

实例1: 三角函数曲线 (1)

```
function shili01
h0=figure('toolbar','none',...
    'position',[198 56 350 300],...
    'name','实例01');
h1=axes('parent',h0,...
    'visible','off');
x=-pi:0.05:pi;
y=sin(x);
plot(x,y);
xlabel('自变量X');
ylabel('函数值Y');
title('SIN( )函数曲线');
grid on
```

实例2: 三角函数曲线 (2)

```
function shili02
h0=figure('toolbar','none',...
    'position',[200 150 450 350],...
    'name','实例02');
x=-pi:0.05:pi;
y=sin(x)+cos(x);
plot(x,y,'-r','linewidth',1);
grid on
xlabel('自变量X');
ylabel('函数值Y');
title('三角函数');
```

实例3：图形的叠加

```
function shili03
h0=figure('toolbar','none',...
    'position',[200 150 450 350],...
    'name','实例03');
x=-pi:0.05:pi;
y1=sin(x);
y2=cos(x);
plot(x,y1,...
    '-*r',...
    x,y2,...
    '--og');
grid on
xlabel('自变量X');
ylabel('函数值Y');
title('三角函数');
```

实例4：双y轴图形的绘制

```
function shili04
h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','实例04');
x=0:900;a=1000;b=0.005;
y1=2*x;
y2=cos(b*x);
[haxes,hline1,hline2]=plotyy(x,y1,x,y2,'semilogy','plot');
axes(haxes(1))
ylabel('semilog plot');
```

```
axes(haxes(2))  
ylabel('linear plot');
```

实例5：单个轴窗口显示多个图形

```
function shili05  
h0=figure('toolbar','none',...  
    'position',[200 150 450 250],...  
    'name','实例05');  
t=0:pi/10:2*pi;  
[x,y]=meshgrid(t);  
subplot(2,2,1)  
plot(sin(t),cos(t))  
axis equal  
subplot(2,2,2)  
z=sin(x)-cos(y);  
plot(t,z)  
axis([0 2*pi -2 2])  
subplot(2,2,3)  
h=sin(x)+cos(y);  
plot(t,h)  
axis([0 2*pi -2 2])  
subplot(2,2,4)  
g=(sin(x).^2)-(cos(y).^2);  
plot(t,g)  
axis([0 2*pi -1 1])
```

实例6：图形标注

```
function shili06  
h0=figure('toolbar','none',...
```

```

        'position',[200 150 450 400],...
        'name','实例06');
t=0:pi/10:2*pi;
h=plot(t,sin(t));
xlabel('t=0到2\pi','fontsize',16);
ylabel('sin(t)','fontsize',16);
title('\it{从 0到2\pi 的正弦曲线}','fontsize',16)
x=get(h,'xdata');
y=get(h,'ydata');
imin=find(min(y)==y);
imax=find(max(y)==y);
text(x(imin),y(imin),...
     ['\leftarrow最小值=',num2str(y(imin))],...
     'fontsize',16)
text(x(imax),y(imax),...
     ['\leftarrow最大值=',num2str(y(imax))],...
     'fontsize',16)

```

实例7：条形图形

```

function shili07
h0=figure('toolbar','none',...
        'position',[200 150 450 350],...
        'name','实例07');
tiaol=[562 548 224 545 41 445 745 512];
tiaol2=[47 48 57 58 54 52 65 48];
t=0:7;
bar(t,tiaol)
xlabel('X轴');
ylabel('TIA01值');

```

```

h1=gca;
h2=axes('position',get(h1,'position'));
plot(t,tiao2,'linewidth',3)
set(h2,'axislocation','right','color','none','xticklabel',[])

```

实例8：区域图形

```

function shili08
h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','实例08');
x=91:95;
profits1=[88 75 84 93 77];
profits2=[51 64 54 56 68];
profits3=[42 54 34 25 24];
profits4=[26 38 18 15 4];
area(x,profits1,'facecolor',[0.5 0.9 0.6],...
    'edgecolor','b',...
    'linewidth',3)
hold on
area(x,profits2,'facecolor',[0.9 0.85 0.7],...
    'edgecolor','y',...
    'linewidth',3)
hold on
area(x,profits3,'facecolor',[0.3 0.6 0.7],...
    'edgecolor','r',...
    'linewidth',3)
hold on
area(x,profits4,'facecolor',[0.6 0.5 0.9],...
    'edgecolor','m',...

```

```

        'linewidth',3)
hold off
set(gca,'xtick',[91:95])
set(gca,'layer','top')
gtext('\leftarrow第一季度销量')
gtext('\leftarrow第二季度销量')
gtext('\leftarrow第三季度销量')
gtext('\leftarrow第四季度销量')
xlabel('年','fontsize',16);
ylabel('销售量','fontsize',16);

```

实例9：饼图的绘制

```

function shili09
h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','实例09');
t=[54 21 35;
    68 54 35;
    45 25 12;
    48 68 45;
    68 54 69];
x=sum(t);
h=pie(x);
textobjs=findobj(h,'type','text');
str1=get(textobjs,{ 'string' });
val1=get(textobjs,{ 'extent' });
oldext=cat(1,val1{:});
names={ '商品一: ' ; '商品二: ' ; '商品三: ' };
str2=strcat(names,str1);

```

```

set(textobjs, {'string'}, str2)
val2=get(textobjs, {'extent'});
newext=cat(1, val2{:});
offset=sign(oldext(:,1)).*(newext(:,3)-oldext(:,3))/2;
pos=get(textobjs, {'position'});
textpos=cat(1, pos{:});
textpos(:,1)=textpos(:,1)+offset;
set(textobjs, {'position'}, num2cell(textpos, [3,2]))

```

实例10：阶梯图

```

function shili10
h0=figure('toolbar','none',...
    'position',[200 150 450 400],...
    'name','实例10');
a=0.01;
b=0.5;
t=0:10;
f=exp(-a*t).*sin(b*t);
stairs(t,f)
hold on
plot(t,f,':*')
hold off
xlabel='函数 $e^{-(\alpha * t)}$  sin $\beta * t$ 的阶梯图';
gtext(glabel, 'fontsize', 16)
xlabel('t=0:10', 'fontsize', 16)
axis([0 10 -1.2 1.2])

```

实例11: 枝干图

```
function shili11
h0=figure('toolbar','none',...
    'position',[200 150 450 350],...
    'name','实例11');
x=0:pi/20:2*pi;
y1=sin(x);
y2=cos(x);
h1=stem(x,y1+y2);
hold on
h2=plot(x,y1,'^r',x,y2,'*g');
hold off
h3=[h1(1);h2];
legend(h3,'y1+y2','y1=sin(x)','y2=cos(x)')
xlabel('自变量X');
ylabel('函数值Y');
title('正弦函数与余弦函数的线性组合');
```

实例12: 罗盘图

```
function shili12
h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','实例12');
winddirection=[54 24 65 84
    256 12 235 62
    125 324 34 254];
windpower=[2 5 5 3
    6 8 12 7
    6 14 10 8];
```

```

rdirection=winddirection*pi/180;
[x,y]=pol2cart(rdirection,windpower);
compass(x,y);
desc={'风向和风力',
      '北京气象台',
      '10月1日0:00到',
      '10月1日12:00'};
gtext(desc)

```

实例13: 轮廓图

```

function shili13
h0=figure('toolbar','none',...
          'position',[200 150 450 250],...
          'name','实例13');
[th,r]=meshgrid((0:10:360)*pi/180,0:0.05:1);
[x,y]=pol2cart(th,r);
z=x+i*y;
f=(z.^4-1).^(0.25);
contour(x,y,abs(f),20)
axis equal
xlabel('实部','fontsize',16);
ylabel('虚部','fontsize',16);
h=polar([0 2*pi],[0 1]);
delete(h)
hold on
contour(x,y,abs(f),20)

```

实例14：交互式图形

```
function shili14
h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','实例14');
axis([0 10 0 10]);
hold on
x=[];
y=[];
n=0;
disp('单击鼠标左键点取需要的点');
disp('单击鼠标右键点取最后一个点');
but=1;
while but==1
    [xi,yi,but]=ginput(1);
    plot(xi,yi,'bo')
    n=n+1;
    disp('单击鼠标左键点取下一个点');
    x(n,1)=xi;
    y(n,1)=yi;
end
t=1:n;
ts=1:0.1:n;
xs=spline(t,x,ts);
ys=spline(t,y,ts);
plot(xs,ys,'r-');
hold off
```

实例14：交互式图形

```

function shili14
h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','实例14');
axis([0 10 0 10]);
hold on
x=[];
y=[];
n=0;
disp('单击鼠标左键点取需要的点');
disp('单击鼠标右键点取最后一个点');
but=1;
while but==1
    [xi,yi,but]=ginput(1);
    plot(xi,yi,'bo')
    n=n+1;
    disp('单击鼠标左键点取下一个点');
    x(n,1)=xi;
    y(n,1)=yi;
end
t=1:n;
ts=1:0.1:n;
xs=spline(t,x,ts);
ys=spline(t,y,ts);
plot(xs,ys,'r-');
hold off

```

实例15：变换的傅立叶函数曲线

```
function shili15
```

```

h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','实例15');
axis equal
m=moviein(20,gcf);
set(gca,'nextplot','replacechildren')
h=uicontrol('style','slider','position',...
    [100 10 500 20],'min',1,'max',20)
for j=1:20
    plot(fft(eye(j+16)))
    set(h,'value',j)
    m(:,j)=getframe(gcf);
end
clf;
axes('position',[0 0 1 1]);
movie(m,30)

```

实例16：劳伦兹非线性方程的无序活动

```

function shili15
h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','实例15');
axis equal
m=moviein(20,gcf);
set(gca,'nextplot','replacechildren')
h=uicontrol('style','slider','position',...
    [100 10 500 20],'min',1,'max',20)
for j=1:20
    plot(fft(eye(j+16)))

```

```

        set(h,'value',j)
        m(:,j)=getframe(gcf);
    end
    clf;
    axes('position',[0 0 1 1]);
    movie(m,30)

```

实例17：填充图

```

function shili17
h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','实例17');
t=(1:2:15)*pi/8;
x=sin(t);
y=cos(t);
fill(x,y,'r')
axis square off
text(0,0,'STOP',...
    'color',[1 1 1],...
    'fontsize',50,...
    'horizontalalignment','center')

```

实例18：条形图和阶梯形图

```

function shili18
h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','实例18');
subplot(2,2,1)
x=-3:0.2:3;

```

```

y=exp(-x.*x);
bar(x,y)
title('2-D Bar Chart')
subplot(2,2,2)
x=-3:0.2:3;
y=exp(-x.*x);
bar3(x,y,'r')
title('3-D Bar Chart')
subplot(2,2,3)
x=-3:0.2:3;
y=exp(-x.*x);
stairs(x,y)
title('Stair Chart')
subplot(2,2,4)
x=-3:0.2:3;
y=exp(-x.*x);
barh(x,y)
title('Horizontal Bar Chart')

```

实例19：三维曲线图

```

function shili19
h0=figure('toolbar','none',...
    'position',[200 150 450 400],...
    'name','实例19');
subplot(2,1,1)
x=linspace(0,2*pi);
y1=sin(x);
y2=cos(x);
y3=sin(x)+cos(x);

```

```

z1=zeros(size(x));
z2=0.5*z1;
z3=z1;
plot3(x,y1,z1,x,y2,z2,x,y3,z3)
grid on
xlabel('X轴');
ylabel('Y轴');
zlabel('Z轴');
title('Figure1:3-D Plot')

subplot(2,1,2)
x=linspace(0,2*pi);
y1=sin(x);
y2=cos(x);
y3=sin(x)+cos(x);
z1=zeros(size(x));
z2=0.5*z1;
z3=z1;
plot3(x,z1,y1,x,z2,y2,x,z3,y3)
grid on
xlabel('X轴');
ylabel('Y轴');
zlabel('Z轴');
title('Figure2:3-D Plot')

```

实例20：图形的隐藏属性

```
function shili20
h0=figure('toolbar','none',...
    'position',[200 150 450 300],...
    'name','实例20');
subplot(1,2,1)
[x,y,z]=sphere(10);
mesh(x,y,z)
axis off
title('Figure1:Opaque')
hidden on
subplot(1,2,2)
[x,y,z]=sphere(10);
mesh(x,y,z)
axis off
title('Figure2:Transparent')
hidden off
```

实例21PEAKS函数曲线

```
function shili21
h0=figure('toolbar','none',...
    'position',[200 100 450 450],...
    'name','实例21');
[x,y,z]=peaks(30);
subplot(2,1,1)
x=x(1,:);
y=y(:,1);
i=find(y>0.8&y<1.2);
j=find(x>-0.6&x<0.5);
```

```

z(i,j)=nan*z(i,j);
surf(x,y,z)
xlabel('X轴');
ylabel('Y轴');
zlabel('Z轴');
title('Figure1:surf函数形成的曲面')

```

```

subplot(2,1,2)
x=x(1,:);
y=y(:,1);
i=find(y>0.8&y<1.2);
j=find(x>-0.6&x<0.5);
z(i,j)=nan*z(i,j);
surf(x,y,z)
xlabel('X轴');
ylabel('Y轴');
zlabel('Z轴');
title('Figure2:surf函数形成的曲面')

```

实例22：片状图

```

function shili22
h0=figure('toolbar','none',...
    'position',[200 150 550 350],...
    'name','实例22');
subplot(1,2,1)
x=rand(1,20);
y=rand(1,20);
z=peaks(x,y*pi);
t=de launay(x,y);

```

```

trimesh(t,x,y,z)
hidden off
title('Figure1:Triangular Surface Plot');
subplot(1,2,2)
x=rand(1,20);
y=rand(1,20);
z=peaks(x,y*pi);
t=delaunay(x,y);
trisurf(t,x,y,z)
title('Figure1:Triangular Surface Plot');

```

实例23：视角的调整

```

function shili23
h0=figure('toolbar','none',...
    'position',[200 150 450 350],...
    'name','实例23');
x=-5:0.5:5;
[x,y]=meshgrid(x);
r=sqrt(x.^2+y.^2)+eps;
z=sin(r)./r;
subplot(2,2,1)
surf(x,y,z)
xlabel('X-axis')
ylabel('Y-axis')
zlabel('Z-axis')
title('Figure1')
view(-37.5,30)
subplot(2,2,2)
surf(x,y,z)

```

```

xlabel('X-axis')
ylabel('Y-axis')
zlabel('Z-axis')
title('Figure2')
view(-37.5+90,30)

subplot(2,2,3)
surf(x,y,z)
xlabel('X-axis')
ylabel('Y-axis')
zlabel('Z-axis')
title('Figure3')
view(-37.5,60)

subplot(2,2,4)
surf(x,y,z)
xlabel('X-axis')
ylabel('Y-axis')
zlabel('Z-axis')
title('Figure4')
view(180,0)

```

实例24：向量场的绘制

```

function shili24
h0=figure('toolbar','none',...
    'position',[200 150 450 350],...
    'name','实例24');
subplot(2,2,1)
z=peaks;
ribbon(z)
title('Figure1')

```

```

subplot(2,2,2)
[x,y,z]=peaks(15);
[dx,dy]=gradient(z,0.5,0.5);
contour(x,y,z,10)
hold on
quiver(x,y,dx,dy)
hold off
title('Figure2')
subplot(2,2,3)
[x,y,z]=peaks(15);
[nx,ny,nz]=surfnorm(x,y,z);
surf(x,y,z)
hold on
quiver3(x,y,z,nx,ny,nz)
hold off
title('Figure3')
subplot(2,2,4)
x=rand(3,5);
y=rand(3,5);
z=rand(3,5);
c=rand(3,5);
fill3(x,y,z,c)
grid on
title('Figure4')

```

实例25：灯光定位

```

function shili25
h0=figure('toolbar','none',...
    'position',[200 150 450 250],...

```

```

    'name','实例25');
vert=[1 1 1;1 2 1;
      2 2 1;2 1 1;
      1 1 2;1 2 2;
      2 2 2;2 1 2];
fac=[1 2 3 4;2 6 7 3;
     4 3 7 8;1 5 8 4;
     1 2 6 5;5 6 7 8];
grid off
sphere(36)
h=findobj('type','surface');
set(h,'facelighting','phong',...
    'facecolor',...
    'interp',...
    'edgecolor',[0.4 0.4 0.4],...
    'backfacelighting',...
    'lit')
hold on
patch('faces',fac,'vertices',vert,...
    'facecolor','y');
light('position',[1 3 2]);
light('position',[-3 -1 3]);
material shiny
axis vis3d off
hold off

```

实例26：柱状图

```

function shili26
h0=figure('toolbar','none',...

