############################主界面#############################

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

% Last Modified by GUIDE v2.5 07-Jun-2019 16:13:28

% Begin initialization code - DO NOT EDIT
gui_Singleton = 1;
gui_State = struct('gui_Name',       mfilename, ...
                   'gui_Singleton',  gui_Singleton, ...
                   'gui_OpeningFcn', @MCICAD_OpeningFcn, ...
                   'gui_OutputFcn',  @MCICAD_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 MCICAD is made visible.
function MCICAD_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 MCICAD (see VARARGIN)

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

% Update handles structure
guidata(hObject, handles);

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


% --- Outputs from this function are returned to the command line.
function varargout = MCICAD_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 preprocess.
function preprocess_Callback(hObject, eventdata, handles)
% hObject    handle to preprocess (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
DPARSFA;


% --- Executes on button press in netconstr.
function netconstr_Callback(hObject, eventdata, handles)
% hObject    handle to netconstr (see GCBO)
```

```
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
FEAX;


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


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


% --- Executes on button press in readme.
function readme_Callback(hObject, eventdata, handles)
% hObject    handle to readme (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
s = sprintf('MCICAD v1.0\nby Sichong Chen Wenjing Jiang Bingjia Liu\nNortheastern
University\nlast modified 2019.06');
msgbox(s,'ReadMe');
open('ReadMe.txt');
guidata(hObject,handles);


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

##########网络分析##########

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

% Last Modified by GUIDE v2.5 08-Jun-2019 22:26:18

% Begin initialization code - DO NOT EDIT
gui_Singleton = 1;
gui_State = struct('gui_Name',       mfilename, ...
                   'gui_Singleton',  gui_Singleton, ...
                   'gui_OpeningFcn', @FEAX_OpeningFcn, ...
                   'gui_OutputFcn',  @FEAX_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 FEAX is made visible.
function FEAX_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 FEAX (see VARARGIN)

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

% Update handles structure
guidata(hObject, handles);

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


% --- Outputs from this function are returned to the command line.
function varargout = FEAX_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 Input.
function Input_Callback(hObject, eventdata, handles)
% hObject    handle to Input (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
filepath = uigetdir('*.*','请选择文件夹');
 set(handles.Input_Directory,'String',filepath);
guidata(hObject, handles);
```

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


% --- Executes during object creation, after setting all properties.
function Input_Directory_CreateFcn(hObject, eventdata, handles)
% hObject    handle to Input_Directory (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 Output.
function Output_Callback(hObject, eventdata, handles)
% hObject    handle to Output (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
outfilepath = uigetdir('*.*','请选择文件夹');
 set(handles.Output_Directory,'String',outfilepath);
guidata(hObject, handles);



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

```
% --- Executes during object creation, after setting all properties.
function Output_Directory_CreateFcn(hObject, eventdata, handles)
% hObject    handle to Output_Directory (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 threhmin_Callback(hObject, eventdata, handles)
% hObject    handle to threhmin (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 threhmin as text
%          str2double(get(hObject,'String')) returns contents of threhmin as a
double


% --- Executes during object creation, after setting all properties.
function threhmin_CreateFcn(hObject, eventdata, handles)
% hObject    handle to threhmin (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 threhmax_Callback(hObject, eventdata, handles)
% hObject    handle to threhmax (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 threhmax as text
%          str2double(get(hObject,'String')) returns contents of threhmax as a
double


% --- Executes during object creation, after setting all properties.
function threhmax_CreateFcn(hObject, eventdata, handles)
% hObject    handle to threhmax (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 step_Callback(hObject, eventdata, handles)
% hObject    handle to step (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 step as text
%        str2double(get(hObject,'String')) returns contents of step as a double


% --- Executes during object creation, after setting all properties.
function step_CreateFcn(hObject, eventdata, handles)
% hObject    handle to step (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 Betweenness_Centrality.
function Betweenness_Centrality_Callback(hObject, eventdata, handles)
% hObject    handle to Betweenness_Centrality (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 Betweenness_Centrality


% --- Executes on button press in PageRank_Centrality.
function PageRank_Centrality_Callback(hObject, eventdata, handles)
% hObject    handle to PageRank_Centrality (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 PageRank_Centrality


