

LAMPIRAN

1 Listing program

Operasi_titik.m

```
function varargout = operasi_titik(varargin)
% OPERASI_TITIK MATLAB code for operasi_titik.fig
%   OPERASI_TITIK, by itself, creates a new OPERASI_TITIK or raises
the existing
%   singleton*.
%
%   H = OPERASI_TITIK returns the handle to a new OPERASI_TITIK
or the handle to
%   the existing singleton*.
%
%   OPERASI_TITIK('CALLBACK',hObject,eventData,handles,...) calls
the local
%   function named CALLBACK in OPERASI_TITIK.M with the given
input arguments.
%
%   OPERASI_TITIK('Property','Value',...) creates a new
OPERASI_TITIK or raises the
%   existing singleton*. Starting from the left, property value pairs are
%   applied to the GUI before operasi_titik_OpeningFcn gets called. An
%   unrecognized property name or invalid value makes property
application
%   stop. All inputs are passed to operasi_titik_OpeningFcn via varargin.
%
%   *See GUI Options on GUIDE's Tools menu. Choose "GUI allows
only one
%   instance to run (singleton)".
%
% See also: GUIDE, GUIDATA, GUIHANDLES

% Edit the above text to modify the response to help operasi_titik

% Last Modified by GUIDE v2.5 11-Aug-2024 08:15:06

% Begin initialization code - DO NOT EDIT
gui_Singleton = 1;
gui_State = struct('gui_Name',    mfilename, ...
    'gui_Singleton', gui_Singleton, ...
    'gui_OpeningFcn', @operasi_titik_OpeningFcn, ...
    'gui_OutputFcn', @operasi_titik_OutputFcn, ...
    'gui_LayoutFcn', [] , ...
    'gui_Callback', []);
if nargin && ischar(varargin{1})
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        gui_State.gui_Callback = str2func(varargin{1});
    end
    if nargin
        [varargout{1:nargout}] = gui_mainfcn(gui_State, varargin{:});
    else
        gui_mainfcn(gui_State, varargin{:});
    end
    % End initialization code - DO NOT EDIT

% --- Executes just before operasi_titik is made visible.
function operasi_titik_OpeningFcn(hObject, eventdata, handles, varargin)
% This function has no output args, see OutputFcn.
% hObject    handle to figure
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
% varargin   command line arguments to operasi_titik (see VARARGIN)

% Choose default command line output for operasi_titik
handles.output = hObject;

% Update handles structure
guidata(hObject, handles);

% UIWAIT makes operasi_titik wait for user response (see UIRESUME)
% uiwait(handles.figure1);

% --- Outputs from this function are returned to the command line.
function varargout = operasi_titik_OutputFcn(hObject, eventdata, handles)
% varargout  cell array for returning output args (see VARARGOUT);
% hObject    handle to figure
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Get default command line output from handles structure
varargout{1} = handles.output;

% --- Executes on button press in pushbutton1.
function pushbutton1_Callback(hObject, eventdata, handles)
% hObject    handle to pushbutton1 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

[namafile, formatfile] = uigetfile({'*.bmp'}, 'membuka gambar'); %memilih
gambar

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Img = imread([formatfile, namafile]); %membaca gambar
guidata(hObject, handles);

axes(handles.axes1); %memilih axes1 sebagai letak gambar yang
dimunculkan

imshow(Img);%memunculkan gambar
handles.Img =Img;
guidata(hObject, handles);

set(handles radiobutton2,'Value',0)
set(handles radiobutton3,'Value',0)
set(handles radiobutton4,'Value',0)

M=255-(Img);%citra negatif
imshow(M);
title('Citra Negatif');

axes(handles.axes2);

cla('reset');
title('Perbaikan Citra')
imhist(M);
title('Histogram');

% --- Executes on button press in radiobutton2.
function radiobutton2_Callback(hObject, eventdata, handles)
% hObject    handle to radiobutton2 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hint: get(hObject,'Value') returns toggle state of radiobutton2

set(handles radiobutton2,'Value',1)
set(handles radiobutton3,'Value',0)
set(handles radiobutton4,'Value',0)

F = handles.Img;
[tinggi, lebar] = size(F);

G = F;
for baris=2 : tinggi-1
    for kolom=2 : lebar-1
        minPiksel = min([F(baris-1, kolom-1)    ...
            F(baris-1, kolom) F(baris, kolom+1)    ...

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        F(baris, kolom-1)      ...
        F(baris, kolom+1) F(baris+1, kolom-1) ...
        F(baris+1, kolom) F(baris+1, kolom+1)];
maksPiksel = min([F(baris-1, kolom-1)      ...
        F(baris-1, kolom) F(baris, kolom+1) ...
