

LAMPIRAN

Lampiran 1 : Program matlab

```
clc;
clear all;

in = xlsread('dataset.xlsx') %membaca file excel
a=in(1:end,1:4) %membaca data pada kolom ke 1 - 4 sebagai vector input MQ135
MQ136 HUM PH
b=in(1:end,5) %membaca data pada kolom ke 5 sebagai target
[baris kolom]=size(a)

skala = 1000 % NN kan maksimal -1 sampai 1
for k = 1: baris %menyimpan data dalam bentuk array kemudian di save ke .mat
input(k,:) = [a(k,1)/skala a(k,2)/skala a(k,3)/skala a(k,4)/skala];
target(k,:) = [b(k,1)/skala];
end
save('input.mat'); %menyimpan data dalam sebuah matrik input.mat untuk data
training vector input
save('target.mat'); %menyimpan data dalam sebuah matrik target.mat

vektor_input=load('input'); %mengambil data
b = vektor_input.input;
INPUT = b;
INPUT = INPUT';

vektor_output = load('target');
d = vektor_output.target;
OUTPUT = d;
OUTPUT = OUTPUT';
```

```

% Batasan error sebagai target training
error_max=1e-8;

% Membentuk jaringan NN
%20 jml neuron hidden layer 1
%30 jml neuron hidden layer 2
%1 jml neuron layer output

net=newff(minmax(INPUT), [19 1], {'tansig','tansig'},'trainlm')
% trainlm,traingd,traingda,traingdm, traingdx

% Define parameters
net.trainParam.epochs =1000; %banyaknya iterasi
net.trainParam.goal = error_max; %0.00000001 1-8
net.trainParam.max_fail = 5000;

% Train network
netWr = train(net, INPUT, OUTPUT);

% Simulate result
Wr= sim(netWr,INPUT);
prediksi = Wr';
hasil = [OUTPUT' prediksi*skala]

% Simpan data
save bobot

```

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

% Last Modified by GUIDE v2.5 02-Aug-2020 16:41:43

% Begin initialization code - DO NOT EDIT
```

```

gui_Singleton = 1;
gui_State = struct('gui_Name',    mfilename, ...
                  'gui_Singleton', gui_Singleton, ...
                  'gui_OpeningFcn', @guiarduino_OpeningFcn, ...
                  'gui_OutputFcn', @guiarduino_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 guiarduino is made visible.
function guiarduino_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 guiarduino (see VARARGIN)

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

% Update handles structure

```

```

guidata(hObject, handles);

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

% --- Outputs from this function are returned to the command line.
function varargout = guiarduino_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)
global s
% 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)
s = serial('COM10','BaudRate',9600,'DataBits',8);
fopen(s);
a = 'Connected';
set(handles.text2,'String',a);
set(handles.pushbutton2, 'userdata', 0);
while 1
    data = fscanf(s, '%s');
    hasil = sscanf(data, ['%f ']);

```

```
set(handles.edit1,'String',hasil(1));
set(handles.edit2,'String',hasil(2));
set(handles.edit3,'String',hasil(3));
set(handles.edit4,'String',hasil(4));
drawnow
```

```
skala = 1000
```

```
MQ135=str2num(get(handles.edit1,'String'));
```

```
MQ136=str2num(get(handles.edit2,'String'));
```

```
HUM=str2num(get(handles.edit3,'String'));
```

```
PH=str2num(get(handles.edit4,'String'));
```

```
load bobot;
```

```
proses = [MQ135/skala MQ136/skala HUM/skala PH/skala];
```

```
tes = proses';
```

```
yp=(sim(netWr,tes))';
```

```
hasil = yp;
```

```
real=hasil*skala;
```

```
if (real<0.5)
```

```
    set(handles.text12, 'String', 'Tidak Layak');
```

```
else
```

```
    set(handles.text12, 'String', 'Layak');
```

```
end
```

```
set(handles.edit5, 'String', real);
```

```

    if get(handles.pushbutton2, 'userdata') % stop condition
        break;
    end
end
end

```

```

% --- Executes on button press in pushbutton2.

```

```

function pushbutton2_Callback(hObject, eventdata, handles)

```

```

global s

```

```

% hObject handle to pushbutton2 (see GCBO)

```

```

% eventdata reserved - to be defined in a future version of MATLAB

```

```

% handles structure with handles and user data (see GUIDATA)

```

```

s = serial('COM10','BaudRate',9600,'DataBits',8);

```

```

delete(instrfind({'Port'},{'COM10'}));

```

```

b = 'Disconnected';

```

```

set(handles.text2,'String',b);

```

```

set(handles.pushbutton2, 'userdata', 0);

```

```

clear all;

```

```

clc;

```

```

% --- Executes on key press with focus on pushbutton1 and none of its controls.

```