```

```

        'position',[200 50 450 450],...
        'name','实例26');
subplot(2,1,1)
x=[5 2 1
    8 7 3
    9 8 6
    5 5 5
    4 3 2];
bar(x)
xlabel('X轴');
ylabel('Y轴');
title('第一子图');
subplot(2,1,2)
y=[5 2 1
    8 7 3
    9 8 6
    5 5 5
    4 3 2];
barh(y)
xlabel('X轴');
ylabel('Y轴');
title('第二子图');
```

实例27：设置照明方式

```
function shili27
h0=figure('toolbar','none',...
    'position',[200 150 450 350],...
    'name','实例27');
subplot(2,2,1)
sphere
shading flat
camlight left
camlight right
lighting flat
colorbar
axis off
title('Figure1')
subplot(2,2,2)
sphere
shading flat
camlight left
camlight right
lighting gouraud
colorbar
axis off
title('Figure2')
subplot(2,2,3)
sphere
shading interp
camlight right
camlight left
lighting phong
```

```

colorbar
axis off
title('Figure3')
subplot(2,2,4)
sphere
shading flat
camlight left
camlight right
lighting none
colorbar
axis off
title('Figure4')

```

实例28：羽状图

```

function shili28
h0=figure('toolbar','none',...
    'position',[200 150 450 350],...
    'name','实例28');
subplot(2,1,1)
alpha=90:-10:0;
r=ones(size(alpha));
m=alpha*pi/180;
n=r*10;
[u,v]=pol2cart(m,n);
feather(u,v)
title('羽状图')
axis([0 20 0 10])
subplot(2,1,2)
t=0:0.5:10;

```

```

x=0.05+i;
y=exp(-x*t);
feather(y)
title('复数矩阵的羽状图')

```

实例29：立体透视（1）

```

function shili29
h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','实例29');
[x,y,z]=meshgrid(-2:0.1:2,...
    -2:0.1:2,...
    -2:0.1:2);
v=x.*exp(-x.^2-y.^2-z.^2);
grid on
for i=-2:0.5:2;
    h1=surf(linspace(-2,2,20),...
        linspace(-2,2,20),...
        zeros(20)+i);
    rotate(h1,[1 -1 1],30)
    dx=get(h1,'xdata');
    dy=get(h1,'ydata');
    dz=get(h1,'zdata');
    delete(h1)
    slice(x,y,z,v,[-2 2],2,-2)
    hold on
    slice(x,y,z,v,dx,dy,dz)
    hold off
    axis tight

```

```

        view(-5,10)

        drawnow
end

```

实例30：立体透视（2）

```

function shili30
h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','实例30');
[x,y,z]=meshgrid(-2:0.1:2,...
    -2:0.1:2,...
    -2:0.1:2);
v=x.*exp(-x.^2-y.^2-z.^2);
[dx,dy,dz]=cylinder;
slice(x,y,z,v,[-2 2],2,-2)
for i=-2:0.2:2
    h=surface(dx+i,dy,dz);
    rotate(h,[1 0 0],90)
    xp=get(h,'xdata');
    yp=get(h,'ydata');
    zp=get(h,'zdata');
    delete(h)
    hold on
    hs=slice(x,y,z,v,xp,yp,zp);
    axis tight
    xlim([-3 3])
    view(-10,35)
    drawnow
    delete(hs)
end

```

```
        hold off
    end
```

实例31：表面图形

```
function shili31
h0=figure('toolbar','none',...
    'position',[200 150 550 250],...
    'name','实例31');
subplot(1,2,1)
x=rand(100,1)*16-8;
y=rand(100,1)*16-8;
r=sqrt(x.^2+y.^2)+eps;
z=sin(r)./r;
xlin=linspace(min(x),max(x),33);
ylin=linspace(min(y),max(y),33);
[X,Y]=meshgrid(xlin,ylin);
Z=griddata(x,y,z,X,Y,'cubic');
mesh(X,Y,Z)
axis tight
hold on
plot3(x,y,z,'.','MarkerSize',20)
subplot(1,2,2)
k=5;
n=2^k-1;
theta=pi*(-n:2:n)/n;
phi=(pi/2)*(-n:2:n)'/n;
X=cos(phi)*cos(theta);
Y=cos(phi)*sin(theta);
Z=sin(phi)*ones(size(theta));
```

```
colormap([0 0 0;1 1 1])
C=hadamard(2^k);
surf(X,Y,Z,C)
axis square
```

实例32：沿曲线移动的小球

```
h0=figure('toolbar','none',...
    'position',[198 56 408 468],...
    'name','实例32');
h1=axes('parent',h0,...
    'position',[0.15 0.45 0.7 0.5],...
    'visible','on');
t=0:pi/24:4*pi;
y=sin(t);
plot(t,y,'b')
n=length(t);
h=line('color',[0 0.5 0.5],...
    'linestyle','.',...
    'markersize',25,...
    'erasemode','xor');
k1=uicontrol('parent',h0,...
    'style','pushbutton',...
    'position',[80 100 50 30],...
    'string','开始',...
    'callback',[...
        'i=1;',...
        'k=1;',...
        'm=0;',...
        'while 1,']
```

```

        'if k==0,',',...
        'break,',',...
        'end,',',...
        'if k-=0,',',...
        'set(h,'xdata'',t(i),'ydata'',y(i)),',',...
        'drawnow;',',...
        'i=i+1;',',...
        'if i>n,',',...
        'm=m+1;',',...
        'i=1;',',',...
        'end,',',...
        'end,',',...
        'end'];

```

```

k2=uicontrol('parent',h0,...
    'style','pushbutton',...
    'position',[180 100 50 30],...
    'string','停止',...
    'callback',[...
        'k=0;',',',...
        'set(e1,'string'',m),',',...
        'p=get(h,'xdata'');',',...
        'q=get(h,'ydata'');',',...
        'set(e2,'string'',p);',',...
        'set(e3,'string'',q)']);

```

```

k3=uicontrol('parent',h0,...
    'style','pushbutton',...
    'position',[280 100 50 30],...
    'string','关闭',...
    'callback','close');

```

```

e1=uicontrol('parent',h0,...
    'style','edit',...
    'position',[60 30 60 20]);
t1=uicontrol('parent',h0,...
    'style','text',...
    'string','循环次数',...
    'position',[60 50 60 20]);
e2=uicontrol('parent',h0,...
    'style','edit',...
    'position',[180 30 50 20]);
t2=uicontrol('parent',h0,...
    'style','text',...
    'string','终点的X坐标值',...
    'position',[155 50 100 20]);
e3=uicontrol('parent',h0,...
    'style','edit',...
    'position',[300 30 50 20]);
t3=uicontrol('parent',h0,...
    'style','text',...
    'string','终点的Y坐标值',...
    'position',[275 50 100 20]);

```

实例33：曲线转换按钮

```

h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','实例33');
x=0:0.5:2*pi;
y=sin(x);
h=plot(x,y);

```

```

grid on

huidiao=[...
    'if i==1,',...
    'i=0;',...
    'y=cos(x);',...
    'delete(h),',...
    'set(hm,''string'',''正弦函数''),',...
    'h=plot(x,y);',...
    'grid on,',...
    'else if i==0,',...
    'i=1;',...
    'y=sin(x);',...
    'set(hm,''string'',''余弦函数''),',...
    'delete(h),',...
    'h=plot(x,y);',...
    'grid on,',...
    'end,',...
    'end'];

hm=uicontrol(gcf,'style','pushbutton',...
    'string','余弦函数',...
    'callback',huidiao);

i=1;

set(hm,'position',[250 20 60 20]);
set(gca,'position',[0.2 0.2 0.6 0.6])
title('按钮的使用')

hold on

```

实例34：栅格控制按钮

```

h0=figure('toolbar','none',...

```

```

        'position',[200 150 450 250],...
        'name','实例34');
x=0:0.5:2*pi;
y=sin(x);
plot(x,y)
huidiao1=[...
        'set(h_toggle2,''value'',0),',...
        'grid on,',...
        ];
huidiao2=[...
        'set(h_toggle1,''value'',0),',...
        'grid off,',...
        ];
h_toggle1=uicontrol(gcf,'style','togglebutton',...
        'string','grid on',...
        'value',0,...
        'position',[20 45 50 20],...
        'callback',huidiao1);
h_toggle2=uicontrol(gcf,'style','togglebutton',...
        'string','grid off',...
        'value',0,...
        'position',[20 20 50 20],...
        'callback',huidiao2);
set(gca,'position',[0.2 0.2 0.6 0.6])
title('开关按钮的使用')

```

实例35：编辑框的使用

```

h0=figure('toolbar','none',...
        'position',[200 150 350 250],...

```

```

        'name','实例35');

f='Please input the letter';

huidiao1=[...
    'g=upper(f);','...
    'set(h2_edit,''string'',g),','...
    ];

huidiao2=[...
    'g=lower(f);','...
    'set(h2_edit,''string'',g),','...
    ];

h1_edit=uicontrol(gcf,'style','edit',...
    'position',[100 200 100 50],...
    'HorizontalAlignment','left',...
    'string','Please input the letter',...
    'callback','f=get(h1_edit,''string'');','...
    'background','w',...
    'max',5,...
    'min',1);

h2_edit=uicontrol(gcf,'style','edit',...
    'HorizontalAlignment','left',...
    'position',[100 100 100 50],...
    'background','w',...
    'max',5,...
    'min',1);

h1_button=uicontrol(gcf,'style','pushbutton',...
    'string','小写变大写',...
    'position',[100 45 100 20],...
    'callback',huidiao1);

h2_button=uicontrol(gcf,'style','pushbutton',...

```

```

'string','大写变小写',...
'position',[100 20 100 20],...
'callback',huidiao2);

```

实例36：弹出式菜单

```

h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','实例36');
x=0:0.5:2*pi;
y=sin(x);
h=plot(x,y);
grid on
hm=uicontrol(gcf,'style','popupmenu',...
    'string',...
    'sin(x)|cos(x)|sin(x)+cos(x)|exp(-sin(x))',...
    'position',[250 20 50 20]);
set(hm,'value',1)
huidiao=[...
    'v=get(hm,''value'');','...',
    'switch v,','...',
    'case 1,','...',
    'delete(h),','...',
    'y=sin(x);','...',
    'h=plot(x,y);','...',
    'grid on,','...',
    'case 2,','...',
    'delete(h),','...',
    'y=cos(x);','...',
    'h=plot(x,y);','...',

```

```

        'grid on','...',
        'case 3','...',
        'delete(h)','...',
        'y=sin(x)+cos(x);','...',
        'h=plot(x,y);','...',
        'grid on','...',
        'case 4','...',
        'delete(h)','...',
        'y=exp(-sin(x));','...',
        'h=plot(x,y);','...',
        'grid on','...',
        'end'];

set(hm,'callback',huidiao)
set(gca,'position',[0.2 0.2 0.6 0.6])
title('弹出式菜单的使用')
hold on

```

实例37：滑标的使用

```
h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','实例37');
[x,y]=meshgrid(-8:0.5:8);
r=sqrt(x.^2+y.^2)+eps;
z=sin(r)./r;
h0=mesh(x,y,z);
h1=axes('position',...
    [0.2 0.2 0.5 0.5],...
    'visible','off');
htext=uicontrol(gcf,...
    'units','points',...
    'position',[20 30 45 15],...
    'string','brightness',...
    'style','text');
hslider=uicontrol(gcf,...
    'units','points',...
    'position',[10 10 300 15],...
    'min',-1,...
    'max',1,...
    'style','slider',...
    'callback',...
    'brighten(get(hslider,'value'))');
```

实例38：多选菜单

```
h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','实例38');
```

```

[x,y]=meshgrid(-8:0.5:8);
r=sqrt(x.^2+y.^2)+eps;
z=sin(r)./r;
h0=mesh(x,y,z);
hlist=uicontrol(gcf,'style','listbox',...
    'string','default|spring|summer|autumn|winter',...
    'max',5,...
    'min',1,...
    'position',[20 20 80 100],...
    'callback',[...
        'k=get(hlist,''value'');','...',...
        'switch k,','...',
        'case 1,','...',
        'colormap default,','...',
        'case 2,','...',
        'colormap spring,','...',
        'case 3,','...',
        'colormap summer,','...',
        'case 4,','...',
        'colormap autumn,','...',
        'case 5,','...',
        'colormap winter,','...',
        'end']);

```

实例39：菜单控制的使用

```

h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','实例39');
x=0:0.5:2*pi;

```

```

y=cos(x);
h=plot(x,y);
grid on
set(gcf,'toolbar','none')
hm=uimenu('label','example');
huidiao1=[...
    'set(hm_gridon,''checked'',''on''),'...',...
    'set(hm_gridoff,''checked'',''off''),'...',...
    'grid on'];
huidiao2=[...
    'set(hm_gridoff,''checked'',''on''),'...',...
    'set(hm_gridon,''checked'',''off''),'...',...
    'grid off'];
hm_gridon=uimenu(hm,'label','grid on',...
    'checked','on',...
    'callback',huidiao1);
hm_gridoff=uimenu(hm,'label','grid off',...
    'checked','off',...
    'callback',huidiao2);

```

实例40：UIMENU菜单的应用

```

h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','实例40');
h1=uimenu(gcf,'label','函数');
h11=uimenu(h1,'label','轮廓图',...
    'callback',[...
        'set(h31,''checked'',''on''),'...',...
        'set(h32,''checked'',''off''),'...',...

```

```

        '[x,y,z]=peaks;;','...
        'contour3(x,y,z,30)');
h12=uimenu(h1,'label','高斯分布',...
    'callback',[...
        'set(h31,''checked'',''on''),'...',...
        'set(h32,''checked'',''off''),'...',...
        'mesh(peaks);','...',...
        'axis tight']);
h13=uimenu(h1,'label','Sinc函数',...
    'callback',[...
        'set(h31,''checked'',''on''),'...',...
        'set(h32,''checked'',''off''),'...',...
        '[x,y]=meshgrid(-8:0.5:8);','...',...
        'r=sqrt(x.^2+y.^2)+eps;;','...',...
        'z=sin(r)./r;','...',...
        'mesh(x,y,z)']);
h2=uimenu(gcf,'label','色彩');
h12(1)=uimenu(h2,'label','Default',...
    'checked','on',...
    'callback',...
    [...
        'set(h12,''checked'',''off''),'...',...
        'set(h12(1),'checked'',''on''),'...',...
        'colormap(''default'')']);
h12(2)=uimenu(h2,'label','spring',...
    'callback',...
    [...
        'set(h12,''checked'',''off''),'...',...
        'set(h12(2),'checked'',''on''),'...',...

```

```

        'colormap(spring)');
h12(3)=uimenu(h2,'label','Summer',...
    'callback',...
    [...
        'set(h12,''checked'',''off''),',...
        'set(h12(3),''checked'',''on''),',...
        'colormap(summer)']);
h12(4)=uimenu(h2,'label','Autumn',...
    'callback',...
    [...
        'set(h12,''checked'',''off''),',...
        'set(h12(4),''checked'',''on''),',...
        'colormap(autumn)']);
h12(5)=uimenu(h2,'label','Winter',...
    'callback',...
    [...
        'set(h12,''checked'',''off''),',...
        'set(h12(5),''checked'',''on''),',...
        'colormap(winter)']);
h3=uimenu(gcf,'label','坐标选项');
h31=uimenu(h3,'label','Axis on',...
    'callback',...
    [...
        'axis on,',...
        'set(h31,''checked'',''on''),',...
        'set(h32,''checked'',''off'')']);
h32=uimenu(h3,'label','Axis off',...
    'callback',...
    [...

```

```

        'axis off','...',...
        'set(h32,''checked'',''on''),'...',...
        'set(h31,''checked'',''off'')'[]]);

```

实例41：除法计算器

```

h=figure('toolbar','none',...
        'position',[200 150 450 250],...
        'name','实例41');
h1=uicontrol(gcf,'style','edit',...
        'position',[80 200 100 20],...
        'HorizontalAlignment','right',...
        'callback',['m=get(h1,''string'');','...',...
        'a=str2num(m);']);
h2=uicontrol(gcf,'style','edit',...
        'HorizontalAlignment','right',...
        'position',[80 150 100 20],...
        'callback',['n=get(h2,''string'');','...',...
        'b=str2num(n);']);
h3=uicontrol(gcf,'style','text',...
        'string','被除数',...
        'position',[80 230 100 20]);
h4=uicontrol(gcf,'style','edit',...
        'position',[80 50 100 20]);
h5=uicontrol(gcf,'style','pushbutton',...
        'position',[80 100 100 20],...
        'string','=',...
        'callback',[...
        'if b==0,','...',...
        'h7=errordlg(''除数不能为0! ','error','on');','...',...

```

```

        'else,',...
        'k=a/b;',...
        'c=num2str(k);',...
        'set(h4,''string'',c),',...
        'end'];
h8=uicontrol(gcf,'style','text',...
    'string','除数',...
    'position',[80 175 100 20]);
h9=uicontrol(gcf,'style','text',...
    'string','商',...
    'position',[80 75 100 20]);

```

实例42：单选框的使用

```

h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','实例42');
x=0:0.5:2*pi;
y=sin(x);
plot(x,y)
grid on
set(gcf,'toolbar','none')
g=set(gca,'position',[0.2 0.2 0.6 0.6]);
huidiao1=[...
    'grid on,',...
    'set(box_on,''value'',1),',...
    'set(box_off,''value'',0),'];
huidiao2=[...
    'grid off,',...
    'set(box_off,''value'',1),',...