% --- Executes on button press in Assortativity.
function Assortativity_Callback(hObject, eventdata, handles)
% hObject    handle to Assortativity (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 Assortativity


% --- Executes on button press in Node_Global_Efficiency.
function Node_Global_Efficiency_Callback(hObject, eventdata, handles)
% hObject    handle to Node_Global_Efficiency (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 Node_Global_Efficiency


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

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


% --- Executes on button press in RUN.
function RUN_Callback(hObject, eventdata, handles)
% hObject    handle to RUN (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
global inDir
global t
global threhmin
global threhmax
global step
inDir = get(handles.Input_Directory,'String');%输入文件夹:Input_Directory
outDir = get(handles.Output_Directory,'String');%输出文件夹:Output_Directory
% if exist(outDir,'dir')==0
%    mkdir(outDir); %如果没有创建文件夹
% end
threshDir = strcat(outDir, '\ThreshNet');
if exist(threshDir,'dir')==0
   mkdir(threshDir); %如果没有创建文件夹
end
proDir = strcat(outDir, '\NetworkFeature');
if exist(proDir,'dir')==0
   mkdir(proDir); %如果没有创建文件夹
end

threhmin = str2double(get(handles.threhmin,'String'));%阈值上限:threhmin
threhmax = str2double(get(handles.threhmax,'String'));%阈值下限:threshmax
step = str2double(get(handles.step,'String'));%阈值步长:step

thr = threhmin:step:threhmax;%阈值数组
t = int8((threhmax - threhmin) / step + 1);

list = dir(fullfile(inDir));
fileNum = length(list);
```

```
N = 90;
A = zeros(N,N);%存储二值矩阵
net = zeros(N,N,t);
%矩阵二值化
for k=3:fileNum
    W = importdata(fullfile(inDir, list(k).name));%对称得相关矩阵
    W = abs(W);
    W = W(1:N, 1:N);
    W=W-diag(diag(W));
    for i = 1:t
        sparsity = thr(i);
        K = ceil(sparsity*N*(N-1));
        if mod(K,2) ~= 0
            K = K + 1;
        end
        Wvec = reshape(W, N*N,1);
        Wvec = sort(Wvec,'descend');
        rthr = Wvec((K));
        A(W >= rthr) = 1;%得到二值矩阵
        net(:,:,i) = A;
    end
    outfile = strcat(threshDir,'\ThreshNet_Sub',num2str(k-2),'.mat');
    save(outfile,'net');
end
%特征提取
%1.Betweenness_Centrality
netList = dir(fullfile(threshDir));
fileNum = length(netList);
trial = get(handles.Betweenness_Centrality,'value');
switch trial
    case 1
        X = zeros(fileNum-2,N,t);
        outfile = strcat(proDir, '\BetweennessCentrality.mat');
        for k = 3:fileNum
            net = importdata(fullfile(threshDir, netList(k).name));
            for j = 1:t
                A = net(:,:,j);
                X(k-2,:,j) = mcicad_betweenness_centrality(A);
            end
        end
        auc=(sum(X, 3)-sum(X(:,:,[1 end]), 3)/2)*step;
        save(outfile,'X','auc');
end
%2.PageRank_Centrality
```

```
trial = get(handles.PageRank_Centrality,'value');
switch trial
    case 1
        X = zeros(fileNum-2,N,t);
        outfile = strcat(proDir, '\PageRankCentrality.mat');
        for k = 3:fileNum
            net = importdata(fullfile(threshDir, netList(k).name));
            for j = 1:t
                A = net(:,:,j);
                Adm = graph(A);
                X(k-2,:,j) = centrality(Adm,'pagerank');
            end
        end
        auc=(sum(X, 3)-sum(X(:,:,[1 end]), 3)/2)*step;
        save(outfile,'X','auc');
end
%3.Node_Global_Efficiency
trial = get(handles.Node_Global_Efficiency,'value');
switch trial
    case 1
        X = zeros(fileNum-2,N,t);
        outfile = strcat(proDir, '\NodeGlobalEfficiency.mat');
        for k = 3:fileNum
            net = importdata(fullfile(threshDir, netList(k).name));
            for j = 1:t
                A = net(:,:,j);
                X(k-2,:,j) = mcicad_node_global_efficiency(A);
            end
        end
        auc=(sum(X, 3)-sum(X(:,:,[1 end]), 3)/2)*step;
        save(outfile,'X','auc');
end
%4.Degree_Centrality
trial = get(handles.Degree_Centrality,'value');
switch trial
    case 1
        X = zeros(fileNum-2,N,t);
        outfile = strcat(proDir, '\DegreeCentrality.mat');
        for k = 3:fileNum
            net = importdata(fullfile(threshDir, netList(k).name));
            for j = 1:t
                A = net(:,:,j);
                X(k-2,:,j) = mcicad_node_degree_centality(A);
            end
```