```

function pushbutton1_KeyPressFcn(hObject, eventdata, handles)

```

```

% hObject handle to pushbutton1 (see GCBO)

```

```

% eventdata structure with the following fields (see
MATLAB.UI.CONTROL.UICONTROL)

```

```

% Key: name of the key that was pressed, in lower case

```

```

% Character: character interpretation of the key(s) that was pressed

```

```

% Modifier: name(s) of the modifier key(s) (i.e., control, shift) pressed

```

```

% handles structure with handles and user data (see GUIDATA)

```

```
% --- Executes during object creation, after setting all properties.
function text2_CreateFcn(hObject, eventdata, handles)
% hObject    handle to text2 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns called
```

```
% --- Executes on button press in togglebutton1.
function togglebutton1_Callback(hObject, eventdata, handles)
% hObject    handle to togglebutton1 (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 togglebutton1
```

```
function edit1_Callback(hObject, eventdata, handles)
% hObject    handle to edit1 (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 edit1 as text
%        str2double(get(hObject,'String')) returns contents of edit1 as a double
```

```
% --- Executes during object creation, after setting all properties.
function edit1_CreateFcn(hObject, eventdata, handles)
% hObject    handle to edit1 (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 edit2_Callback(hObject, eventdata, handles)
```

```
% hObject handle to edit2 (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 edit2 as text
```

```
% str2double(get(hObject,'String')) returns contents of edit2 as a double
```

```
% --- Executes during object creation, after setting all properties.
```

```
function edit2_CreateFcn(hObject, eventdata, handles)
```

```
% hObject handle to edit2 (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 edit3_Callback(hObject, eventdata, handles)
% hObject handle to edit3 (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 edit3 as text
% str2double(get(hObject,'String')) returns contents of edit3 as a double

% --- Executes during object creation, after setting all properties.
function edit3_CreateFcn(hObject, eventdata, handles)
% hObject handle to edit3 (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 edit4_Callback(hObject, eventdata, handles)
% hObject handle to edit4 (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 edit4 as text
%    str2double(get(hObject,'String')) returns contents of edit4 as a double

% --- Executes during object creation, after setting all properties.
function edit4_CreateFcn(hObject, eventdata, handles)
% hObject    handle to edit4 (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 edit5_Callback(hObject, eventdata, handles)
% hObject    handle to edit5 (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 edit5 as text
%    str2double(get(hObject,'String')) returns contents of edit5 as a double

% --- Executes during object creation, after setting all properties.

```

```

function edit5_CreateFcn(hObject, eventdata, handles)
% hObject    handle to edit5 (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

```



Lampiran 2 : Program arduino

```
int mq135, mq136, csms, input;
float ph;
void setup()
{

Serial.begin(9600); // sets the serial port to 9600
}

void loop()
{

mq135 = analogRead(A5); // random(0,9);
mq136 = analogRead(A4); // random(10,99);
csms = analogRead(A2); // random(100,999);
input = analogRead(A0); // random(1000,10000);
ph = (-0.0693*input)+7.3855;
Serial.print("mq135= ");
Serial.print(mq135, DEC);
Serial.print("\t");
Serial.print("mq136= ");
Serial.print(mq136, DEC);
Serial.print("\t");
Serial.print("kelembapan= ");
Serial.print(csms, DEC);
Serial.print("\t\t");
Serial.print("PH= ");
Serial.println(ph);
delay(1000);
}
```

DAFTAR RIWAYAT HIDUP

A. Biodata Pribadi

1. Nama lengkap : Rinp Bagus Sumanto
2. Tempat/ tanggal lahir : Gresik, 25 Maret 1995
3. Jenis Kelamin : Laki – laki
4. Kewarganegaraan : Indonesia
5. Tinggi, Berat badan : 172 cm, 65 kg
6. Agama : Islam
7. Status : Belum Menikah
8. Alamat : Jl.Kh syafi’I DahanrejoLor, Kebomas, Gresik
9. No. Telp : 082234837865
10. Email : rinobagus666@gmail.com

B. Riwayat Pendidikan

1. SD : SDN Dahanrejo 2002-2008
2. SMP : SMP N 2 Kebomas 2008-2011
3. SMK : SMK N 1 Cerme 2011-2014
4. Perguruan Tinggi : Universitas Muhammdiyah Gresik,
Program Studi Teknik Elektro S1 2016-2020