```

```

        'set(box_on, 'value', 0), []);
box_on=icontrol(gcf, 'style', 'radio', ...
    'position', [5 50 50 20], ...
    'string', 'grid on', ...
    'value', 1, ...
    'callback', huidaol);
box_off=icontrol(gcf, 'style', 'radio', ...
    'position', [5 20 50 20], ...
    'string', 'grid off', ...
    'value', 0, ...
    'callback', huidaio2);
title('无线按钮的使用')

```

实例43：添加环境效果

```

h0=figure('toolbar', 'none', ...
    'position', [198 56 450 468], ...
    'name', '实例43');
h1=axes('parent', h0, ...
    'position', [0.15 0.45 0.7 0.5], ...
    'visible', 'off');
sphere
h=findobj('type', 'surface');
shading interp
axis equal
l=light('position', [0 -2 1]);
k(1)=get(h, 'specularstrength');
k(2)=get(h, 'diffusestrength');
k(3)=get(h, 'specularexponent');
k(4)=get(h, 'specularcolorreflectance');

```

```

u1=uimenu('parent',h0,...
    'label','灯光效果',...
    'tag','u1',...
    'backgroundcolor',[0.75 0.75 0.75]);
u11=uimenu('parent',u1,...
    'label','gouraud',...
    'tag','u11',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'callback',[...
        'set(u11,''checked'',''on'');','...',...
        'set(u12,''checked'',''off'');','...',...
        'set(h,''facelighting'',''gouraud'')'']);
u12=uimenu('parent',u1,...
    'label','phong',...
    'tag','u12',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'callback',[...
        'set(u11,''checked'',''off'');','...',...
        'set(u12,''checked'',''on'');','...',...
        'set(h,''facelighting'',''gouraud'')'']);
u2=uimenu('parent',h0,...
    'label','背面灯光',...
    'tag','u2',...
    'backgroundcolor',[0.75 0.75 0.75]);
u21=uimenu('parent',u2,...
    'label','reverselit',...
    'tag','u21',...
    'checked','on',...
    'backgroundcolor',[0.75 0.75 0.75],...

```

```

        'callback',[...
            'set(u21,''checked'',''on'');','...',
            'set(u22,''checked'',''off'');','...',
            'set(h,''backfacelighting'',''reverselit'')']);
u22=uimenu('parent',u2,...
    'label','reverselit',...
    'tag','u22',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'callback',[...
        'set(u21,''checked'',''off'');','...',
        'set(u22,''checked'',''on'');','...',
        'set(h,''backfacelighting'',''reverselit'')']);
s1=uicontrol('parent',h0,...
    'units','points',...
    'style','slider',...
    'tag','s1',...
    'min',0,...
    'max',1,...
    'value',k(1),...
    'position',[20 80 100 15],...
    'callback',[...
        'slvalue=get(s1,''value'');','...',
        'set(h,''specularstrength'',slvalue)']);
t1=uicontrol('parent',h0,...
    'units','points',...
    'style','text',...
    'tag','t1',...
    'string','镜面反射强度',...
    'position',[20 97 100 15]);

```

```

s2=uicontrol('parent',h0,...
    'units','points',...
    'style','slider',...
    'tag','s2',...
    'min',0,...
    'max',1,...
    'value',k(2),...
    'position',[20 30 100 15],...
    'callback',[...
        's2value=get(s2,''value'');','...',...
        'set(h,''diffusestrength'',s2value)']);

t2=uicontrol('parent',h0,...
    'units','points',...
    'style','text',...
    'tag','t2',...
    'string','漫反射强度',...
    'position',[20 47 100 15]);

s3=uicontrol('parent',h0,...
    'units','points',...
    'style','slider',...
    'tag','s3',...
    'min',0.1,...
    'max',1,...
    'value',k(3)/20,...
    'position',[220 80 100 15],...
    'callback',[...
        's3value=get(s3,''value''')+eps;','...',...
        'set(h,''specularexponent'',20*s3value)']);

t3=uicontrol('parent',h0,...

```

```

        'units','points',...
        'style','text',...
        'tag','t3',...
        'string','镜面指数',...
        'position',[220 97 100 15]);
s4=uicontrol('parent',h0,...
    'units','points',...
    'style','slider',...
    'tag','s4',...
    'min',0,...
    'max',1,...
    'value',k(4),...
    'position',[220 30 100 15],...
    'callback',[...
        's4value=get(s4,''value'');','...',...
        'set(h,''specularcolorreflectance'',s4value)']);
t4=uicontrol('parent',h0,...
    'units','points',...
    'style','text',...
    'tag','t1',...
    'string','镜面颜色反射比',...
    'position',[220 47 100 15]);
b1=uicontrol('parent',h0,...
    'units','points',...
    'style','pushbutton',...
    'tag','b1',...
    'string','关闭',...
    'position',[145 45 50 30],...
    'callback','close');

```

实例44：改变坐标轴范围

```
h0=figure('toolbar','none',...
    'position',[198 56 408 468],...
    'name','实例44');
h1=axes('parent',h0,...
    'position',[0.15 0.45 0.7 0.5],...
    'visible','on');
e1=uicontrol('parent',h0,...
    'style','edit',...
    'string',1,...
    'position',[50 120 50 20]);
t1=uicontrol('parent',h0,...
    'style','text',...
    'string','X轴最小值',...
    'position',[35 150 80 20]);
e2=uicontrol('parent',h0,...
    'style','edit',...
    'string',5,...
    'position',[50 60 50 20]);
t2=uicontrol('parent',h0,...
    'style','text',...
    'string','X轴最大值',...
    'position',[35 90 80 20]);
e3=uicontrol('parent',h0,...
    'style','edit',...
    'string',1,...
    'position',[150 120 50 20]);
t3=uicontrol('parent',h0,...
```

```

        'style','text',...
        'string','Y轴最小值',...
        'position',[135 150 80 20]);
e4=uicontrol('parent',h0,...
    'style','edit',...
    'string',5,...
    'position',[150 60 50 20]);
t4=uicontrol('parent',h0,...
    'style','text',...
    'string','Y轴最大值',...
    'position',[135 90 80 20]);
e5=uicontrol('parent',h0,...
    'style','edit',...
    'string',20,...
    'position',[250 120 50 20]);
t5=uicontrol('parent',h0,...
    'style','text',...
    'horizontalalignment','left',...
    'string','点数',...
    'position',[250 150 30 20]);
b1=uicontrol('parent',h0,...
    'style','pushbutton',...
    'string','绘图',...
    'position',[250 60 60 40],...
    'callback',[...
        'a=str2num(get(e1,''string''));','...
        'b=str2num(get(e2,''string''));','...
        'c=str2num(get(e3,''string''));','...
        'd=str2num(get(e4,''string''));','...

```

```

'n=str2num(get(e5,'string'));;',...
'xgrid=linspace(-abs(a),abs(a),n);;',...
'ygrid=linspace(-abs(b),abs(b),n);;',...
'[x,y]=meshgrid(xgrid,ygrid);;',...
'z=c*sqrt(d-y.*y/b/b-x.*x/a/a);;',...
'u=1;;',...
'z1=real(z);;',...
'for k=2:n-1,;',...
'for j=2:n-1,;',...
'if imag(z(k,j))-=0,;',...
'z1(k,j)=0;;',...
'end,;',...
'if all(imag(z([k-1:k+1],[j-1:j+1])))-=0,;',...
'z1(k,j)=nan;;',...
'end,;',...
'end,;',...
'end,;',...
'surf(x,y,z1),;',...
'hold on,;',...
'if u==1,;',...
'z2=-z1;;',...
'surf(x,y,z2),;',...

'axis([-abs(a),abs(a),-abs(b),abs(b),-abs(c),abs(c)]);;',...
'end,;',...
'xlabel('x');;',...
'ylabel('y');;',...
'zlabel('z');;',...
'hold off'];

```

```

b2=uicontrol('parent',h0,...
    'style','pushbutton',...
    'string','关闭',...
    'position',[150 10 60 20],...
    'callback','close');

```

实例45：简单运算器

```

h1=uicontrol(gcf,'style','radio',...
    'string','加',...
    'value',1,...
    'position',[20 150 40 20],...
    'callback',[...
        'k=1;;','...
        'set(h1,''value'',1),','...
        'set(h2,''value'',0),','...
        'set(h3,''value'',0)']);
h2=uicontrol(gcf,'style','radio',...
    'string','减',...
    'position',[20 110 40 20],...
    'callback',[...
        'k=2;;','...
        'set(h2,''value'',1),','...
        'set(h1,''value'',0),','...
        'set(h3,''value'',0)']);
h3=uicontrol(gcf,'style','radio',...
    'string','乘',...
    'position',[20 70 40 20],...
    'callback',[...
        'k=3;;','...

```

```

        'set(h3, ''value'',1),',...
        'set(h2, ''value'',0),',...
        'set(h1, ''value'',0)']];
e1=uicontrol(gcf,'style','edit',...
    'position',[80 150 100 20]);
e2=uicontrol(gcf,'style','edit',...
    'position',[80 110 100 20]);
e3=uicontrol(gcf,'style','edit',...
    'position',[80 70 100 20]);
b1=uicontrol(gcf,'style','pushbutton',...
    'string','运算',...
    'position',[200 150 80 30],...
    'callback',[...
        'x=str2num(get(e1, ''string''));',...
        'y=str2num(get(e2, ''string''));',...
        'switch k,',...
        'case 1,',...
        'z=x+y;',...
        'case 2,',...
        'z=x-y;',...
        'case 3,',...
        'z=x*y;',...
        'end,',...
        'set(e3, ''string'', num2str(z))']];
b2=uicontrol(gcf,'style','pushbutton',...
    'string','退出',...
    'position',[200 100 80 30],...
    'callback','close');

```

实例46：曲线色彩的修改

```
h0=figure('toolbar','none',...
    'position',[198 56 408 468],...
    'name','my second gui');
h1=axes('parent',h0,...
    'position',[0.15 0.45 0.7 0.5],...
    'visible','on');
x=0:0.1:2*pi;
k=plot(x,sin(x));
xlabel('自变量X');
ylabel('函数值Y');
title('图形色彩改变');
p1=uicontrol('parent',h0,...
    'style','pushbutton',...
    'backgroundcolor','r',...
    'position',[60 100 50 30],...
    'callback','set(k,''color'',''r'')');
p2=uicontrol('parent',h0,...
    'style','pushbutton',...
    'backgroundcolor','g',...
    'position',[170 100 50 30],...
    'callback','set(k,''color'',''g'')');
p3=uicontrol('parent',h0,...
    'style','pushbutton',...
    'backgroundcolor','b',...
    'position',[280 100 50 30],...
    'callback','set(k,''color'',''b'')');
p4=uicontrol('parent',h0,...
    'style','pushbutton',...
```

```

        'backgroundcolor',[1 1 1],...
        'fontsize',20,...
        'fontweight','demi',...
        'string','关闭',...
        'position',[150 30 80 60],...
        'callback','close');
t1=uicontrol('parent',h0,...
    'style','text',...
    'string','红色',...
    'fontsize',12,...
    'fontweight','demi',...
    'position',[60 120 50 20]);
t2=uicontrol('parent',h0,...
    'style','text',...
    'string','绿色',...
    'fontsize',12,...
    'fontweight','demi',...
    'position',[170 120 50 20]);
t3=uicontrol('parent',h0,...
    'style','text',...
    'string','蓝色',...
    'fontsize',12,...
    'fontweight','demi',...
    'position',[280 120 50 20]);

```

实例47：曲线标记

```
h0=figure('toolbar','none',...
    'position',[198 56 408 468],...
    'name','my second gui');
h1=axes('parent',h0,...
    'position',[0.15 0.45 0.7 0.5],...
    'visible','on');
x=0:0.1:2*pi;
k=plot(x,sin(x),'*');
xlabel('自变量X');
ylabel('函数值Y');
title('标记类型的改变');
p1=uicontrol('parent',h0,...
    'style','pushbutton',...
    'string','+',...
    'fontsize',20,...
    'foregroundcolor',[1 1 1],...
    'backgroundcolor',[0 0 0],...
    'position',[60 100 50 20],...
    'callback','set(k,''marker'',''+')');
p2=uicontrol('parent',h0,...
    'style','pushbutton',...
    'string','o',...
    'fontsize',20,...
    'foregroundcolor',[1 1 1],...
    'backgroundcolor',[0 0 0],...
    'position',[170 100 50 20],...
    'callback','set(k,''marker'',''o')');
p3=uicontrol('parent',h0,...
```

```

        'style','pushbutton',...
        'string','x',...
        'fontsize',20,...
        'foregroundcolor',[1 1 1],...
        'backgroundcolor',[0 0 0],...
        'position',[280 100 50 20],...
        'callback','set(k,''marker'',''x'')');
p4=uicontrol('parent',h0,...
    'style','pushbutton',...
    'backgroundcolor',[1 1 1],...
    'fontsize',20,...
    'fontweight','demi',...
    'string','关闭',...
    'position',[150 30 80 60],...
    'callback','close');
t1=uicontrol('parent',h0,...
    'style','text',...
    'string','星号',...
    'fontsize',12,...
    'fontweight','demi',...
    'position',[60 120 50 20]);
t2=uicontrol('parent',h0,...
    'style','text',...
    'string','圆圈',...
    'fontsize',12,...
    'fontweight','demi',...
    'position',[170 120 50 20]);
t3=uicontrol('parent',h0,...
    'style','text',...

```

```

'string','叉号',...
'fontsize',12,...
'fontweight','demi',...
'position',[280 120 50 20]);

```

实例48：修改曲型

```

h0=figure('toolbar','none',...
    'position',[198 56 408 468],...
    'name','实例48');
h1=axes('parent',h0,...
    'position',[0.15 0.45 0.7 0.5],...
    'visible','on');
x=0:0.1:2*pi;
k=plot(x,sin(x));
xlabel('自变量X');
ylabel('函数值Y');
title('线型的改变');
p1=uicontrol('parent',h0,...
    'style','pushbutton',...
    'string','-.',...
    'fontsize',20,...
    'foregroundcolor',[1 1 1],...
    'backgroundcolor',[0 0 0],...
    'position',[60 100 50 20],...
    'callback','set(k,''linestyle'',''-.'')');
p2=uicontrol('parent',h0,...
    'style','pushbutton',...
    'string',':',...
    'fontsize',20,...

```

```

        'foregroundcolor',[1 1 1],...
        'backgroundcolor',[0 0 0],...
        'position',[170 100 50 20],...
        'callback','set(k,''linestyle'','':')');
p3=uicontrol('parent',h0,...
    'style','pushbutton',...
    'string','- ',...
    'fontsize',20,...
    'foregroundcolor',[1 1 1],...
    'backgroundcolor',[0 0 0],...
    'position',[280 100 50 20],...
    'callback','set(k,''linestyle'',''-')');
p4=uicontrol('parent',h0,...
    'style','pushbutton',...
    'backgroundcolor',[1 1 1],...
    'fontsize',20,...
    'fontweight','demi',...
    'string','关闭',...
    'position',[150 30 80 60],...
    'callback','close');
t1=uicontrol('parent',h0,...
    'style','text',...
    'string','点划线',...
    'fontsize',12,...
    'fontweight','demi',...
    'position',[60 120 50 20]);
t2=uicontrol('parent',h0,...
    'style','text',...
    'string','虚线',...

```

```

        'fontsize',12,...
        'fontweight','demi',...
        'position',[170 120 50 20]);
t3=uicontrol('parent',h0,...
    'style','text',...
    'string','实线',...
    'fontsize',12,...
    'fontweight','demi',...
    'position',[280 120 50 20]);

```

实例48：修改曲型

```

h0=figure('toolbar','none',...
    'position',[198 56 408 468],...
    'name','实例48');
h1=axes('parent',h0,...
    'position',[0.15 0.45 0.7 0.5],...
    'visible','on');
x=0:0.1:2*pi;
k=plot(x,sin(x));
xlabel('自变量X');
ylabel('函数值Y');
title('线型的改变');
p1=uicontrol('parent',h0,...
    'style','pushbutton',...
    'string','-.',...
    'fontsize',20,...
    'foregroundcolor',[1 1 1],...
    'backgroundcolor',[0 0 0],...
    'position',[60 100 50 20],...

```

```

        'callback','set(k, ''linestyle'', ''-.'')');
p2=uicontrol('parent',h0,...
    'style','pushbutton',...
    'string',':',...
    'fontsize',20,...
    'foregroundcolor',[1 1 1],...
    'backgroundcolor',[0 0 0],...
    'position',[170 100 50 20],...
    'callback','set(k, ''linestyle'', ''-: '')');
p3=uicontrol('parent',h0,...
    'style','pushbutton',...
    'string','-',...
    'fontsize',20,...
    'foregroundcolor',[1 1 1],...
    'backgroundcolor',[0 0 0],...
    'position',[280 100 50 20],...
    'callback','set(k, ''linestyle'', ''-''')');
p4=uicontrol('parent',h0,...
    'style','pushbutton',...
    'backgroundcolor',[1 1 1],...
    'fontsize',20,...
    'fontweight','demi',...
    'string','关闭',...
    'position',[150 30 80 60],...
    'callback','close');
t1=uicontrol('parent',h0,...
    'style','text',...
    'string','点划线',...
    'fontsize',12,...