```
        end
        auc=(sum(X, 3)-sum(X(:,:,[1 end]), 3)/2)*step;
        save(outfile,'X','auc');
end
%5.node_local_efficiency
trial = get(handles.Node_Local_Efficiency,'value');
switch trial
    case 1
        X = zeros(fileNum-2,N,t);
        outfile = strcat(proDir, '\NodeLocalEfficiency.mat');
        for k = 3:fileNum
            net = importdata(fullfile(threshDir, netList(k).name));
            for j = 1:t
                A = net(:,:,j);
                X(k-2,:,j) = mcicad_node_local_efficiency(A);
            end
        end
        auc=(sum(X, 3)-sum(X(:,:,[1 end]), 3)/2)*step;
        save(outfile,'X','auc');
end
%6.Assortativity
trial = get(handles.Assortativity,'value');
switch trial
    case 1
        X = zeros(fileNum-2,t);
        outfile = strcat(proDir, '\Assortativity.mat');
        for k = 3:fileNum
            net = importdata(fullfile(threshDir, netList(k).name));
            for j = 1:t
                A = net(:,:,j);
                X(k-2,j) = mcicad_assortativity(A);
            end
        end
        auc=(sum(X, 2)-sum(X(:,[1 end]), 2)/2)*step;
        save(outfile,'X','auc');
end
feacat(proDir);
s = sprintf('Network Analysis Done!!!');
msgbox(s,'Done');


% --- Executes on button press in done.
function done_Callback(hObject, eventdata, handles)
% hObject    handle to done (see GCBO)
```

```
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
close;
```

##########模型构建##########

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

% Last Modified by GUIDE v2.5 13-Jun-2019 20:46:30

% Begin initialization code - DO NOT EDIT
gui_Singleton = 1;
gui_State = struct('gui_Name',       mfilename, ...
                   'gui_Singleton',  gui_Singleton, ...
                   'gui_OpeningFcn', @MDBDX_OpeningFcn, ...
                   'gui_OutputFcn',  @MDBDX_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 MDBDX is made visible.
function MDBDX_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 MDBDX (see VARARGIN)

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

% Update handles structure
guidata(hObject, handles);

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


% --- Outputs from this function are returned to the command line.
function varargout = MDBDX_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 pushbutton4.
function pushbutton4_Callback(hObject, eventdata, handles)
% hObject    handle to pushbutton4 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
close;



function edit14_Callback(hObject, eventdata, handles)
% hObject    handle to edit14 (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 edit14 as text
%           str2double(get(hObject,'String')) returns contents of edit14 as a
double



% --- Executes during object creation, after setting all properties.
function edit14_CreateFcn(hObject, eventdata, handles)
% hObject    handle to edit14 (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 pushbutton5.
function pushbutton5_Callback(hObject, eventdata, handles)
% hObject    handle to pushbutton5 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
[filename,pathname,filterindex] = uigetfile({'*.mat';'*.*'},'Select Features');
if filterindex
 filename=strcat(pathname,filename);
 handles.DATA = load(filename);
  guidata(hObject, handles);
 set(handles.edit14,'String',filename);
end
 guidata(hObject, handles);




function edit15_Callback(hObject, eventdata, handles)
% hObject    handle to edit15 (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 edit15 as text
```

```
%           str2double(get(hObject,'String')) returns contents of edit15 as a
double


% --- Executes during object creation, after setting all properties.
function edit15_CreateFcn(hObject, eventdata, handles)
% hObject    handle to edit15 (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 pushbutton6.
function pushbutton6_Callback(hObject, eventdata, handles)
% hObject    handle to pushbutton6 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
[filename,pathname,filterindex]  =  uigetfile({'*.xlsx';'*.xls';'*.*'},'Select
Labels');
if filterindex
 filename=strcat(pathname,filename);
handles.LABELS = xlsread(filename);
 set(handles.edit15,'String',filename);
end
 guidata(hObject, handles);


function edit10_Callback(hObject, eventdata, handles)
% hObject    handle to edit10 (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 edit10 as text
%           str2double(get(hObject,'String')) returns contents of edit10 as a
double


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

