











DAFTAR PUSTAKA













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LAMPIRAN

Lampiran 1. List Gambar Meteran Listrik

No.	Gambar Meteran	No.	Gambar Meteran
1.		12.	
2.		13.	
3.		14.	
4.		15.	
5.		16.	

6.		17.	
7.		18.	
8.		19.	
9.		20.	
10		21.	
11.		22.	

Lampiran 2. Source Code

```
function varargout = uimeteran(varargin)
% UIMETERAN MATLAB code for uimeteran.fig
%     UIMETERAN, by itself, creates a new UIMETERAN or raises the
existing
%     singleton*.
%
%     H = UIMETERAN returns the handle to a new UIMETERAN or the
handle to
%     the existing singleton*.
%
%     UIMETERAN('CALLBACK',hObject,eventData,handles,...) calls
the local
%     function named CALLBACK in UIMETERAN.M with the given input
arguments.
%
%     UIMETERAN('Property','Value',...) creates a new UIMETERAN
or raises the
%     existing singleton*. Starting from the left, property
value pairs are
%     applied to the GUI before uimeteran_OpeningFcn gets called.
An
%     unrecognized property name or invalid value makes property
application
%     stop. All inputs are passed to uimeteran_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 uimeteran

% Last Modified by GUIDE v2.5 27-Oct-2021 15:08:25

% Begin initialization code - DO NOT EDIT
gui_Singleton = 1;
gui_State = struct('gui_Name',       mfilename, ...
                  'gui_Singleton',  gui_Singleton, ...
                  'gui_OpeningFcn', @uimeteran_OpeningFcn, ...
                  'gui_OutputFcn',  @uimeteran_OutputFcn, ...
                  'gui_LayoutFcn',  [] , ...
                  'gui_Callback',    []);
if nargin && ischar(varargin{1})
    gui_State.gui_Callback = str2func(varargin{1});
end

if nargout
    [varargout{1:nargout}] = gui_mainfcn(gui_State, varargin{:});
else
    gui_mainfcn(gui_State, varargin{:});
end
```

```

% End initialization code - DO NOT EDIT

% --- Executes just before uimeteran is made visible.
function uimeteran_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 uimeteran (see VARARGIN)

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

% Update handles structure
guidata(hObject, handles);
ah = axes ('unit', 'normalized', 'position', [0 0 1 1]);
bg = imread ('bgteknik.jpg'); imagesc(bg);
set(ah, 'handlevisibility','off','visible','off')

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

% --- Outputs from this function are returned to the command line.
function varargout = uimeteran_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 btnimage.
function btnimage_Callback(hObject, eventdata, handles)
[nama_file,nama_folder] = uigetfile({'*.jpg'; '*.png'; '*.bmp'},
'Add Image');
% jika ada nama file yang dipilih maka akan mengeksekusi perintah
di bawah
% ini
if ~isequal(nama_file,0)
    % membaca file citra rgb
    I = imread(fullfile(nama_folder,nama_file));
    % menampilkan citra rgb pada axes
    axes(handles.axes1)
    imshow(I)
    title('Original Image')

```

```

    % menampilkan nama file citra pada edit text
    set(handles.editid, 'string', nama_file)

    % menyimpan variabel I pada lokasi handles
    handles.I = I;
    guidata(hObject, handles)
else
    % jika tidak ada file yang dipilih maka akan kembali
    return
end

% --- Executes on button press in btncrop.
function btncrop_Callback(hObject, eventdata, handles)
% hObject    handle to btncrop (see GCBO)
% eventdata reserved - to be defined in a future version of
MATLAB
% handles    structure with handles and user data (see GUIDATA)
citra = handles.I;
axes(handles.axes1)
imshow(citra)
title('Gambar Asli');

h = imrect;
position = wait (h);
hasil1 = imcrop(citra, position);
handles.hasil=hasil1;
axes(handles.axes2)
imshow(hasil1);

% menyimpan variabel hasil1 pada lokasi handles
handles.hasil1 = hasil1;
guidata(hObject, handles)

% --- Executes on button press in btnproses.
function btnproses_Callback(hObject, eventdata, handles)
% hObject    handle to btnproses (see GCBO)
% eventdata reserved - to be defined in a future version of
MATLAB
% handles    structure with handles and user data (see GUIDATA)
hasil1 = handles.hasil1;
% konversi RGB ke Grayscale
Img = rgb2gray(hasil1);
% Image = imresize(Img, [200 600]);
% figure, imshow(Image);

% menguatkan citra gelap
BW1 = imadjust(Img);
BW1 = im2bw(BW1);
% figure, imshow (BW1);

blobAnalyzer = vision.BlobAnalysis('MaximumCount', 50);
[area, centroids, roi] = step(blobAnalyzer, BW1);