```

```

        'fontweight','demi',...
        'position',[60 120 50 20]);
t2=uicontrol('parent',h0,...
    'style','text',...
    'string','虚线',...
    'fontsize',12,...
    'fontweight','demi',...
    'position',[170 120 50 20]);
t3=uicontrol('parent',h0,...
    'style','text',...
    'string','实线',...
    'fontsize',12,...
    'fontweight','demi',...
    'position',[280 120 50 20]);

```

实例48：修改曲型

```

h0=figure('toolbar','none',...
    'position',[198 56 408 468],...
    'name','实例48');
h1=axes('parent',h0,...
    'position',[0.15 0.45 0.7 0.5],...
    'visible','on');
x=0:0.1:2*pi;
k=plot(x,sin(x));
xlabel('自变量X');
ylabel('函数值Y');
title('线型的改变');
p1=uicontrol('parent',h0,...
    'style','pushbutton',...

```

```

        'string','-.',...
        'fontsize',20,...
        'foregroundcolor',[1 1 1],...
        'backgroundcolor',[0 0 0],...
        'position',[60 100 50 20],...
        'callback','set(k,''linestyle'',''-.'')');
p2=uicontrol('parent',h0,...
    'style','pushbutton',...
    'string',':',...
    'fontsize',20,...
    'foregroundcolor',[1 1 1],...
    'backgroundcolor',[0 0 0],...
    'position',[170 100 50 20],...
    'callback','set(k,''linestyle'','':')');
p3=uicontrol('parent',h0,...
    'style','pushbutton',...
    'string','- ',...
    'fontsize',20,...
    'foregroundcolor',[1 1 1],...
    'backgroundcolor',[0 0 0],...
    'position',[280 100 50 20],...
    'callback','set(k,''linestyle'',''- ')');
p4=uicontrol('parent',h0,...
    'style','pushbutton',...
    'backgroundcolor',[1 1 1],...
    'fontsize',20,...
    'fontweight','demi',...
    'string','关闭',...
    'position',[150 30 80 60],...

```

```

        'callback','close');
t1=uicontrol('parent',h0,...
    'style','text',...
    'string','点划线',...
    'fontsize',12,...
    'fontweight','demi',...
    'position',[60 120 50 20]);
t2=uicontrol('parent',h0,...
    'style','text',...
    'string','虚线',...
    'fontsize',12,...
    'fontweight','demi',...
    'position',[170 120 50 20]);
t3=uicontrol('parent',h0,...
    'style','text',...
    'string','实线',...
    'fontsize',12,...
    'fontweight','demi',...
    'position',[280 120 50 20]);

```

实例49：指定坐标轴范围

```

h0=figure('toolbar','none',...
    'position',[198 56 408 468],...
    'name','实例49');
h1=axes('parent',h0,...
    'position',[0.15 0.45 0.7 0.5],...
    'visible','on');
x=0:0.1:2*pi;
y=sin(x);

```

```

plot(x,y);
xlabel('X');
ylabel('Y');
title('坐标轴范围的改变');
h=get(gca,'xlim');
k=get(gca,'ylim');
e1=uicontrol('parent',h0,...
    'style','edit',...
    'string',eval(num2str(h(1))),...
    'horizontalalignment','right',...
    'position',[80 120 100 20]);
t1=uicontrol('parent',h0,...
    'style','text',...
    'string','X轴最小值',...
    'position',[100 145 80 20]);
e2=uicontrol('parent',h0,...
    'style','edit',...
    'string',eval(num2str(h(2))),...
    'horizontalalignment','right',...
    'position',[80 60 100 20]);
t2=uicontrol('parent',h0,...
    'style','text',...
    'string','X轴最大值',...
    'position',[100 85 80 20]);
e3=uicontrol('parent',h0,...
    'style','edit',...
    'string',eval(num2str(k(1))),...
    'horizontalalignment','right',...
    'position',[250 120 100 20]);

```

```

t3=uicontrol('parent',h0,...
    'style','text',...
    'string','Y轴最小值',...
    'position',[270 145 80 20]);
e4=uicontrol('parent',h0,...
    'style','edit',...
    'string',eval(num2str(k(2))),...
    'horizontalalignment','right',...
    'position',[250 60 100 20]);
t4=uicontrol('parent',h0,...
    'style','text',...
    'string','X轴最小值',...
    'position',[270 85 80 20]);
p1=uicontrol('parent',h0,...
    'style','pushbutton',...
    'string','设置',...
    'position',[105 10 50 30],...
    'callback',[...
        'a=str2num(get(e1,''string''));','...
        'b=str2num(get(e2,''string''));','...
        'c=str2num(get(e3,''string''));','...
        'd=str2num(get(e4,''string''));','...
        'axis([a b c d]),','...
        'drawnow']);
p2=uicontrol('parent',h0,...
    'style','pushbutton',...
    'string','关闭',...
    'position',[275 10 50 30],...
    'callback','close');

```

实例50：绘制不同函数曲线的用户界面

```
h0=figure('toolbar','none',...
    'position',[198 56 408 468],...
    'name','实例50');
h1=axes('parent',h0,...
    'position',[0.29 0.45 0.7 0.5],...
    'visible','on');
f=uicontrol('parent',h0,...
    'style','frame',...
    'position',[5 50 90 400]);
p1=uicontrol('parent',h0,...
    'style','pushbutton',...
    'position',[150 100 60 40],...
    'string','绘图',...
    'callback',[...
        'm=str2num(get(e1,''string''));','...',...
        'n=str2num(get(e2,''string''));','...',...
        'a=get(l1,''value'');','...',...
        'x=m:0.1:n;','...',...
        'if a==1,','...',...
        'plot(x,sin(x)),','...',...
        'end,','...',...
        'if a==2,','...',...
        'plot(x,cos(x)),','...',...
        'end,','...',...
        'if a==3,','...',...
        'plot(x,exp(x)),','...',...
        'end'];
```

```

p2=uicontrol('parent',h0,...
    'style','pushbutton',...
    'position',[270 100 60 40],...
    'string','关闭',...
    'callback','close');
l1=uicontrol('parent',h0,...
    'style','listbox',...
    'position',[10 300 80 80],...
    'string','sin(x)|cos(x)|exp(x)',...
    'value',1,...
    'max',0.5,...
    'min',0);
f2=uicontrol('parent',h0,...
    'style','text',...
    'string','选择函数',...
    'fontsize',10,...
    'position',[10 380 80 20]);
r1=uicontrol('style','radio',...
    'string','grid on',...
    'value',0,...
    'position',[10 100 60 20],...
    'callback',[...
        'grid on,',...
        'set(r1,''value'',1);,',...
        'set(r2,''value'',0)']);
r2=uicontrol('style','radio',...
    'string','grid off',...
    'position',[10 80 60 20],...
    'value',1,...

```

```

        'callback',[...
            'grid off,',...
            'set(r2,''value'',1);,',...
            'set(r1,''value'',0)']]);
e1=uicontrol('parent',h0,...
    'style','edit',...
    'string',0,...
    'position',[20 210 60 20],...
    'horizontalalignment','right');
e2=uicontrol('parent',h0,...
    'style','edit',...
    'string','3',...
    'position',[20 150 60 20],...
    'horizontalalignment','right');
t1=uicontrol('parent',h0,...
    'style','text',...
    'string','X from',...
    'fontsize',10,...
    'position',[20 230 60 20],...
    'horizontalalignment','center');
t2=uicontrol('parent',h0,...
    'style','text',...
    'string','To',...
    'fontsize',10,...
    'position',[20 170 60 20],...
    'horizontalalignment','center');

```

实例51：可设置函数曲线图视角的用户界面

```
h0=figure('toolbar','none',...
```

```

        'position',[198 56 408 468],...
        'name','实例51');
h1=axes('parent',h0,...
        'position',[0.15 0.45 0.7 0.5],...
        'visible','off');
[x,y]=meshgrid(-8:0.5:8);
r=sqrt(x.^2+y.^2)+eps;
z=sin(r)./r;
fl=surf(x,y,z);
shading interp
view(-50,30)
camlight left
colormap([1 0 0])
fv=get(h0,'colormap');
ifv=fv;
p1=uicontrol('parent',h0,...
        'style','pushbutton',...
        'string','重置',...
        'position',[280 120 50 30],...
        'callback',[...
            'set(s1,''value'',ifv(1));','...
            'set(s2,''value'',ifv(2));','...
            'set(s3,''value'',ifv(3));','...
            'set(h0,''colormap'',ifv)']);
p2=uicontrol('parent',h0,...
        'style','pushbutton',...
        'string','关闭',...
        'position',[280 60 50 30],...
        'callback','close');

```

```

s1=uicontrol('parent',h0,...
    'style','slider',...
    'min',0,...
    'max',1,...
    'value',fv(1),...
    'position',[20 150 200 20],...
    'callback',[...
        's1k=get(s1,''value'');','...',...
        'fv(1)=s1k;','...',...
        'set(h0,''colormap'',fv);']);

t1=uicontrol('parent',h0,...
    'style','text',...
    'string','改变红色成分',...
    'position',[20 170 100 20]);

s2=uicontrol('parent',h0,...
    'style','slider',...
    'min',0,...
    'max',1,...
    'value',fv(2),...
    'position',[20 100 200 20],...
    'callback',[...
        's2k=get(s2,''value'');','...',...
        'fv(2)=s2k;','...',...
        'set(h0,''colormap'',fv);']);

t2=uicontrol('parent',h0,...
    'style','text',...
    'string','改变绿色成分',...
    'position',[20 120 100 20]);

s3=uicontrol('parent',h0,...

```

```

    'style','slider',...
    'min',0,...
    'max',1,...
    'value',fv(3),...
    'position',[20 50 200 20],...
    'callback',[...
        's3k=get(s3,''value'');','...',...
        'fv(3)=s3k;','...',...
        'set(h0,''colormap'',fv);']]);
t1=uicontrol('parent',h0,...
    'style','text',...
    'string','改变蓝色成分',...
    'position',[20 70 100 20]);

```

实例51：可设置函数曲线图视角的用户界面

```

h0=figure('toolbar','none',...
    'position',[198 56 408 468],...
    'name','实例51');
h1=axes('parent',h0,...
    'position',[0.15 0.45 0.7 0.5],...
    'visible','off');
[x,y]=meshgrid(-8:0.5:8);
r=sqrt(x.^2+y.^2)+eps;
z=sin(r)./r;
f1=surf(x,y,z);
shading interp
view(-50,30)
camlight left
colormap([1 0 0])

```

```

fv=get(h0,'colormap');
ifv=fv;
p1=uicontrol('parent',h0,...
    'style','pushbutton',...
    'string','重置',...
    'position',[280 120 50 30],...
    'callback',[...
        'set(s1,''value'',ifv(1));','...',...
        'set(s2,''value'',ifv(2));','...',...
        'set(s3,''value'',ifv(3));','...',...
        'set(h0,''colormap'',ifv)']);
p2=uicontrol('parent',h0,...
    'style','pushbutton',...
    'string','关闭',...
    'position',[280 60 50 30],...
    'callback','close');
s1=uicontrol('parent',h0,...
    'style','slider',...
    'min',0,...
    'max',1,...
    'value',fv(1),...
    'position',[20 150 200 20],...
    'callback',[...
        's1k=get(s1,''value'');','...',...
        'fv(1)=s1k;','...',...
        'set(h0,''colormap'',fv);']);
t1=uicontrol('parent',h0,...
    'style','text',...
    'string','改变红色成分',...

```

```

        'position',[20 170 100 20]);
s2=uicontrol('parent',h0,...
    'style','slider',...
    'min',0,...
    'max',1,...
    'value',fv(2),...
    'position',[20 100 200 20],...
    'callback',[...
        's2k=get(s2,''value'');','...',...
        'fv(2)=s2k;','...',...
        'set(h0,''colormap'',fv);']);
t2=uicontrol('parent',h0,...
    'style','text',...
    'string','改变绿色成分',...
    'position',[20 120 100 20]);
s3=uicontrol('parent',h0,...
    'style','slider',...
    'min',0,...
    'max',1,...
    'value',fv(3),...
    'position',[20 50 200 20],...
    'callback',[...
        's3k=get(s3,''value'');','...',...
        'fv(3)=s3k;','...',...
        'set(h0,''colormap'',fv);']);
t1=uicontrol('parent',h0,...
    'style','text',...
    'string','改变蓝色成分',...
    'position',[20 70 100 20]);

```

实例51：修改函数曲线图颜色的用户界面

```
h0=figure('toolbar','none',...
    'position',[198 56 408 468],...
    'name','实例51');
h1=axes('parent',h0,...
    'position',[0.15 0.45 0.7 0.5],...
    'visible','off');
[x,y]=meshgrid(-8:0.5:8);
r=sqrt(x.^2+y.^2)+eps;
z=sin(r)./r;
fl=surf(x,y,z);
shading interp
view(-50,30)
camlight left
colormap([1 0 0])
fv=get(h0,'colormap');
ifv=fv;
p1=uicontrol('parent',h0,...
    'style','pushbutton',...
    'string','重置',...
    'position',[280 120 50 30],...
    'callback',[...
        'set(s1,''value'',ifv(1));','...',...
        'set(s2,''value'',ifv(2));','...',...
        'set(s3,''value'',ifv(3));','...',...
        'set(h0,''colormap'',ifv)']);
p2=uicontrol('parent',h0,...
    'style','pushbutton',...
```

```

        'string','关闭',...
        'position',[280 60 50 30],...
        'callback','close');
s1=uicontrol('parent',h0,...
    'style','slider',...
    'min',0,...
    'max',1,...
    'value',fv(1),...
    'position',[20 150 200 20],...
    'callback',[...
        's1k=get(s1,''value'');','...',...
        'fv(1)=s1k;','...',...
        'set(h0,''colormap'',fv);']);
t1=uicontrol('parent',h0,...
    'style','text',...
    'string','改变红色成分',...
    'position',[20 170 100 20]);
s2=uicontrol('parent',h0,...
    'style','slider',...
    'min',0,...
    'max',1,...
    'value',fv(2),...
    'position',[20 100 200 20],...
    'callback',[...
        's2k=get(s2,''value'');','...',...
        'fv(2)=s2k;','...',...
        'set(h0,''colormap'',fv);']);
t2=uicontrol('parent',h0,...
    'style','text',...

```

```

        'string','改变绿色成分',...
        'position',[20 120 100 20]);
s3=uicontrol('parent',h0,...
    'style','slider',...
    'min',0,...
    'max',1,...
    'value',fv(3),...
    'position',[20 50 200 20],...
    'callback',[...
        's3k=get(s3,''value'');','...',...
        'fv(3)=s3k;','...',...
        'set(h0,''colormap'',fv);']);
t1=uicontrol('parent',h0,...
    'style','text',...
    'string','改变蓝色成分',...
    'position',[20 70 100 20]);

```

实例52：可设置函数曲线图视角的用户界面

```

h0=figure('toolbar','none',...
    'position',[198 56 408 468],...
    'name','实例52');
h1=axes('parent',h0,...
    'position',[0.15 0.5 0.7 0.5],...
    'visible','off');
[x,y]=meshgrid(-8:0.5:8);
r=sqrt(x.^2+y.^2)+eps;
z=sin(r)./r;
fh=surf(x,y,z);
shading interp

```

```

view([-60 30])
fv=get(h1,'view');
fv2=fv;
camlight left
sh1=uicontrol('parent',h0,...
    'style','slider',...
    'max',1,...
    'min',-1,...
    'value',fv(1)/180,...
    'position',[20 150 200 20],...
    'callback',[...
        'fv(1)=90*get(sh1,''value'');','...',...
        'set(h1,''view'',[fv(1) fv(2)]),'...',...
        'set(ed1,''string'',fv(1))'']);
text1=uicontrol('parent',h0,...
    'style','text',...
    'string','方位角的变化滑标',...
    'position',[20 170 200 20]);
sh2=uicontrol('parent',h0,...
    'style','slider',...
    'max',1,...
    'min',-1,...
    'value',fv(2)/180,...
    'position',[20 90 200 20],...
    'callback',[...
        'fv(2)=90*get(sh2,''value'');','...',...
        'set(h1,''view'',[fv(1) fv(2)]),'...',...
        'set(ed2,''string'',fv(2))'']);
text2=uicontrol('parent',h0,...