```
function edit10_CreateFcn(hObject, eventdata, handles)
% hObject    handle to edit10 (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 edit11_Callback(hObject, eventdata, handles)
% hObject    handle to edit11 (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 edit11 as text
%           str2double(get(hObject,'String')) returns contents of edit11 as a
double


% --- Executes during object creation, after setting all properties.
function edit11_CreateFcn(hObject, eventdata, handles)
% hObject    handle to edit11 (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 pushbutton3.
function pushbutton3_Callback(hObject, eventdata, handles)
% hObject    handle to pushbutton3 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
MODEL = handles.MODEL
```

```
INDEX = handles.INDEX
BESTTHD = handles.BESTTHD
guidata(hObject, handles);
[filename, pathname]=...
uiputfile({'*.mat'},'choose pathway');
%combination and file name
str = [pathname filename];
if (filename~=0)
save(str,'MODEL','INDEX','BESTTHD');
else
return
end
s = sprintf('Saving is Done!!!');
msgbox(s,'Done');
guidata(hObject, handles);



function edit12_Callback(hObject, eventdata, handles)
% hObject    handle to edit12 (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 edit12 as text
%           str2double(get(hObject,'String')) returns contents of edit12 as a
double


% --- Executes during object creation, after setting all properties.
function edit12_CreateFcn(hObject, eventdata, handles)
% hObject    handle to edit12 (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 edit13_Callback(hObject, eventdata, handles)
```

```
% hObject    handle to edit13 (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 edit13 as text
%          str2double(get(hObject,'String')) returns contents of edit13 as a
double


% --- Executes during object creation, after setting all properties.
function edit13_CreateFcn(hObject, eventdata, handles)
% hObject    handle to edit13 (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



function edit6_Callback(hObject, eventdata, handles)
% hObject    handle to edit6 (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 edit6 as text
%        str2double(get(hObject,'String')) returns contents of edit6 as a double


% --- Executes during object creation, after setting all properties.
function edit6_CreateFcn(hObject, eventdata, handles)
% hObject    handle to edit6 (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 edit7_Callback(hObject, eventdata, handles)
% hObject    handle to edit7 (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 edit7 as text
%        str2double(get(hObject,'String')) returns contents of edit7 as a double


% --- Executes during object creation, after setting all properties.
function edit7_CreateFcn(hObject, eventdata, handles)
% hObject    handle to edit7 (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 edit8_Callback(hObject, eventdata, handles)
% hObject    handle to edit8 (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 edit8 as text
%        str2double(get(hObject,'String')) returns contents of edit8 as a double


% --- Executes during object creation, after setting all properties.
function edit8_CreateFcn(hObject, eventdata, handles)
% hObject    handle to edit8 (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 edit9_Callback(hObject, eventdata, handles)
% hObject    handle to edit9 (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 edit9 as text
%        str2double(get(hObject,'String')) returns contents of edit9 as a double
```

```
% --- Executes during object creation, after setting all properties.
function edit9_CreateFcn(hObject, eventdata, handles)
% hObject    handle to edit9 (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 pushbutton2.
function pushbutton2_Callback(hObject, eventdata, handles)
% 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)
global scale
LABELS = handles.LABELS
OPTIMALFEA = handles.OPTIMALFEA
THDSIZE = handles.THDSIZE

cmin = str2double(get(handles.edit4,'String'))
cmax = str2double(get(handles.edit5,'String'))
cstep = str2double(get(handles.edit6,'String'))
gmin = str2double(get(handles.edit7,'String'))
gmax = str2double(get(handles.edit8,'String'))
gstep = str2double(get(handles.edit9,'String'))
fold = str2double(get(handles.edit3,'String'))
model=cell(THDSIZE);
c=zeros(THDSIZE,1);g=zeros(THDSIZE,1);acc=zeros(THDSIZE,1);
for i=1:THDSIZE
[scale,~] = scaleForSVM(OPTIMALFEA{i},OPTIMALFEA{i},-1,1);
% [bestacc,bestc,bestg] = SVMcgForClass...
%     (LABELS,...
%     scale,...
%     cmin,...
%     cmax,...
%     gmin,...
%     gmax,...
%     fold,...
```

