *noise*



Citra hasil restorasi menggunakan
algoritma *Wiener-Filter*
dengan perusak *gaussian* dan *noise*



Citra asli_4



Citra terdegradasi(sudut dan piksel kamera)



Citra hasil restorasi menggunakan algoritma *Blind-Deconvolution* dengan perusak sudut&piksel kamera



Citra hasil restorasi menggunakan algoritma *Lucy-Richardson* dengan perusak sudut&piksel kamera



Citra hasil restorasi menggunakan algoritma *Wiener-Filter* dengan perusak sudut&piksel kamera



Citra asli_5



Citra terdegradasi (*gaussian*)



Citra hasil restorasi menggunakan
algoritma *Blind-Deconvolution*
dengan perusak *gaussian*



Citra hasil restorasi menggunakan
algoritma *Lucy-Richardson*
dengan perusak *gaussian*



Citra hasil restorasi menggunakan
algoritma *Wiener-Filter*
dengan perusak *gaussian*



Citra asli_5



Citra terdegradasi(*gaussian* dan *noise*)



Citra hasil restorasi menggunakan
algoritma *Blind-Deconvolution*
dengan perusak *gaussian* dan *noise*



Citra hasil restorasi menggunakan
algoritma *Lucy-Richardson*
dengan perusak *gaussian* dan *noise*



Citra hasil restorasi menggunakan
algoritma *Wiener-Filter*
dengan perusak *gaussian* dan *noise*



Citra asli_5



Citra terdegradasi(sudut dan piksel kamera)



Citra hasil restorasi menggunakan algoritma *Blind-Deconvolution* dengan merusak sudut&piksel kamera



Citra hasil restorasi menggunakan algoritma *Lucy-Richardson* dengan merusak sudut&piksel kamera



Citra hasil restorasi menggunakan algoritma *Wiener-Filter* dengan merusak sudut&piksel kamera

LAMPIRAN C

KUESIONER

LAMPIRAN D
ITERASI PADA ALGORITMA *LUCY-RICHARDSON*



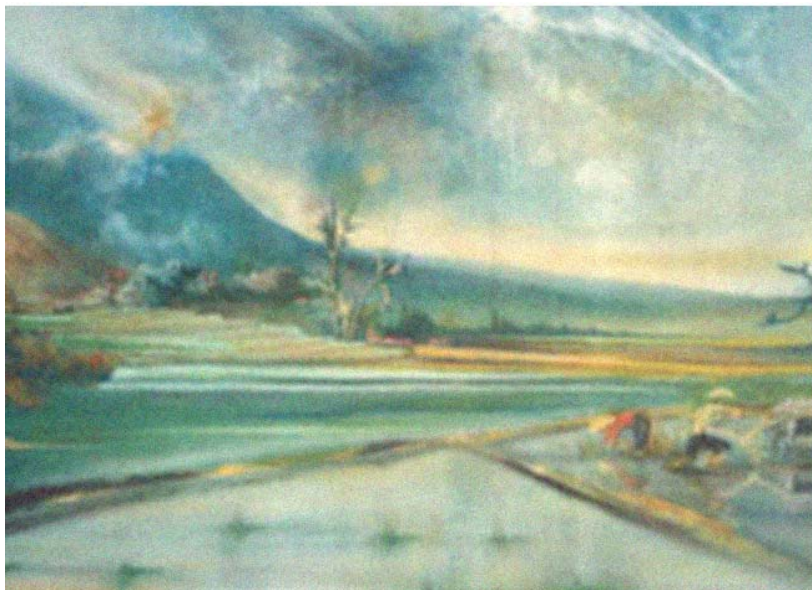
Citra asli



Citra terdegradasi (*gaussian* dan *noise*)
(SNR = 64,33)



Citra hasil restorasi dengan iterasi = 1
(SNR = 64,35)



Citra hasil restorasi dengan iterasi = 2
(SNR = 64,34)



Citra hasil restorasi dengan iterasi = 3
(SNR = 64,25)



Citra hasil restorasi dengan iterasi = 4
(SNR = 64,10)



Citra hasil restorasi dengan iterasi = 5
(SNR = 63,92)