```

```

        'style','text',...
        'string','仰角的变化滑标',...
        'position',[20 110 200 20]);
ed1=uicontrol('parent',h0,...
    'style','edit',...
    'string',fv(1),...
    'position',[30 30 50 20]);
text3=uicontrol('parent',h0,...
    'style','text',...
    'string','方位角的数值',...
    'position',[20 50 80 20]);
ed2=uicontrol('parent',h0,...
    'style','edit',...
    'string',fv(2),...
    'position',[150 30 50 20]);
text4=uicontrol('parent',h0,...
    'style','text',...
    'string','仰角的数值',...
    'position',[135 50 80 20]);
pfl=uicontrol('parent',h0,...
    'style','pushbutton',...
    'string','重置',...
    'position',[280 120 50 30],...
    'callback',[...
        'set(h1,''view'',fv2),','...
        'set(sh1,''value'',fv2(1)/180),','...
        'set(sh2,''value'',fv2(2)/180),','...
        'set(ed1,''string'',fv2(1)),','...
        'set(ed2,''string'',fv2(2))']]);

```

```
pf2=uicontrol('parent',h0,...  
    'style','pushbutton',...  
    'string','关闭',...  
    'position',[280 60 50 30],...  
    'callback','close');
```

实例53：可设置函数曲线光源的用户界面

```
h0=figure('toolbar','none',...
    'position',[198 56 408 468],...
    'name','实例53');
h1=axes('parent',h0,...
    'position',[0.15 0.5 0.7 0.5],...
    'visible','off');
[x,y]=meshgrid(-8:0.5:8);
r=sqrt(x.^2+y.^2)+eps;
z=sin(r)./r;
fh=surf(x,y,z);
shading interp
view([-60 30])
camlight left
lightk=light('position',[0 -2 1]);
button1=uicontrol('parent',h0,...
    'style','pushbutton',...
    'string','设置光线',...
    'position',[80 60 70 30],...
    'callback',[...
        'an1=inputdlg(''光线来源的X轴坐标'');','...
        'k1=str2num(an1{1});','...
        'an2=inputdlg(''光线来源的Y轴坐标'');','...
        'k2=str2num(an2{1});','...
        'an3=inputdlg(''光线来源的Z轴坐标'');','...
        'k3=str2num(an3{1});','...
        'set(lightk,''position'',[k1 k2 k3]);','...
        'set(edit1,''string'',[''['',num2str(k1),''
        '',num2str(k2),'' ''',num2str(k3),'' '']]);']];
```

```

button2=uicontrol('parent',h0,...
    'style','pushbutton',...
    'string','关闭',...
    'position',[250 60 70 30],...
    'callback','close');
edit1=uicontrol('parent',h0,...
    'style','edit',...
    'max',2,...
    'min',0,...
    'fontsize',15,...
    'backgroundcolor',[1 1 1],...
    'string','[0 -2 1]',...
    'position',[80 110 220 30]);
text1=uicontrol('parent',h0,...
    'style','text',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'fontsize',15,...
    'string','光线来源坐标',...
    'position',[80 140 220 30]);

```

实例54：添加效果

```

h0=figure('toolbar','none',...
    'position',[200 50 300 350],...
    'name','实例54');
h1=axes('parent',h0,...
    'position',[0.2 0.4 0.6 0.6],...
    'visible','off');
ezsurf('sin(sqrt(x.^2+y.^2))/sqrt(x.^2+y.^2)',[-6*pi,6*pi])
b1=uicontrol('parent',h0,...

```

```

    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'string','设置',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[40 50 50 20],...
    'callback',[...
        'view(0,75);','...',...
        'shading interp;','...',...
        'lightangle(-45,30);','...',...
        'k=findobj(gca,''type'',''surface'');','...',...
        'set(k,''facelighting'',''phong'');','...',...
        'set(k,''ambientstrength'',0.3);','...',...
        'set(k,''diffusestrength'',0.8);','...',...
        'set(k,''specularstrength'',0.9);','...',...
        'set(k,''specularexponent'',25);','...',...
        'set(k,''backfacelighting'',''unlit'')'']);
b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...
    'style','pushbutton',...
    'string','关闭',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[120 50 50 20],...
    'callback','close');

```

实例55：查询日期

```

h0=figure('toolbar','none',...
    'position',[198 56 408 468],...

```

```

    'name','实例55');
h1=axes('parent',h0,...
    'position',[0.15 0.5 0.7 0.5],...
    'visible','off');
huidiao=[...
    'yearnum=str2num(get(edit1,''string''));','...
    'monthnum=str2num(get(edit2,''string''));','...
    'daynum=str2num(get(edit3,''string''));','...
    'monthday=[0 31 28 31 30 31 30 31 31 30 31 30 31];','...
    'dyear=yearnum-2000;','...
    'beishu=fix(dyear/4);','...
    'yushu=rem(yearnum,4);','...
    'if yushu==0','...
    'monthday(3)=29;','...
    'end','...
    'mday=0;','...
    'for i=1:monthnum','...
    'mday=monthday(i)+mday;','...
    'end','...
    'yearday=mday+daynum-1;','...
    'noweek=fix(yearday/7);','...

    'set(edit5,''string'',[''第'',num2str(noweek),''周'']);','...
    'if dyear>0','...
    'if yushu==0','...
    'beishu=beishu-1;','...
    'end','...
    'dday=yearday+365*dyear+beishu+1;','...
    'end','...

```

```

'if dyear<=0,',...
'dday=365*dyear+year day+beishu;',...
'end,',...
'mweek=rem(dday,7)+7;',...
'if mweek==8,',...
'set(edit4,''string'',''Sunday'');;',...
'end,',...
'if mweek==9,',...
'set(edit4,''string'',''Monday'');;',...
'end,',...
'if mweek==10,',...
'set(edit4,''string'',''Tuesday'');;',...
'end,',...
'if mweek==11,',...
'set(edit4,''string'',''Wednesday'');;',...
'end,',...
'if mweek==12,',...
'set(edit4,''string'',''Thursday'');;',...
'end,',...
'if mweek==13,',...
'set(edit4,''string'',''Friday'');;',...
'end,',...
'if mweek==7,',...
'set(edit4,''string'',''Saturday'');;',...
'end,',...
'if mweek==6,',...
'set(edit4,''string'',''Friday'');;',...
'end,',...
'if mweek==5,',...

```

```

        'set(edit4, ''string'', ''Thursday'');, ', ...
    'end, ', ...
    'if mweek==4, ', ...
        'set(edit4, ''string'', ''Wednesday'');, ', ...
    'end, ', ...
    'if mweek==3, ', ...
        'set(edit4, ''string'', ''Tuesday'');, ', ...
    'end, ', ...
    'if mweek==2, ', ...
        'set(edit4, ''string'', ''Monday'');, ', ...
    'end, ', ...
    'if mweek==1, ', ...
        'set(edit4, ''string'', ''Sunday'');, ', ...
    'end'];

edit1=uicontrol('parent',h0,...
    'style','edit',...
    'horizontalalignment','right',...
    'position',[40 300 50 20]);

text1=uicontrol('parent',h0,...
    'style','text',...
    'string','年',...
    'horizontalalignment','left',...
    'position',[90 300 50 20]);

edit2=uicontrol('parent',h0,...
    'style','edit',...
    'horizontalalignment','right',...
    'position',[160 300 50 20]);

text2=uicontrol('parent',h0,...
    'style','text',...

```

```

        'string','月',...
        'horizontalalignment','left',...
        'position',[210 300 50 20]);
edit3=uicontrol('parent',h0,...
    'style','edit',...
    'horizontalalignment','right',...
    'position',[280 300 50 20]);
text3=uicontrol('parent',h0,...
    'style','text',...
    'string','日',...
    'horizontalalignment','left',...
    'position',[330 300 50 20]);
edit4=uicontrol('parent',h0,...
    'style','edit',...
    'horizontalalignment','left',...
    'position',[210 200 120 20]);
text4=uicontrol('parent',h0,...
    'style','text',...
    'string','查找的日期为',...
    'horizontalalignment','right',...
    'position',[110 200 100 20]);
edit5=uicontrol('parent',h0,...
    'style','edit',...
    'horizontalalignment','left',...
    'position',[210 100 120 20]);
text1=uicontrol('parent',h0,...
    'style','text',...
    'string','该日处于',...
    'horizontalalignment','left',...

```

```
        'position',[160 100 50 20]);  
button1=uicontrol('parent',h0,...  
        'style','pushbutton',...  
        'position',[80 40 80 30],...  
        'string','开始',...  
        'callback',huidiao);  
button2=uicontrol('parent',h0,...  
        'style','pushbutton',...  
        'position',[220 40 80 30],...  
        'string','关闭',...  
        'callback','close');
```

为了大学生数学建模，我愿和你成为朋友吧！
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2004-6-1 10:17:34

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实例56：图形效果（1）

```
h0=figure('toolbar','none',...
    'position',[198 56 450 468],...
    'name','实例56');
h1=axes('parent',h0,...
    'position',[0.3 0.45 0.5 0.5],...
    'visible','off');
l1=uimenu(gcf,'label','Draw figure',...
    'tag','l1');
huidiao=[...
    'if get(r1,''value'')==1,',...
    'shading faceted,',...
    'end,',...
    'if get(r2,''value'')==1,',...
    'shading flat,',...
    'end,',...
    'if get(r3,''value'')==1,',...
    'shading interp,',...
    'end,',...
    'k=get(p1,''value'');',...
    'switch k,',...
```

```

        'case 1, ', ...
        'colormap(''cool''), ', ...
        'case 2, ', ...
        'colormap(''spring''), ', ...
        'case 3, ', ...
        'colormap(''summer''), ', ...
        'case 4, ', ...
        'colormap(''autumn''), ', ...
        'case 5, ', ...
        'colormap(''winter''), ', ...
        'end'];

l11=uimenu('parent',l1,...
    'label','Surface',...
    'tag','l11',...
    'callback',[...
        '[x,y]=meshgrid(-8:0.5:8);',...
        'r=sqrt(x.^2+y.^2)+eps;',...
        'z=sin(r)./r;',...
        'surf(x,y,z)',...
        huidiao]);

l12=uimenu('parent',l1,...
    'label','Mesh',...
    'tag','l12',...
    'callback',[...
        'mesh(peaks)',...
        huidiao]);

l13=uimenu('parent',l1,...
    'label','Membrane',...
    'tag','l13',...

```

```

        'callback',[...
            'mesh(membrane)',',...
            huidiao]);
f1=uicontrol('parent',h0,...
    'units','points',...
    'listboxtop',0,...
    'position',[12 6 100 101],...
    'style','frame',...
    'tag','f1');
r1=uicontrol('parent',h0,...
    'units','points',...
    'backgroundcolor',[0.753 0.753 0.753],...
    'listboxtop',0,...
    'position',[19.5 58.5 72.75 16.5],...
    'string','shading faceted',...
    'style','radiobutton',...
    'tag','r1',...
    'value',1,...
    'callback',[...
        'shading faceted,',',...
        'set(r1,''value'',1);',',...
        'set(r2,''value'',0);',',...
        'set(r3,''value'',0);']);
r2=uicontrol('parent',h0,...
    'units','points',...
    'backgroundcolor',[0.753 0.753 0.753],...
    'listboxtop',0,...
    'position',[19.5 35.25 78.75 18.75],...
    'string','shading flat',...

```

```

        'style','radiobutton',...
        'tag','r2',...
        'value',0,...
        'callback',[...
            'shading flat',',...
            'set(r2,''value'',1);',',...
            'set(r1,''value'',0);',',...
            'set(r3,''value'',0);']];
r3=uicontrol('parent',h0,...
    'units','points',...
    'backgroundcolor',[0.753 0.753 0.753],...
    'listboxtop',0,...
    'position',[19.5 12.75 71.25 18.75],...
    'string','shading interp',...
    'style','radiobutton',...
    'tag','r3',...
    'value',0,...
    'callback',[...
        'shading interp',',...
        'set(r3,''value'',1);',',...
        'set(r1,''value'',0);',',...
        'set(r2,''value'',0);']];
t1=uicontrol('parent',h0,...
    'units','points',...
    'backgroundcolor',[0.753 0.753 0.753],...
    'fontsize',12,...
    'listboxtop',0,...
    'position',[14.25 75.75 90.75 22.5],...
    'string','平滑处理',...

```

```

        'style','text',...
        'tag','t1');
t2=uicontrol('parent',h0,...
    'units','points',...
    'backgroundcolor',[0.753 0.753 0.753],...
    'fontsize',12,...
    'listboxtop',0,...
    'position',[117 69 72.75 17.5],...
    'string','设置色调',...
    'style','text',...
    'tag','t2');
p1=uicontrol('parent',h0,...
    'units','points',...
    'backgroundcolor',[0.753 0.753 0.753],...
    'listboxtop',0,...
    'position',[116.25 39 72.75 20.25],...
    'string','Cool|Spring|Summer|Autumn|Winter',...
    'style','popupmenu',...
    'tag','p1',...
    'value',1,...
    'callback',[...
        'k=get(p1,''value'');','...
        'switch k,','...
        'case 1,','...
        'colormap(''cool''),'','...
        'case 2,','...
        'colormap(''spring''),'','...
        'case 3,','...
        'colormap(''summer''),'','...

```

```

        'case 4,',...
        'colormap(''autumn''),',...
        'case 5,',...
        'colormap(''winter''),',...
        'end'];
b1=uicontrol('parent',h0,...
    'units','points',...
    'backgroundcolor',[0.753 0.753 0.753],...
    'listboxtop',0,...
    'position',[12 243 72.75 30.75],...
    'string','关闭',...
    'tag','b1',...
    'callback','close');
b2=uicontrol('parent',h0,...
    'units','points',...
    'backgroundcolor',[0.753 0.753 0.753],...
    'listboxtop',0,...
    'position',[216.75 67.5 83.25 18.75],...
    'string','Colorbar',...
    'tag','b2',...
    'callback','colorbar');

```

实例57：图形效果

```

h0=figure('toolbar','none',...
    'position',[168 94.5 315 289.5],...
    'name','实例57');
h1=axes('parent',h0,...
    'position',[0.4 0.4 0.5 0.5],...
    'visible','off');

```

```

f1=uicontrol('parent',h0,...
    'style','frame',...
    'position',[15 10 80 70],...
    'string','dull',...
    'units','points',...
    'backgroundcolor',[0.753 0.753 0.753],...
    'listboxtop',0,...
    'tag','r1',...
    'value',1,...
    'callback',[...
        'set(r1,''value'',1);','...
        'set(r2,''value'',0);','...
        'set(r3,''value'',0);','...
        'material dull']);
r1=uicontrol('parent',h0,...
    'style','radiobutton',...
    'position',[19.5 58.5 72.75 16.5],...
    'string','dull',...
    'units','points',...
    'backgroundcolor',[0.753 0.753 0.753],...
    'listboxtop',0,...
    'tag','r1',...
    'value',1,...
    'callback',[...
        'set(r1,''value'',1);','...
        'set(r2,''value'',0);','...
        'set(r3,''value'',0);','...
        'material dull']);
r2=uicontrol('parent',h0,...

```

```

        'style','radiobutton',...
        'position',[19.5 35.25 72.75 16.5],...
        'string','metal',...
        'units','points',...
        'backgroundcolor',[0.753 0.753 0.753],...
        'listboxtop',0,...
        'tag','r2',...
        'value',0,...
        'callback',[...
            'set(r2,''value'',1);','...
            'set(r1,''value'',0);','...
            'set(r3,''value'',0);','...
            'material metal'];
r3=uicontrol('parent',h0,...
    'style','radiobutton',...
    'position',[19.5 12.75 72.75 16.5],...
    'string','shiny',...
    'units','points',...
    'backgroundcolor',[0.753 0.753 0.753],...
    'listboxtop',0,...
    'tag','r3',...
    'value',0,...
    'callback',[...
        'set(r3,''value'',1);','...
        'set(r1,''value'',0);','...
        'set(r2,''value'',0);','...
        'material shiny']);
u1=uimenu('parent',h0,...
    'label','绘图',...

```

```

'backgroundcolor',[0.753 0.753 0.753],...
'tag','u1',...
'callback',[...
    '[x,y]=meshgrid(-8:0.5:8);','...
    'r=sqrt(x.^2+y.^2)+eps;','...
    'z=sin(r)./r;','...
    'surf(x,y,z)','...
    'shading interp'];
b1=uicontrol('parent',h0,...
    'style','pushbutton',...
    'position',[19.5 150 60 20],...
    'string','light',...
    'units','points',...
    'backgroundcolor',[0.753 0.753 0.753],...
    'listboxtop',0,...
    'tag','b1',...
    'callback','camlight headlight');
b2=uicontrol('parent',h0,...
    'style','pushbutton',...
    'position',[19.5 100 60 20],...
    'string','关闭',...
    'units','points',...
    'backgroundcolor',[0.753 0.753 0.753],...
    'listboxtop',0,...
    'tag','b2',...
    'callback','close');

```

实例58：可控制小球运动速度的用户界面

```
h0=figure('toolbar','none',...
```

```

        'position',[198 56 350 468],...
        'name','实例58');
h1=axes('parent',h0,...
        'position',[0.25 0.45 0.5 0.5],...
        'visible','off');
t=0:0.1:4*pi;
x=sin(t);
y=cos(t);
plot(x,y)
axis equal
axis off
h=line('color',[1 0 0],...
        'linestyle','.',...
        'xdata',0,...
        'ydata',1,...
        'markersize',20,...
        'erasemode','xor');
n=length(t);
i=1;
speed=0.01;
k=0;
blhuidiao=[...
        'k=0;;',...
        'while 1,',...
        'set(h,''xdata'',x(i),''ydata'',y(i));,',...
        'drawnow,',...
        'pause(speed),',...
        'i=i+1;;',...
        'if i>n,',...