```
%     cstep,...
%     gstep,4.5,2);
[bestacc,bestc,bestg] = SVMcgForClass...
    (LABELS,...
    scale,...
    cmin,...
    cmax,...
    gmin,...
    gmax,...
    fold,...
    cstep,...
    gstep,4.5,2);
c(i)=bestc;g(i)=bestg;acc(i)=bestacc;
para = [' -c ',num2str(bestc),' -g ',num2str(bestg),' -t 2 -b 1'];%参数转字符
model{i} = svmtrain(LABELS, scale, para);
end
[sacc,indsacc]=sort(acc,'descend');
bbacc=sacc(1);
indeacc=find(acc==bbacc);
equalc=zeros(THDSIZE,1);
equalc(indeacc)=c(indeacc);
eqc=c(indeacc);
[~,indseqc]=sort(eqc);
indc=find(equalc==eqc(indseqc(1)));
bbc=c(indc(1));
bbg=g(indc(1));

set(handles.edit10,'String',num2str(bbc));
set(handles.edit12,'String',num2str(bbg));
set(handles.edit11,'String',num2str(bbacc));
handles.MODEL = model{indc(1)};
guidata(hObject,handles);
if THDSIZE ~= 1
 set(handles.edit13,'String',num2str(indc(1)));
else
 set(handles.edit13,'String','Null');
end
handles.BESTTHD = indc(1);
ALLINDEX = handles.ALLINDEX;
handles.INDEX = cell2mat(ALLINDEX(indc(1)));
guidata(hObject,handles);
 s = sprintf('Model Building is Done!!!');
msgbox(s,'Done');
 guidata(hObject, handles);
```

```
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


% --- 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)
DATA = handles.DATA
LABELS = handles.LABELS
TORA = get(handles.auc,'Value')
LAMBDA = str2double(get(handles.edit1,'String'))
FIRST = str2double(get(handles.edit2,'String'))

if TORA == 1
    NODEFEA = DATA.anodefea;
    GLOFEA = DATA.aglofea;
else
    NODEFEA = DATA.nodefea;
    GLOFEA = DATA.glofea;
end

FOLD = size(NODEFEA,1)
set(handles.edit3,'String',num2str(FOLD));

opts=[];  %set the parameters
opts.init=0;
opts.tFlag=5;       % run .maxIter iterations
opts.maxIter=1000;   % maximum number of iterations
opts.nFlag=0;       % without normalization
opts.rFlag=1;       % the input parameter 'rho' is a ratio in (0, 1)
opts.rsL2=0;
opts.mFlag=0;       % treating it as compositive function
opts.lFlag=0;       % Nemirovski's line search

THDSIZE=size(NODEFEA,3)  %if NODEFEA is feature in AUC, THDSIZE==1
OPTIMALFEA=cell(1,THDSIZE);
ALLINDEX=cell(1,THDSIZE);
for i=1:THDSIZE
inodefea=NODEFEA(:,:,i);
x= LeastR(inodefea, LABELS, LAMBDA, opts);%extract node feature
```

```
[indexnz,~,nz]=find(x);
if FIRST==0
    noderesult=inodefea(:,indexnz(:));
    ALLINDEX{i}=indexnz;

else %keep the top 'FIRST' feature
    [~,indexnzs]=sort(abs(nz),'descend');
    indexnzsf=indexnzs(1:FIRST);
    noderesult=inodefea(:,indexnzsf(:));
    ALLINDEX{i}=indexnzsf;

end
if isempty(GLOFEA)==1
    OPTIMALFEA{i}=[noderesult]
else
    OPTIMALFEA{i}=[noderesult GLOFEA(:,i)]
end
end
s = sprintf('Feature Selection Done!!!');
msgbox(s,'Done');
handles.OPTIMALFEA = OPTIMALFEA;
handles.THDSIZE = THDSIZE;
handles.ALLINDEX = ALLINDEX;
guidata(hObject,handles);