```



```

areaConstraint = area > 250;
roi = double(roi(areaConstraint, :));
cit_area_250px = bwareaopen(BW1, 250);

Imgroi = insertShape(Img, 'rectangle', roi);
% figure, imshow(Imgroi);

width = roi(:,3);
height = roi(:,4);
aspectRatio = width ./ height;

roi = roi(aspectRatio > 0.25 & aspectRatio <1,:);
[yroi, xroi] = size(roi);
mask = zeros(size(BW1));

for mulaiyroi = 1:yroi
    mask(roi(mulaiyroi,2):roi(mulaiyroi,2)+roi(mulaiyroi,4)-1,...
        roi(mulaiyroi,1):roi(mulaiyroi,1)+roi(mulaiyroi,3)-1) = 1;
end

Img_baru = logical(BW1) .* logical(mask);
% figure, imshow(Img_baru);

citraakhir = bwareaopen(Img_baru, 250);

% Rekognisi karakter teks
results = ocr(citraakhir, 'Language', ...
    {'D:\skripsi\sucimeter\tessdata\sucimeter.traineddata'});

% Buat Var Final_Output
final_output = [];
final_output = [final_output deblank(results.Text)];

% Hilangkan spasi pada teks
final_output = final_output(~isspace(final_output))
set(handles.editangka, 'String', num2str(final_output))

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

A = get(handles.editwaktu, 'String');
B = get(handles.editid, 'String');
C = get(handles.editangka, 'String');
Data = {A,B,C};
OldData = get(handles.uitable, 'Data');

% check empty data
r = size(OldData,1);

```

```

brk = false;
for m=1:r
    x = OldData{m,1};
    k = m;
    brk = true;
    if isempty(x)
        break;
    end
end

if (k==r && brk==false)
    NW_Data = [OldData;Data];
else
    NW_Data = OldData;
    NW_Data(k,:) = Data;
end
set(handles.uitable, 'Data', NW_Data);

% --- Executes on button press in btnreset.
function btnreset_Callback(hObject, eventdata, handles)
% hObject    handle to btnreset (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
% handles    structure with handles and user data (see GUIDATA)
% mereset GUI
set(handles.editid, 'String', [])
set(handles.editwaktu, 'String', [])
set(handles.editangka, 'String', [])
set(handles.uitable, 'Data', [])

axes(handles.axes1)
cla reset
set(gca, 'Xtick', [])
set(gca, 'Ytick', [])

axes(handles.axes2)
cla reset
set(gca, 'Xtick', [])
set(gca, 'Ytick', [])

function editid_Callback(hObject, eventdata, handles)
% hObject    handle to editid (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hints: get(hObject, 'String') returns contents of editid as text
%        str2double(get(hObject, 'String')) returns contents of
editid as a double

```

```

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

% Hint: edit controls usually have a white background on Windows.
%         See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUiControlBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

function editwaktu_Callback(hObject, eventdata, handles)
% hObject    handle to editwaktu (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of editwaktu as
text
%         str2double(get(hObject,'String')) returns contents of
editwaktu as a double

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

% Hint: edit controls usually have a white background on Windows.
%         See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUiControlBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

function editangka_Callback(hObject, eventdata, handles)
% hObject    handle to editangka (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
% handles    structure with handles and user data (see GUIDATA)

```

```

% Hints: get(hObject,'String') returns contents of editangka as
text
%         str2double(get(hObject,'String')) returns contents of
editangka as a double

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

% Hint: edit controls usually have a white background on Windows.
%         See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUiControlBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

% --- Executes on button press in btndownload.
function btndownload_Callback(hObject, eventdata, handles)
% hObject    handle to btndownload (see GCBO)
% eventdata  reserved - to be defined in a future version of
MATLAB
% handles    structure with handles and user data (see GUIDATA)
Data =get(handles.uitable,'Data');
HD = {'Waktu','ID','Output'};
SN = ['Data_', datestr(now, 'ddmmyyyy_HHMMSS'), '.xlsx'];

xlswrite(SN, [HD;Data]);
msgbox('Success!', 'Report');

```