```

```

        'i=1;',',...
        'end,',',...
        'if k==1,',',...
        'break,',',...
        'end,',',...
        'end'];

b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'string','开始',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[30 80 50 20],...
    'callback',b1huidiao);

b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...
    'style','pushbutton',...
    'string','停止',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[100 80 50 20],...
    'callback','k=1;');

b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'style','pushbutton',...
    'string','关闭',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[170 80 50 20],...

```

```

        'callback',[...
            'k=1;;','...
            'close']);
s1=uicontrol('parent',h0,...
    'units','points',...
    'tag','s1',...
    'style','slider',...
    'value',50*speed,...
    'max',1,...
    'min',0,...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[30 115 190 20],...
    'callback',[...
        'm=get(s1,'value');','...
        'speed=m/50;']);
t1=uicontrol('parent',h0,...
    'units','points',...
    'tag','t1',...
    'style','text',...
    'fontsize',15,...
    'string','小球运动速度',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[30 135 190 20]);

```

实例59：设置坐标轴纵横轴比

```

h0=figure('name','实例59');
h1=axes('parent',h0,...
    'position',[0.3 0.45 0.5 0.5],...
    'visible','off');

```

```

ul=uimenu('parent',h0,...
    'label','绘图',...
    'backgroundcolor',[0.753 0.753 0.753],...
    'tag','ul',...
    'callback',[...
        '[x,y]=meshgrid(-8:0.5:8);','...',...
        'r=sqrt(x.^2+y.^2)+eps;','...',...
        'z=sin(r)./r;','...',...
        'mesh(x,y,z)','...',...
        'shading interp','...',...
        'axis normal']);
fl=uicontrol('parent',h0,...
    'units','points',...
    'listboxtop',0,...
    'position',[12 6 100 150],...
    'style','frame',...
    'tag','fl');
tl=uicontrol('parent',h0,...
    'units','points',...
    'backgroundcolor',[0.753 0.753 0.753],...
    'listboxtop',0,...
    'position',[19.5 130 72.75 16.5],...
    'string','坐标纵横比',...
    'style','text',...
    'tag','tl');
rl=uicontrol('parent',h0,...
    'units','points',...
    'backgroundcolor',[0.753 0.753 0.753],...
    'listboxtop',0,...

```

```

    'position',[19.5 110 72.75 16.5],...
    'string','axis equal',...
    'style','radiobutton',...
    'tag','r1',...
    'value',1,...
    'callback',[...
        'set(r1,''value'',1);','...
        'set(r2,''value'',0);','...
        'set(r3,''value'',0);','...
        'set(r4,''value'',0);','...
        'set(r5,''value'',0);','...
        'axis equal'];
r2=uicontrol('parent',h0,...
    'units','points',...
    'backgroundcolor',[0.753 0.753 0.753],...
    'listboxtop',0,...
    'position',[19.5 85 72.75 16.5],...
    'string','axis square',...
    'style','radiobutton',...
    'tag','r2',...
    'value',0,...
    'callback',[...
        'set(r2,''value'',1);','...
        'set(r1,''value'',0);','...
        'set(r3,''value'',0);','...
        'set(r4,''value'',0);','...
        'set(r5,''value'',0);','...
        'axis square']);
r3=uicontrol('parent',h0,...

```

```

    'units','points',...
    'backgroundcolor',[0.753 0.753 0.753],...
    'listboxtop',0,...
    'position',[19.5 60 72.75 16.5],...
    'string','axis image',...
    'style','radiobutton',...
    'tag','r3',...
    'value',0,...
    'callback',[...
        'set(r3,''value'',1);','...
        'set(r2,''value'',0);','...
        'set(r1,''value'',0);','...
        'set(r4,''value'',0);','...
        'set(r5,''value'',0);','...
        'axis image'];
r4=uicontrol('parent',h0,...
    'units','points',...
    'backgroundcolor',[0.753 0.753 0.753],...
    'listboxtop',0,...
    'position',[19.5 35 72.75 16.5],...
    'string','axie vis3d',...
    'style','radiobutton',...
    'tag','r4',...
    'value',0,...
    'callback',[...
        'set(r4,''value'',1);','...
        'set(r2,''value'',0);','...
        'set(r3,''value'',0);','...
        'set(r1,''value'',0);','...

```

```

        'set(r5, ''value'', 0);, ', ...
        'axis vis3d'];
r5=uicontrol('parent', h0, ...
    'units', 'points', ...
    'backgroundcolor', [0.753 0.753 0.753], ...
    'listboxtop', 0, ...
    'position', [19.5 10 72.75 16.5], ...
    'string', 'axis auto', ...
    'style', 'radiobutton', ...
    'tag', 'r5', ...
    'value', 0, ...
    'callback', [...
        'set(r5, ''value'', 1);, ', ...
        'set(r2, ''value'', 0);, ', ...
        'set(r3, ''value'', 0);, ', ...
        'set(r4, ''value'', 0);, ', ...
        'set(r1, ''value'', 0);, ', ...
        'axis auto']);
b1=uicontrol('parent', h0, ...
    'units', 'points', ...
    'backgroundcolor', [0.753 0.753 0.753], ...
    'listboxtop', 0, ...
    'position', [12 243 72.75 30.75], ...
    'string', '关闭', ...
    'tag', 'b1', ...
    'callback', 'close');
b2=uicontrol('parent', h0, ...
    'units', 'points', ...
    'backgroundcolor', [0.753 0.753 0.753], ...

```

```

'listboxtop',0,...
'position',[216.75 67.5 83.25 18.75],...
'string','Colorbar',...
'tag','b2',...
'callback','colorbar');

```

实例60：动态文本显示

```

h0=figure('toolbar','none',...
    'position',[198 56 350 468],...
    'name','实例60');
h1=axes('parent',h0,...
    'position',[0.25 0.45 0.5 0.5],...
    'visible','off');
str1='当前阻尼比=';
z=0.52;
t=0:0.1:10;
y=step(1,[1 2*z 1],t);
hline=plot(t,y);
grid on
r1=uicontrol('parent',h0,...
    'units','points',...
    'tag','r1',...
    'style','radio',...
    'string','grid on',...
    'position',[30 120 60 20],...
    'backgroundcolor',[0.75 0.75 0.75],...
    'value',1,...
    'callback',[...
        'grid on','...

```

```

        'set(r1,'value',1);,',...
        'set(r2,'value',0)');
r2=uicontrol('parent',h0,...
    'units','points',...
    'tag','r2',...
    'style','radio',...
    'string','grid on',...
    'position',[30 95 60 20],...
    'backgroundcolor',[0.75 0.75 0.75],...
    'value',0,...
    'callback',[...
        'grid off;',...
        'set(r2,'value',1);,',...
        'set(r1,'value',0)']);
s1=uicontrol('parent',h0,...
    'units','points',...
    'tag','s1',...
    'style','slider',...
    'value',z,...
    'position',[100 95 150 20],...
    'backgroundcolor',[0.75 0.75 0.75],...
    'max',1,...
    'min',0,...
    'callback',[...
        'z=get(s1,'value');,',...
        'set(t1,'string',[str1,sprintf('%1.4g\\',z)]);,',...
        'delete(hline);,',...
        'y=step(1,[1 2*z 1],t);,',...
        'hline=plot(t,y);,',...

```

```

        'if get(r1,'value')==1,',...
        'grid on,',...
        'end,',...
        'if get(r2,'value')==1,',...
        'grid off,',...
        'end'];
t1=uicontrol('parent',h0,...
    'units','points',...
    'tag','t1',...
    'style','text',...
    'string',[str1,sprintf('%1.4g\\',z)],...
    'position',[100 120 150 20],...
    'backgroundcolor',[0.75 0.75 0.75]);
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'string','关闭',...
    'position',[80 50 80 30],...
    'backgroundcolor',[0.75 0.75 0.75],...
    'fontsize',15,...
    'callback','close');

```

实例61：浏览流体数据

```

h0=figure('toolbar','none',...
    'position',[198 56 450 468],...
    'name','实例61');
h1=axes('parent',h0,...
    'position',[0.3 0.45 0.5 0.5],...

```

```

        'visible','off');

[x,y,z,v]=flow;

xmin=min(x(:));

ymin=min(y(:));

zmin=min(z(:));

xmax=max(x(:));

ymax=max(y(:));

zmax=max(z(:));

u1=uimenu('parent',h0,...

    'tag','u1',...

    'label','绘图',...

    'background',[0.75 0.75 0.75]);

u11=uimenu('parent',u1,...

    'tag','u11',...

    'label','绕X轴旋转-45度',...

    'background',[0.75 0.75 0.75],...

    'callback',[...

        'cla','...

        'hslice=surf(linspace(xmin,xmax,100),linspace(ymin,ymax,100),zeros(100));','...

        'rotate(hslice,[-1,0,0],-45),'...

        'xd=get(hslice,''xdata'');','...

        'yd=get(hslice,''ydata'');','...

        'zd=get(hslice,''zdata'');']]);

u12=uimenu('parent',u1,...

    'tag','u12',...

    'label','绕Y轴旋转-45度',...

    'background',[0.75 0.75 0.75],...

    'callback',[...

```

```
'cla','...
```

```
'hslice=surf(linspace(xmin,xmax,100),linspace(ymin,ymax,100),zeros(100));','...
```

```
'rotate(hslice,[0,-1,0],-45),'...
```

```
'xd=get(hslice,'xdata');','...
```

```
'yd=get(hslice,'ydata');','...
```

```
'zd=get(hslice,'zdata');']');
```

```
b1=uicontrol('parent',h0,...
```

```
'style','pushbutton',...
```

```
'units','points',...
```

```
'tag','b1',...
```

```
'backgroundcolor',[0.75 0.75 0.75],...
```

```
'string','设置颜色',...
```

```
'position',[50 120 60 25],...
```

```
'callback',[...
```

```
'delete(hslice),'...
```

```
'h=slice(x,y,z,v,xd,yd,zd);','...
```

```
'set(h,'facecolor','interp','edgecolor','none','diffusestrength',0.8)']');
```

```
b2=uicontrol('parent',h0,...
```

```
'style','pushbutton',...
```

```
'units','points',...
```

```
'tag','b2',...
```

```
'backgroundcolor',[0.75 0.75 0.75],...
```

```
'string','添加切片1',...
```

```
'position',[240 120 60 25],...
```

```
'callback',[...
```

```
'hold on','...
```

```

        'hx=slice(x,y,z,v,xmax,[],[]);','...',...

'set(hx,''facecolor'',''interp'',''edgecolor'',''none'')'[]);
b3=uicontrol('parent',h0,...
    'style','pushbutton',...
    'units','points',...
    'tag','b3',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'string','添加切片2',...
    'position',[240 70 60 20],...
    'callback',[...
        'hold on','...',...
        'hy=slice(x,y,z,v,ymax,[],[]);','...',...

'set(hy,''facecolor'',''interp'',''edgecolor'',''none'')'[]);
b4=uicontrol('parent',h0,...
    'style','pushbutton',...
    'units','points',...
    'tag','b4',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'string','添加切片3',...
    'position',[240 20 60 20],...
    'callback',[...
        'hold on','...',...
        'hz=slice(x,y,z,v,zmax-1,[],[]);','...',...

'set(hz,''facecolor'',''interp'',''edgecolor'',''none'')'[]);
b5=uicontrol('parent',h0,...
    'style','pushbutton',...

```

```

    'units','points',...
    'tag','b5',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'string','灯光效果',...
    'position',[50 70 60 20],...
    'callback',[...
        'daspect([1 1 1]),',...
        'axis tight,',...
        'box on,',...
        'view(-38.5,16),',...
        'camzoom(1.4),',...
        'camproj perspective,',...
        'lightangle(-45,45)']);
b6=uicontrol('parent',h0,...
    'style','pushbutton',...
    'units','points',...
    'tag','b6',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'string','colorbar',...
    'position',[50 20 60 20],...
    'callback','colorbar(''horiz'')');
b7=uicontrol('parent',h0,...
    'style','pushbutton',...
    'units','points',...
    'tag','b7',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'string','关闭',...
    'fontsize',14,...
    'position',[145 75 60 20],...

```

```
'callback','close');
```

实例61：浏览流体数据

```
h0=figure('toolbar','none',...
    'position',[198 56 450 468],...
    'name','实例61');
h1=axes('parent',h0,...
    'position',[0.3 0.45 0.5 0.5],...
    'visible','off');
[x,y,z,v]=flow;
xmin=min(x(:));
ymin=min(y(:));
zmin=min(z(:));
xmax=max(x(:));
ymax=max(y(:));
zmax=max(z(:));
u1=uimenu('parent',h0,...
    'tag','u1',...
    'label','绘图',...
    'background',[0.75 0.75 0.75]);
u11=uimenu('parent',u1,...
    'tag','u11',...
    'label','绕X轴旋转-45度',...
    'background',[0.75 0.75 0.75],...
    'callback',[...
        'cla','...

    'hslice=surf(linspace(xmin,xmax,100),linspace(ymin,ymax,100),zeros(100));','...
    'rotate(hslice,[-1,0,0],-45),'...

```

```

        'xd=get(hslice, 'xdata');, ', ...
        'yd=get(hslice, 'ydata');, ', ...
        'zd=get(hslice, 'zdata');']];
u12=uimenu('parent', u1, ...
    'tag', 'u12', ...
    'label', '绕Y轴旋转-45度', ...
    'background', [0.75 0.75 0.75], ...
    'callback', [...
        'cla', ', ...

'hslice=surf(linspace(xmin, xmax, 100), linspace(ymin, ymax, 100), zeros(100));, ', ...
    'rotate(hslice, [0, -1, 0], -45), ', ...
    'xd=get(hslice, 'xdata');, ', ...
    'yd=get(hslice, 'ydata');, ', ...
    'zd=get(hslice, 'zdata');']];
b1=uicontrol('parent', h0, ...
    'style', 'pushbutton', ...
    'units', 'points', ...
    'tag', 'b1', ...
    'backgroundcolor', [0.75 0.75 0.75], ...
    'string', '设置颜色', ...
    'position', [50 120 60 25], ...
    'callback', [...
        'delete(hslice), ', ...
        'h=slice(x, y, z, v, xd, yd, zd);, ', ...

'set(h, 'facecolor'', 'interp'', 'edgecolor'', 'none'', 'diffusestrength'', 0.8)'];
b2=uicontrol('parent', h0, ...

```

```

        'style','pushbutton',...
        'units','points',...
        'tag','b2',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'string','添加切片1',...
        'position',[240 120 60 25],...
        'callback',[...
            'hold on,',...
            'hx=slice(x,y,z,v,xmax, [], []);,',...

'set(hx,''facecolor'',''interp'',''edgecolor'',''none'')']);
b3=uicontrol('parent',h0,...
    'style','pushbutton',...
    'units','points',...
    'tag','b3',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'string','添加切片2',...
    'position',[240 70 60 20],...
    'callback',[...
        'hold on,',...
        'hy=slice(x,y,z,v,ymax, [], []);,',...

'set(hy,''facecolor'',''interp'',''edgecolor'',''none'')']);
b4=uicontrol('parent',h0,...
    'style','pushbutton',...
    'units','points',...
    'tag','b4',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'string','添加切片3',...

```

```

    'position',[240 20 60 20],...
    'callback',[...
        'hold on,',...
        'hz=slice(x,y,z,v,zmax-1,[],[]);',...

'set(hz,'facecolor','interp','edgecolor','none')');
b5=uicontrol('parent',h0,...
    'style','pushbutton',...
    'units','points',...
    'tag','b5',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'string','灯光效果',...
    'position',[50 70 60 20],...
    'callback',[...
        'daspect([1 1 1]),',...
        'axis tight,',...
        'box on,',...
        'view(-38.5,16),',...
        'camzoom(1.4),',...
        'camproj perspective,',...
        'lightangle(-45,45)']);
b6=uicontrol('parent',h0,...
    'style','pushbutton',...
    'units','points',...
    'tag','b6',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'string','colorbar',...
    'position',[50 20 60 20],...
    'callback','colorbar(''horiz'')');

```

```
b7=uicontrol('parent',h0,...  
    'style','pushbutton',...  
    'units','points',...  
    'tag','b7',...  
    'backgroundcolor',[0.75 0.75 0.75],...  
    'string','关闭',...  
    'fontsize',14,...  
    'position',[145 75 60 20],...  
    'callback','close');
```

实例62：简单计算器

```
h0=figure('toolbar','none',...
    'position',[200 60 220 240],...
    'name','实例62');
b0=uicontrol('parent',h0,...
    'units','points',...
    'tag','b0',...
    'style','pushbutton',...
    'string','0',...
    'fontsize',12,...
    'position',[5 15 35 20],...
    'backgroundcolor',[0.75 0.75 0.75],...
    'callback',[...
        'if k=='0'&i==0,',...
        'errordlg(''数字首位不能为0''),',...
        'else,',...
        'k=[k,''0''];',...
        'if k=='00'',',...
        'k='''0'';',',...
        'end,',...
        'set(e1,''string'',k);',...
        'end']);
b15=uicontrol('parent',h0,...
    'units','points',...
    'tag','b15',...
    'style','pushbutton',...
    'string','=',...
    'fontsize',12,...
    'position',[45 15 35 20],...
```

```

'backgroundcolor',[0.75 0.75 0.75],...
'callback',[...
    'k=get(e1,''string'');','...',...
    'if g=='+'','',...
    'm=m+str2num(k);','...',...
    'end','',...
    'if g=='-'','',...
    'm=m-str2num(k);','...',...
    'end','',...
    'if g=='*','',...
    'm=m*str2num(k);','...',...
    'end','',...
    'if g=='/'','',...
    'if k=='0','',...
    'errordlg(''除数不能为0'');','...',...
    'end','',...
    'm=m/str2num(k);','...',...
    'end','',...
    'set(e1,''string'',num2str(m));','...',...
    'i=0;']];

b11=icontrol('parent',h0,...
    'units','points',...
    'tag','b11',...
    'style','pushbutton',...
    'string','+',...
    'fontsize',12,...
    'position',[85 15 35 20],...
    'backgroundcolor',[0.75 0.75 0.75],...
    'callback',[...