% --- Executes on button press in auc.
function auc_Callback(hObject, eventdata, handles)
% hObject    handle to auc (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
set(handles.auc,'value',1);
set(handles.thds,'value',0);
guidata(hObject,handles);
% Hint: get(hObject,'Value') returns toggle state of auc

% --- Executes on button press in thds.
function thds_Callback(hObject, eventdata, handles)
% hObject    handle to thds (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
set(handles.auc,'value',0);
set(handles.thds,'value',1);
guidata(hObject,handles);
% Hint: get(hObject,'Value') returns toggle state of thds
```

############################诊断##############################

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

% Last Modified by GUIDE v2.5 13-Jun-2019 21:55:40

% Begin initialization code - DO NOT EDIT
gui_Singleton = 1;
gui_State = struct('gui_Name',       mfilename, ...
                   'gui_Singleton',  gui_Singleton, ...
                   'gui_OpeningFcn', @CAD_OpeningFcn, ...
                   'gui_OutputFcn',  @CAD_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 CAD is made visible.
function CAD_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 CAD (see VARARGIN)

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

% Update handles structure
guidata(hObject, handles);

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


% --- Outputs from this function are returned to the command line.
function varargout = CAD_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;



function info3_Callback(hObject, eventdata, handles)
% hObject    handle to info3 (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 info3 as text
%        str2double(get(hObject,'String')) returns contents of info3 as a double


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

```
function info3_CreateFcn(hObject, eventdata, handles)
% hObject    handle to info3 (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 saveresults.
function saveresults_Callback(hObject, eventdata, handles)
% hObject    handle to saveresults (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
EXCEL = handles.EXCEL;
[filename, pathname]=...
uiputfile({'*.xls'},'choose image pathway');
%combination and file name
str = [pathname filename];
if (filename~=0)
save(str,'EXCEL');
else
return
end
s = sprintf('Saving is Done!!!');
msgbox(s,'Done');
guidata(hObject, handles);




function info1_Callback(hObject, eventdata, handles)
% hObject    handle to info1 (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 info1 as text
%        str2double(get(hObject,'String')) returns contents of info1 as a double
```

```
% --- Executes during object creation, after setting all properties.
function info1_CreateFcn(hObject, eventdata, handles)
% hObject    handle to info1 (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 loaddata.
function loaddata_Callback(hObject, eventdata, handles)
% hObject    handle to loaddata (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
[filename,pathname,filterindex] = uigetfile({'*.mat';'*.*'},'Select Features');
if filterindex
 filename=strcat(pathname,filename);
 mystring=filename;
 handles.DATA = load(filename);
 set(handles.info1,'String',mystring);
end
 guidata(hObject, handles);




function info2_Callback(hObject, eventdata, handles)
% hObject    handle to info2 (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 info2 as text
%        str2double(get(hObject,'String')) returns contents of info2 as a double


% --- Executes during object creation, after setting all properties.
function info2_CreateFcn(hObject, eventdata, handles)
% hObject    handle to info2 (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 selectmodel.
function selectmodel_Callback(hObject, eventdata, handles)
% hObject    handle to selectmodel (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
[filename,pathname,filterindex] = uigetfile({'*.mat';'*.*'},'Select Features');
if filterindex
 filename=strcat(pathname,filename);
 mystring=filename;
 handles.MDIND = load(filename);
 set(handles.info2,'String',mystring);
end
 guidata(hObject, handles);



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

DATA = handles.DATA;
mdind = handles.MDIND;
model = mdind.MODEL;
indexfea = mdind.INDEX;
bestthd=mdind.BESTTHD;

TORA = get(handles.auc,'Value');
if TORA == 1
    NODEFEA = DATA.anodefea;
    GLOFEA = DATA.aglofea;
else
    NODEFEA = DATA.nodefea;
    GLOFEA = DATA.glofea;
```

```
end

inodefea=NODEFEA(:,:,bestthd);
noderesult=inodefea(:,indexfea(:));
if isempty(GLOFEA)==1
    optimalfea=noderesult;
else
    optimalfea=[noderesult GLOFEA(:,bestthd)];
end

fakelabel=(1:size(optimalfea,1))';
[scale1,~] = scaleForSVM(optimalfea,optimalfea,-1,1);%归一化
[a,~,~] = svmpredict(fakelabel,scale1, model);
set(handles.info3,'String',num2str([fakelabel,a]));