        F(baris, kolom-1)      ...
        F(baris, kolom+1) F(baris+1, kolom-1) ...
        F(baris+1, kolom) F(baris+1, kolom+1)]);

if F(baris, kolom) < minPiksel
    G(baris, kolom) = minPiksel;
else
    if F(baris, kolom) > maksPiksel
        G(baris, kolom) = maksPiksel;
    else
        G(baris, kolom) = F(baris, kolom);
    end
end
end
end

handles.G = G;
guidata(hObject,handles);

axes(handles.axes3)
imshow(G)
title('Perbaikan Citra')

axes(handles.axes4)
cla('reset')

imhist(G)

title('Histogram')

% --- Executes on button press in radiobutton3.
function radiobutton3_Callback(hObject, eventdata, handles)
% hObject    handle to radiobutton3 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hint: get(hObject,'Value') returns toggle state of radiobutton3

set(handles.radiobutton2,'Value',0)
set(handles.radiobutton3,'Value',1)
set(handles.radiobutton4,'Value',0)

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F = handles.Img;
[tinggi, lebar] = size(F);

G = F;
F2 = double(F);
for baris=2 : tinggi-1
    for kolom=2 : lebar-1
        jum = F2(baris-1, kolom-1)+ ...
            F2(baris-1, kolom) + ...
            F2(baris-1, kolom+1) + ...
            F2(baris, kolom-1) + ...
            F2(baris, kolom) + ...
            F2(baris, kolom+1) + ...
            F2(baris+1, kolom-1) + ...
            F2(baris+1, kolom) + ...
            F2(baris+1, kolom+1);

        G(baris, kolom) = uint8(1/9 * jum);
    end
end

handles.G = G;
guidata(hObject,handles);

axes(handles.axes3);

imshow(G);
title('Perbaikan Citra');
imtool(G);
axes(handles.axes4)

cla('reset')

imhist(G);

title('Histogram');

% --- Executes on button press in radiobutton4.
function radiobutton4_Callback(hObject, eventdata, handles)
% hObject    handle to radiobutton4 (see GCBO)
% eventdata reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

set(handles.radiobutton2,'Value',0)

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set(handles radiobutton3,'Value',0)
set(handles radiobutton4,'Value',1)

F = handles.Img;
[tinggi, lebar] = size(F);

G = F;
for baris=2 : tinggi-1
    for kolom=2 : lebar-1
        data = [F(baris-1, kolom-1) ...
                F(baris-1, kolom) ...
                F(baris-1, kolom+1) ...
                F(baris, kolom-1) ...
                F(baris, kolom) ...
                F(baris, kolom+1) ...
                F(baris+1, kolom-1) ...
                F(baris+1, kolom) ...
                F(baris+1, kolom+1)];

        % Urutkan
        for i=1 : 8
            for j=i+1 : 9
                if data(i) > data(j)
                    tmp = data(i);
                    data(i) = data(j);
                    data(j) = tmp;
                end
            end
        end

        % Ambil nilai median
        G(baris, kolom) = data(5);
    end
end
handles.G = G;
guidata(hObject,handles);
axes(handles.axes3)
imshow(G);
title('Perbaikan Citra')

axes(handles.axes4)
cla('reset')
imhist(G);
title('Histogram')
imtool(G);
% Hint: get(hObject,'Value') returns toggle state of radiobutton4

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% --- Executes on slider movement.
function slider1_Callback(hObject, eventdata, handles)
% hObject    handle to slider1 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

nilai = get(hObject,'Value');
G = handles.G;
K = G + nilai;

axes(handles.axes3)
imshow(K);
title('Perbaikan Citra')

% Hints: get(hObject,'Value') returns position of slider
%        get(hObject,'Min') and get(hObject,'Max') to determine range of
%        slider

% --- Executes during object creation, after setting all properties.
function slider1_CreateFcn(hObject, eventdata, handles)
% hObject    handle to slider1 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns called

% Hint: slider controls usually have a light gray background.
if isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUicontrolBackgroundColor'))
    set(hObject,'BackgroundColor',[.9 .9 .9]);
end

% --- Executes on button press in radiobutton5.
function radiobutton5_Callback(hObject, eventdata, handles)
% hObject    handle to radiobutton5 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hint: get(hObject,'Value') returns toggle state of radiobutton5
set(handles.radiobutton2,'Value',0)
set(handles.radiobutton3,'Value',0)
set(handles.radiobutton4,'Value',0)
set(handles.radiobutton5,'Value',1)

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