```

```

        'i=i+1;',',...
        'if i==1,',',...
        'm=str2num(k);',',...
        'set(e1,''string'', ''0'');',',...
        'end,',',...
        'if i>1,',',...
        'k=get(e1,''string'');',',...
        'if g=='+'',',',...
        'm=m+str2num(k);',',...
        'end,',',...
        'if g=='-',',',...
        'm=m-str2num(k);',',...
        'end,',',...
        'if g=='*',',',...
        'm=m*str2num(k);',',...
        'end,',',...
        'if g=='/',',',...
        'if k=='0'',',',...
        'errorlg('除数不能为0'');',',...
        'end,',',...
        'm=m/str2num(k);',',...
        'end,',',...
        'set(e1,''string'', num2str(m));',',...
        'i=1;',',...
        'end,',',...
        'k=''0'';',',...
        'g=='+'';']);

b16=uicontrol('parent',h0,...

    'units','points',...

```

```

        'tag','b16',...
        'style','pushbutton',...
        'string','关闭',...
        'fontsize',12,...
        'position',[125 15 35 20],...
        'backgroundcolor',[0.75 0.75 0.75],...
        'callback','close');
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'string','1',...
    'fontsize',12,...
    'position',[5 45 35 20],...
    'backgroundcolor',[0.75 0.75 0.75],...
    'callback',[...
        'if k=='0'',',...
        'k='''';',',...
        'end,',',...
        'k=[k, ''1'''];',',...
        'set(e1, ''string'', k);']]);
b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...
    'style','pushbutton',...
    'string','2',...
    'fontsize',12,...
    'position',[45 45 35 20],...
    'backgroundcolor',[0.75 0.75 0.75],...

```

```

        'callback',[...
            'if k=='0'',',...
            'k='''';',',...
            'end,',',...
            'k=[k,'2''];',',...
            'set(e1,'string'',k);']]);
b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'style','pushbutton',...
    'string','3',...
    'fontsize',12,...
    'position',[85 45 35 20],...
    'backgroundcolor',[0.75 0.75 0.75],...
    'callback',[...
        'if k=='0'',',...
        'k='''';',',...
        'end,',',...
        'k=[k,'3''];',',...
        'set(e1,'string'',k);']]);
b14=uicontrol('parent',h0,...
    'units','points',...
    'tag','b14',...
    'style','pushbutton',...
    'string','/',...
    'fontsize',12,...
    'position',[125 45 35 20],...
    'backgroundcolor',[0.75 0.75 0.75],...
    'callback',[...

```

```

'i=i+1;;',...
'if i==1,',...
'm=str2num(k);',...
'set(e1,'string','0');',...
'end,',...
'if i>1,',...
'k=get(e1,'string');',...
'if k=='0'',',...
'errorlg('除数不能为0');',...
'end,',...
'if ~(k=='0''),',...
'if g=='+',',...
'm=m+str2num(k);',...
'end,',...
'if g=='-',',...
'm=m-str2num(k);',...
'end,',...
'if g=='*',',...
'm=m*str2num(k);',...
'end,',...
'if g=='/',',...
'm=m/str2num(k);',...
'end,',...
'set(e1,'string',num2str(m));',...
'end,',...
'i=1;;',...
'end,',...
'k=='0'';',',...
'g=='/'';']]);

```

```

b4=uicontrol('parent',h0,...
    'units','points',...
    'tag','b4',...
    'style','pushbutton',...
    'string','4',...
    'fontsize',12,...
    'position',[5 75 35 20],...
    'backgroundcolor',[0.75 0.75 0.75],...
    'callback',[...
        'if k=='0'',',...
        'k=''';','...',...
        'end,',',...
        'k=[k, ''4''];','...',...
        'set(e1, ''string'', k);'']);
b5=uicontrol('parent',h0,...
    'units','points',...
    'tag','b5',...
    'style','pushbutton',...
    'string','5',...
    'fontsize',12,...
    'position',[45 75 35 20],...
    'backgroundcolor',[0.75 0.75 0.75],...
    'callback',[...
        'if k=='0'',',...
        'k=''';','...',...
        'end,',',...
        'k=[k, ''5''];','...',...
        'set(e1, ''string'', k);'']);
b6=uicontrol('parent',h0,...

```

```

    'units','points',...
    'tag','b6',...
    'style','pushbutton',...
    'string','6',...
    'fontsize',12,...
    'position',[85 75 35 20],...
    'backgroundcolor',[0.75 0.75 0.75],...
    'callback',[...
        'if k=='0'',',...
        'k=''';','...',...
        'end,',',...
        'k=[k, ''6''];','...',...
        'set(e1, ''string'', k);']]);
b13=uicontrol('parent',h0,...
    'units','points',...
    'tag','b13',...
    'style','pushbutton',...
    'string','*',...
    'fontsize',12,...
    'position',[125 75 35 20],...
    'backgroundcolor',[0.75 0.75 0.75],...
    'callback',[...
        'i=i+1;',',',...
        'if i==1,',',...
        'm=str2num(k);','...',...
        'set(e1, ''string'', ''0'');','...',...
        'end,',',',...
        'if i>1,',',...
        'k=get(e1, ''string'');','...',...

```

```

        'if g=='+'',',...
        'm=m+str2num(k);',...
        'end,',...
        'if g=='-'',',...
        'm=m-str2num(k);',...
        'end,',...
        'if g=='*''',',...
        'm=m*str2num(k);',...
        'end,',...
        'if g=='/'',',...
        'if k=='0''',',...
        'errordlg('除数不能为0'');',...
        'end,',...
        'm=m/str2num(k);',...
        'end,',...
        'set(e1,'string'',num2str(m));',...
        'i=1;',...
        'end,',...
        'k=''0'';',...
        'g=''*'';']);
b7=uicontrol('parent',h0,...
    'units','points',...
    'tag','b7',...
    'style','pushbutton',...
    'string','7',...
    'fontsize',12,...
    'position',[5 105 35 20],...
    'backgroundcolor',[0.75 0.75 0.75],...
    'callback',[...

```

```

        'if k=='0'',',...
        'k='''';',',...
        'end,',',...
        'k=[k, ''7''];',',...
        'set(e1, ''string'', k);');
b8=uicontrol('parent',h0,...
    'units','points',...
    'tag','b8',...
    'style','pushbutton',...
    'string','8',...
    'fontsize',12,...
    'position',[45 105 35 20],...
    'backgroundcolor',[0.75 0.75 0.75],...
    'callback',[...
        'if k=='0'',',...
        'k='''';',',...
        'end,',',...
        'k=[k, ''8''];',',...
        'set(e1, ''string'', k);']);
b9=uicontrol('parent',h0,...
    'units','points',...
    'tag','b9',...
    'style','pushbutton',...
    'string','9',...
    'fontsize',12,...
    'position',[85 105 35 20],...
    'backgroundcolor',[0.75 0.75 0.75],...
    'callback',[...
        'if k=='0'',',...

```

```

        'k='''';',',...
    'end,',',...
    'k=[k, ''9'''];',',...
    'set(e1, ''string'', k);');
b12=uicontrol('parent', h0,...
    'units', 'points',...
    'tag', 'b12',...
    'style', 'pushbutton',...
    'string', '- ',...
    'fontsize', 12,...
    'position', [125 105 35 20],...
    'backgroundcolor', [0.75 0.75 0.75],...
    'callback', [...
        'i=i+1;',',',...
        'if i==1,',',...
        'm=str2num(k);',',...
        'set(e1, ''string'', ''0'');',',',...
        'end,',',',...
        'if i>1,',',...
        'k=get(e1, ''string'');',',',...
        'if g==' '+'',',',...
        'm=m+str2num(k);',',',...
        'end,',',',...
        'if g==' -'',',',...
        'm=m-str2num(k);',',',...
        'end,',',',...
        'if g==' *'',',',...
        'm=m*str2num(k);',',',...
        'end,',',',...

```

```

        'if g=='/'',',...
        'if k=='0'',',...
        'errorlg('除数不能为0');',...
        'end,',...
        'm=m/str2num(k);',...
        'end,',...
        'set(e1,'string',num2str(m));',...
        'i=1;',',...
        'end,',...
        'k=='0'',',',...
        'g=''-'';']]);
e1=uicontrol('parent',h0,...
    'units','points',...
    'tag','e1',...
    'style','edit',...
    'horizontalalignment','right',...
    'fontsize',12,...
    'string','0',...
    'position',[45 135 115 20],...
    'backgroundcolor',[1 1 1]);
k=get(e1,'string');
i=0;
m=0;

```

实例63：字母统计

```

h0=figure('toolbar','none',...
    'position',[200 150 350 200],...
    'name','实例63');
choose=1;

```

```

e1=uicontrol('parent',h0,...
    'units','points',...
    'tag','e1',...
    'style','edit',...
    'backgroundcolor',[1 1 1],...
    'min',0,...
    'max',2,...
    'fontsize',12,...
    'horizontalalignment','left',...
    'position',[20 20 120 100]);
t1=uicontrol('parent',h0,...
    'units','points',...
    'tag','t1',...
    'style','text',...
    'string','请输入字母（大小写皆可）：',...
    'fontsize',10,...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[20 125 120 15]);
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'string','开始统计',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[180 100 60 20],...
    'callback',[...
        's=get(e1,''string'');','...',...
        'n=length(s);','...',...
        'jb=0;','...',...

```

```

'jl=0;;',...
'for i=1:n;',...
'if (abs(s(i))>64)&(abs(s(i))<91),',...
'jb=jb+1;',...
'end,',...
'if (abs(s(i))>96)&(abs(s(i))<123),',...
'jl=jl+1;',...
'end,',...
'end,',...
'j=jb+jl;',...
'if choose==1,',...

```

```

'msgbox(['共有字母',num2str(j),'个! ','其中大写字
母',num2str(jb),'个! '],''统计结果''),',...
'end,',...
'if choose==2,',...

```

```

'msgbox(['共有字母',num2str(j),'个! ','其中小写字
母',num2str(jl),'个! '],''统计结果'');',...
'end'];

```

```

u1=uimenu('parent',h0,...
'label','字母分类',...
'backgroundcolor',[0.75 0.75 0.75],...
'tag','u1');
u11=uimenu('parent',u1,...
'label','大写字母',...
'backgroundcolor',[0.75 0.75 0.75],...
'tag','u11',...
'checked','on',...

```

```

        'callback',[...
            'set(u11,''checked'',''on'');','...',
            'set(u12,''checked'',''off'');','...',
            'choose=1;']);
u12=uimenu('parent',u1,...
    'label','小写字母',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'tag','u12',...
    'callback',[...
        'set(u12,''checked'',''on'');','...',
        'set(u11,''checked'',''off'');','...',
        'choose=2;']);
b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...
    'style','pushbutton',...
    'string','清除',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[180 60 60 20],...
    'callback','set(e1,''string'',''')');
b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'style','pushbutton',...
    'string','关闭',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[180 20 60 20],...
    'callback','close');

```

实例64：图形的几何操作

```
h0=figure('toolbar','none',...
    'position',[200 150 300 150],...
    'name','实例64');
now=fix(clock);
e1=uicontrol('parent',h0,...
    'units','points',...
    'tag','e1',...
    'style','edit',...
    'backgroundcolor',[1 1 1],...
    'horizontal','right',...
    'fontsize',12,...
    'position',[20 80 30 20],...
    'string',num2str(now(1)));
t1=uicontrol('parent',h0,...
    'units','points',...
    'tag','t1',...
    'style','text',...
    'string','年',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'fontsize',14,...
    'position',[55 80 20 20]);
e2=uicontrol('parent',h0,...
    'units','points',...
    'tag','e2',...
    'style','edit',...
    'backgroundcolor',[1 1 1],...
    'horizontal','right',...
    'fontsize',12,...
```

```

        'position',[80 80 30 20],...
        'string',num2str(now(2)));
t2=uicontrol('parent',h0,...
    'units','points',...
    'tag','t2',...
    'style','text',...
    'string','月',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'fontsize',14,...
    'position',[115 80 20 20]);
e3=uicontrol('parent',h0,...
    'units','points',...
    'tag','e3',...
    'style','edit',...
    'horizontal','right',...
    'backgroundcolor',[1 1 1],...
    'fontsize',12,...
    'position',[140 80 30 20],...
    'string',num2str(now(3)));
t3=uicontrol('parent',h0,...
    'units','points',...
    'tag','t3',...
    'style','text',...
    'string','日',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'fontsize',14,...
    'position',[175 80 20 20]);
e4=uicontrol('parent',h0,...
    'units','points',...

```

```

    'tag','e4',...
    'style','edit',...
    'backgroundcolor',[1 1 1],...
    'horizontal','right',...
    'fontsize',12,...
    'position',[20 30 100 20],...

    'string',[num2str(now(4)),': ',num2str(now(5)),': ',num2str(now(6))]);
    b1=uicontrol('parent',h0,...
        'units','points',...
        'tag','b1',...
        'style','pushbutton',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'string','关闭',...
        'fontsize',12,...
        'position',[150 30 50 20],...
        'callback',[...
            'k=1;','...',...
            'close']);
    k=0;
    while find(get(0,'children'))==h0
        now1=fix(clock)
        set(e1,'string',num2str(now1(1)));
        set(e2,'string',num2str(now1(2)));
        set(e3,'string',num2str(now1(3)));

        set(e4,'string',[num2str(now1(4)),': ',num2str(now1(5)),': ',num2str(now1(6))]);
        pause(1)
        if k==1

```

```

        break
    end
end
end

```

实例65：时间计算器

```

h0=figure('toolbar','none',...
    'position',[200 150 300 250],...
    'name','实例65');
huidiao=[...
    'k=0;;','...
    'fyear=str2num(get(e1,'string'));;','...
    'fmonth=str2num(get(e2,'string'));;','...
    'fday=str2num(get(e3,'string'));;','...
    'syear=str2num(get(e4,'string'));;','...
    'smmonth=str2num(get(e5,'string'));;','...
    'sday=str2num(get(e6,'string'));;','...
    'month=[0 31 28 31 30 31 30 31 31 30 31 30 31];','...
    'k=fix(fyear/4);','...
    'if rem(fyear,4)==0,','...
    'month(3)=29;;','...
    'else,','...
    'k=k+1;;','...
    'month(3)=28;;','...
    'end,','...
    'sum=0;;','...
    'for i=1:fmonth,','...
    'sum=sum+month(i);','...
    'end,','...
    'fdday=fyear*365+sum+fday+k;;','...

```

```

        'l=fix(syear/4);','...
        'if rem(syear,4)==0','...
        'month(3)=29;','...
        'else','...
        'l=l+1;','...
        'month(3)=28;','...
        'end','...
        'ssum=0;','...
        'for i=1:smmonth','...
        'ssum=ssum+month(i);','...
        'end','...
        'sdday=syear*365+ssum+sday+l;','...
        'dday=abs(fdday-sdday);','...
        'set(e7,''string'',[num2str(dday),''天'']);'];

t0=uicontrol('parent',h0,...
    'units','points',...
    'tag','t0',...
    'style','text',...
    'string','开始日期:',...
    'horizontalalignment','right',...
    'fontsize',15,...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[10 160 80 20]);

t8=uicontrol('parent',h0,...
    'units','points',...
    'tag','t8',...
    'style','text',...
    'string','结束日期:',...
    'horizontalalignment','right',...