A=a;N=size(optimalfea,1);
EXCEL = cell((N+1),2);
% 建立表头
title = {'Index','Label'};
% 建立数据
Index = num2cell(1:N);
Label = num2cell(A);
% 整合
EXCEL(1,:)=title;
EXCEL(2:end,1)=Index;
EXCEL(2:end,2)=Label;
handles.EXCEL = EXCEL;
% xlswrite('data1.xls',data1);
% set(hObject, 'uitable1', {'Index','Predict Label'}, 'data',data1) %将数据设置
到uitable控件中
s = sprintf('Diagnosis is Done!!!');
msgbox(s,'Done');
clc;
guidata(hObject,handles);




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

```
close;


% % --- Executes during object creation, after setting all properties.
% function uibuttongroup2_CreateFcn(hObject, eventdata, handles)
% % hObject    handle to uibuttongroup2 (see GCBO)
% % eventdata  reserved - to be defined in a future version of MATLAB
% % handles    empty - handles not created until after all CreateFcns called
%
%
% % --- Executes when selected object is changed in uibuttongroup2.
% function uibuttongroup2_SelectionChangedFcn(hObject, eventdata, handles)
% % hObject    handle to the selected object in uibuttongroup2
% % eventdata  reserved - to be defined in a future version of MATLAB
% % handles    structure with handles and user data (see GUIDATA)
% global TORA
% str=get(hObject,'tag');
% switch str
%     case 'thds'
%           TORA = 1;
%     case 'auc'
%         TORA = 0;
% end


% --- Executes during object creation, after setting all properties.
% function uitable1_CreateFcn(hObject, eventdata, handles)
% % hObject    handle to uitable1 (see GCBO)
% % eventdata  reserved - to be defined in a future version of MATLAB
% % handles    empty - handles not created until after all CreateFcns called
% global A N
% A=a;N=size(optimalfea,1);
% data1 = cell((N+1),2);
% % 建立表头
% title = {'Index','Label'};
% % 建立数据
% Index = num2cell(1:N);
% Label = num2cell(A);
% % 整合
% data1(1,:)=title;
% data1(2:end,1)=Index;
% data1(2:end,2)=Label;
% xlswrite('data1.xls',data1);
% set(hObject, 'uitable1', {'Index','Predict Label'}, 'data',data1) %将数据设置
```

到uitable控件中

```
% --- Executes when figure1 is resized.
function figure1_SizeChangedFcn(hObject, eventdata, handles)
% hObject    handle to figure1 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)


% --- Executes when entered data in editable cell(s) in uitable1.
function uitable1_CellEditCallback(hObject, eventdata, handles)
% hObject    handle to uitable1 (see GCBO)
% eventdata  structure with the following fields (see MATLAB.UI.CONTROL.TABLE)
%   Indices: row and column indices of the cell(s) edited
%   PreviousData: previous data for the cell(s) edited
%   EditData: string(s) entered by the user
%   NewData: EditData or its converted form set on the Data property. Empty if
Data was not changed
%   Error: error string when failed to convert EditData to appropriate value for
Data
% handles    structure with handles and user data (see GUIDATA)
% global A N
% data1 = cell(N,2);
% % 建立表头
% title = {'Index','Label'};
% % 建立数据
% Index = num2cell(1:N);
% Label = num2cell(A);
% % 整合
% data1(1,:)=title;
% data1(2:end,1)=Index;
% data1(2:end,2)=Label;
% xlswrite('data1.xls',data1);
% set(hObject, 'uitable1', {'Index','Predict Label'}, 'data',data1) %将数据设置
到uitable控件中


% % --- 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


% % --- 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)
%
% % Hint: get(hObject,'Value') returns toggle state of radiobutton4


% --- Executes on button press in thds.
function thds_Callback(hObject, eventdata, handles)
% hObject    handle to thds (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
set(handles.auc,'value',0);
set(handles.thds,'value',1);
guidata(hObject,handles);
% Hint: get(hObject,'Value') returns toggle state of thds


% --- Executes on button press in auc.
function auc_Callback(hObject, eventdata, handles)
% hObject    handle to auc (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
set(handles.auc,'value',1);
set(handles.thds,'value',0);
guidata(hObject,handles);
% Hint: get(hObject,'Value') returns toggle state of auc
```