```

```

        'fontsize',15,...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[115 160 80 20]);
e1=uicontrol('parent',h0,...
    'units','points',...
    'tag','e1',...
    'style','edit',...
    'horizontalalignment','right',...
    'backgroundcolor',[1 1 1],...
    'position',[20 130 50 20]);
t1=uicontrol('parent',h0,...
    'units','points',...
    'tag','t1',...
    'style','text',...
    'string','年',...
    'horizontalalignment','left',...
    'fontsize',15,...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[75 130 20 20]);
e2=uicontrol('parent',h0,...
    'units','points',...
    'tag','e2',...
    'style','edit',...
    'horizontalalignment','right',...
    'backgroundcolor',[1 1 1],...
    'position',[20 100 50 20]);
t2=uicontrol('parent',h0,...
    'units','points',...
    'tag','t2',...

```

```

        'style','text',...
        'string','月',...
        'horizontalalignment','left',...
        'fontsize',15,...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[75 100 20 20]);
e3=uicontrol('parent',h0,...
    'units','points',...
    'tag','e3',...
    'style','edit',...
    'horizontalalignment','right',...
    'backgroundcolor',[1 1 1],...
    'position',[20 70 50 20]);
t3=uicontrol('parent',h0,...
    'units','points',...
    'tag','t3',...
    'style','text',...
    'string','日',...
    'horizontalalignment','left',...
    'fontsize',15,...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[75 70 20 20]);
e4=uicontrol('parent',h0,...
    'units','points',...
    'tag','e4',...
    'style','edit',...
    'horizontalalignment','right',...
    'backgroundcolor',[1 1 1],...
    'position',[120 130 50 20]);

```

```

t4=uicontrol('parent',h0,...
    'units','points',...
    'tag','t4',...
    'style','text',...
    'string','年',...
    'horizontalalignment','left',...
    'fontsize',15,...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[175 130 20 20]);

e5=uicontrol('parent',h0,...
    'units','points',...
    'tag','e5',...
    'style','edit',...
    'horizontalalignment','right',...
    'backgroundcolor',[1 1 1],...
    'position',[120 100 50 20]);

t5=uicontrol('parent',h0,...
    'units','points',...
    'tag','t5',...
    'style','text',...
    'string','月',...
    'horizontalalignment','left',...
    'fontsize',15,...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[175 100 20 20]);

e6=uicontrol('parent',h0,...
    'units','points',...
    'tag','e6',...
    'style','edit',...

```

```

        'horizontalalignment','right',...
        'backgroundcolor',[1 1 1],...
        'position',[120 70 50 20]);
t6=uicontrol('parent',h0,...
    'units','points',...
    'tag','t6',...
    'style','text',...
    'string','日',...
    'horizontalalignment','left',...
    'fontsize',15,...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[175 70 20 20]);
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'string','计算日期',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[20 40 50 20],...
    'callback',huidiao);
b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...
    'style','pushbutton',...
    'string','关闭',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[20 10 50 20],...
    'callback','close');
e7=uicontrol('parent',h0,...

```

```

        'units','points',...
        'tag','e7',...
        'style','edit',...
        'horizontalalignment','right',...
        'backgroundcolor',[1 1 1],...
        'position',[120 10 80 20]);
t7=uicontrol('parent',h0,...
    'units','points',...
    'tag','t7',...
    'style','text',...
    'string','两个日期相差: ',...
    'horizontalalignment','right',...
    'fontsize',15,...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[100 30 110 20]);

```

实例66：数字操作

```

h0=figure('toolbar','none',...
    'position',[200 150 350 200],...
    'name','实例66');
e1=uicontrol('parent',h0,...
    'units','points',...
    'tag','e1',...
    'style','edit',...
    'backgroundcolor',[1 1 1],...
    'position',[20 90 80 20],...
    'fontsize',12,...
    'horizontalalignment','right');
e2=uicontrol('parent',h0,...

```

```

        'units','points',...
        'tag','e2',...
        'style','edit',...
        'backgroundcolor',[1 1 1],...
        'position',[160 90 80 20],...
        'fontsize',12,...
        'horizontalalignment','right');
t1=uicontrol('parent',h0,...
    'units','points',...
    'tag','t1',...
    'style','text',...
    'string','初始数值 (十进制) : ',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[15 110 90 20],...
    'fontsize',12,...
    'horizontalalignment','left');
t2=uicontrol('parent',h0,...
    'units','points',...
    'tag','t2',...
    'style','text',...
    'string','转换结果: ',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[155 110 90 20],...
    'fontsize',12,...
    'horizontalalignment','left');
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...

```

```

    'string','二进制',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[30 50 50 20],...
    'callback',[...
        'k=get(e1,''string'');','...',...
        'k2=str2num(k);','...',...
        'bk=dec2bin(k2);','...',...
        'set(e2,''string'',num2str(bk));']];
b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...
    'style','pushbutton',...
    'string','清除',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[170 50 50 20],...
    'callback',[...
        'set(e1,''string'',''')';','...',...
        'set(e2,''string'',''')'];]);
b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'style','pushbutton',...
    'string','十六进制',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[30 15 50 20],...
    'callback',[...
        'k=get(e1,''string'');','...',...
        'k3=str2num(k);','...',...
        'hk=dec2hex(k3);','...',...

```

```

        'set(e2, ''string'', num2str(hk));']);
b4=uicontrol('parent',h0,...
    'units','points',...
    'tag','b4',...
    'style','pushbutton',...
    'string','关闭',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[170 15 50 20],...
    'callback','close');

```

实例67：图像的块操作

```

h0=figure('toolbar','none',...
    'position',[198 56 350 468],...
    'name','实例67');
h1=axes('parent',h0,...
    'position',[0.2 0.45 0.6 0.5],...
    'visible','off');
I=imread('tire.tif');
imshow(I)
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'style','pushbutton',...
    'string','边沿操作',...
    'position',[30 100 50 20],...
    'callback',[...
        'cla,',...
        'I=imread(''tire.tif'');',...

```

```

        'f=inline(''max(x(:))'');,','...
        'I2=nlfilter(I,[2 2],f);,','...
        'imshow(I2)');
b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'style','pushbutton',...
    'string','显示块操作',...
    'position',[100 100 50 20],...
    'callback',[...
        'cla,','...
        'I=imread(''tire.tif'');,','...
        'f=inline(''uint8(round(mean2(x)*ones(size(x))))'');,','...
        'I2=blkproc(I,[6 6],f);,','...
        'imshow(I2)']);
b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'style','pushbutton',...
    'string','交叠块操作',...
    'position',[170 100 50 20],...
    'callback',[...
        'cla,','...
        'I=imread(''tire.tif'');,','...
        'f=inline(''uint8(round(mean2(x)*ones(size(x))))'');,','...
        'I2=blkproc(I,[6 6],[3 3],f);,','...
        'imshow(I2)']);

```

```

b4=uicontrol('parent',h0,...
    'units','points',...
    'tag','b4',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'style','pushbutton',...
    'string','关闭',...
    'fontsize',14,...
    'position',[90 50 70 30],...
    'callback','close');

```

实例68：图形的过滤操作

```

h0=figure('toolbar','none',...
    'position',[198 56 350 468],...
    'name','过滤操作');
h1=axes('parent',h0,...
    'position',[0.3 0.45 0.5 0.5],...
    'visible','off');
I=imread('blood1.tif');
imshow(I)
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'string','均平过滤',...
    'position',[50 120 50 20],...
    'callback',[...
        'cla,',...
        'I=imread(''blood1.tif'');',...

```

```

        'h=fspecial(''average'',6);','...',...
        'I2=uint8(round(filter2(h,I)));','...',...
        'imshow(I2)');
b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...
    'style','pushbutton',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'string','Sobel过滤',...
    'position',[150 120 50 20],...
    'callback',[...
        'cla','...',...
        'I=imread(''blood1.tif'');','...',...
        'h=fspecial(''sobel'');','...',...
        'I2=filter2(h,I);','...',...
        'imshow(I2,[])']);
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'string','关闭',...
    'position',[85 60 80 30],...
    'callback','close');

```

实例69：图像的频率操作

```

h0=figure('toolbar','none',...
    'position',[198 56 350 468],...
    'name','频率操作');

```

```

h1=axes('parent',h0,...
        'position',[0.3 0.45 0.5 0.5],...
        'visible','off');
b=remez(10,[0 0.4 0.6 1],[1 1 0 0]);
h=ftrans2(b);
[H,W]=freqz(b,1,64,'whole');
colormap(jet(64))
plot(W/pi-1,fftshift(abs(H)))
b1=uicontrol('parent',h0,...
            'units','points',...
            'tag','b1',...
            'backgroundcolor',[0.75 0.75 0.75],...
            'style','pushbutton',...
            'string','频率变换',...
            'position',[30 100 50 20],...
            'callback',[...
                'cla,',...
                'b=remez(10,[0 0.4 0.6 1],[1 1 0 0]);',...
                'h=ftrans2(b);',...
                '[H,W]=freqz(b,1,64,\'\'whole\'');',...
                'colormap(jet(64))',...
                'freqz2(h,[32 32])\'']);
b2=uicontrol('parent',h0,...
            'units','points',...
            'tag','b2',...
            'backgroundcolor',[0.75 0.75 0.75],...
            'style','pushbutton',...
            'string','频率采样一',...
            'position',[100 100 50 20],...

```

```

        'callback',[...
            'cla','...',
            'Hd=zeros(11,11);','...',
            'Hd(4:8,4:8)=1;','...',
            '[f1,f2]=freqspace(11,'meshgrid');','...',
            'mesh(f1,f2,Hd)','...',
            'axis([-1 1 -1 1 0 1.2]),','...',
            'colormap(jet(64))')]);

b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'style','pushbutton',...
    'string','频率采样二',...
    'position',[170 100 50 20],...
    'callback',[...
        'cla','...',
        'Hd=zeros(11,11);','...',
        'Hd(4:8,4:8)=1;','...',
        'H=fsamp2(Hd);','...',
        'freqz2(h,[32 32]),','...',
        'axis([-1 1 -1 1 0 1.2]),','...',
        'colormap(jet(64))')]);

b4=uicontrol('parent',h0,...
    'units','points',...
    'tag','b4',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'style','pushbutton',...
    'string','关闭',...

```

```

'fontsize',15,...
'position',[80 50 80 30],...
'callback','close');

```

实例70：函数变换

```

h0=figure('toolbar','none',...
    'position',[198 56 350 468],...
    'name','函数变换');
h1=axes('parent',h0,...
    'position',[0.25 0.45 0.5 0.5],...
    'visible','off');
I=imread('cameraman.tif');
imshow(I)
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'style','pushbutton',...
    'string','图像压缩',...
    'position',[30 100 50 20],...
    'callback',[...
        'cla','...
        'I=imread(''cameraman.tif'');','...
        'I2=im2double(I);','...
        'imshow(I2)']);
b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...
    'backgroundcolor',[0.75 0.75 0.75],...

```

```

'style','pushbutton',...
'string','图像解压',...
'position',[100 100 50 20],...
'callback',[...
    'cla,',...
    'I=imread(''cameraman.tif'');',...
    'I=im2double(I);',...
    'T=dctmtx(8);',...
    'B=blkproc(I,[8 8],'P1*x*P2'',T,T'');',...
    'mask=[1 1 1 1 0 0 0 0;',...
        '1 1 1 0 0 0 0 0;',...
        '1 1 0 0 0 0 0 0;',...
        '1 0 0 0 0 0 0 0;',...
        '0 0 0 0 0 0 0 0;',...
        '0 0 0 0 0 0 0 0;',...
        '0 0 0 0 0 0 0 0;',...
        '0 0 0 0 0 0 0 0];',...
    'B2=blkproc(B,[8 8],'P1.*x'',mask);',...
    'I2=blkproc(B2,[8 8],'P1*x*P2'',T'',T);',...
    'imshow(I2)'];
b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'style','pushbutton',...
    'string','线条解析',...
    'position',[170 100 50 20],...
    'callback',[...
        'cla,',...

```

```

        'I=imread(''cameraman.tif'');','...',
        'BW=edge(I);','...',
        'imshow(BW)');
b4=uicontrol('parent',h0,...
    'units','points',...
    'tag','b4',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'style','pushbutton',...
    'string','关闭',...
    'fontsize',15,...
    'position',[80 50 80 30],...
    'callback','close');

```

实例71: RADON函数变换

```

h0=figure('toolbar','none',...
    'position',[198 56 350 468],...
    'name','实例71');
h1=axes('parent',h0,...
    'position',[0.3 0.45 0.5 0.5],...
    'visible','off');
P=phantom(256);
imshow(P)
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'string','变换一',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[30 100 50 20],...

```

```

        'callback',[...
            'cla','...',
            'k=1;','...',
            'theta1=0:10:170;','...',
            'R1=radon(P,theta1);','...',
            'imagesc(R1)','...',
            'colormap(hot)','...',
            'colorbar']);
b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...
    'style','pushbutton',...
    'string','变换二',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[100 100 50 20],...
    'callback',[...
        'cla','...',
        'k=2;','...',
        'theta2=0:5:175;','...',
        'R2=radon(P,theta2);','...',
        'imagesc(R2)','...',
        'colormap(hot)','...',
        'colorbar']);
b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'style','pushbutton',...
    'string','变换三',...
    'backgroundcolor',[0.75 0.75 0.75],...

```

```

        'position',[170 100 50 20],...
        'callback',[...
            'cla','...
            'k=3;','...
            'theta3=0:2:178;','...
            'R3=radon(P,theta3);','...
            'imagesc(R3)','...
            'colormap(hot)','...
            'colorbar']);
b4=uicontrol('parent',h0,...
    'units','points',...
    'tag','b4',...
    'style','pushbutton',...
    'string','原始图像',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[50 50 70 30],...
    'callback',[...
        'cla','...
        'if k==1','...
        'I1=iradon(R1,10);','...
        'imshow(I1)','...
        'end','...
        'if k==2','...
        'I2=iradon(R2,5);','...
        'imshow(I2)','...
        'end','...
        'if k==3','...
        'I3=iradon(R3,2);','...
        'imshow(I3)','...

```

```
        'end'];  
b5=uicontrol('parent',h0,...  
    'units','points',...  
    'tag','b5',...  
    'style','pushbutton',...  
    'string','关闭',...  
    'backgroundcolor',[0.75 0.75 0.75],...  
    'position',[150 50 70 30],...  
    'callback','close');
```

实例72：图像分析（1）

```
h0=figure('toolbar','none',...
    'position',[198 56 350 468],...
    'name','实例72');
h1=axes('parent',h0,...
    'position',[0.25 0.45 0.5 0.5],...
    'visible','off');
I=imread('rice.tif');
imshow(I)
k=0;
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'string','图像轮廓图',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[20 100 60 20],...
    'callback',[...
        'cla;',...
        'k=1;;',...
        'I=imread(''rice.tif'');;',...
        'imcontour(I)']);
b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...
    'style','pushbutton',...
    'string','SOBEL边界图',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[100 100 60 20],...
```

```

        'callback',[...
            'cla','...',...
            'k=2;;','...',...
            'I=imread(''rice.tif'');','...',...
            'BW=edge(I,''sobel'');','...',...
            'imshow(BW)'];
b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'style','pushbutton',...
    'string','CANNY边界图',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[180 100 60 20],...
    'callback',[...
        'cla','...',...
        'k=3;;','...',...
        'I=imread(''rice.tif'');','...',...
        'BW=edge(I,''canny'');','...',...
        'imshow(BW)']);
b4=uicontrol('parent',h0,...
    'units','points',...
    'tag','b4',...
    'style','pushbutton',...
    'string','灰度调整',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[20 50 60 20],...
    'callback',[...
        'cla','...',...
        'k=4;;','...',...

```

```

        'I=imread(''rice.tif'');','...',
        'J=imadjust(I,[0.15 0.9],[0 1]);','...',
        'imshow(J,64)'];
b5=uicontrol('parent',h0,...
    'units','points',...
    'tag','b5',...
    'style','pushbutton',...
    'string','图像柱状图',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[180 50 60 20],...
    'callback',[...
        'if k==0','...',
        'figure','...',
        'imhist(I,64)','...',
        'end','...',
        'if k==1','...',
        'imhist(I,64)','...',
        'end','...',
        'if k==2','...',
        'imhist(BW,64)','...',
        'end','...',
        'if k==3','...',
        'imhist(BW,64)','...',
        'end','...',
        'if k==4','...',
        'imhist(J)','...',
        'end']);
b6=uicontrol('parent',h0,...
    'units','points',...

```

```

'tag','b6',...
'style','pushbutton',...
'string','关闭',...
'backgroundcolor',[0.75 0.75 0.75],...
'position',[100 50 60 20],...
'callback','close');

```

实例73：过滤图像

```

h0=figure('toolbar','none',...
    'position',[198 56 350 468],...
    'name','实例73');
h1=axes('parent',h0,...
    'position',[0.25 0.45 0.5 0.5],...
    'visible','off');
I=imread('eight.tif');
imshow(I)
u1=uimenu('parent',h0,...
    'tag','u1',...
    'label','添加噪声',...
    'backgroundcolor',[0.75 0.75 0.75]);
u11=uimenu('parent',u1,...
    'tag','u11',...
    'label','SALT&PEPPER噪声',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'callback',[...
        'set(u11,''checked'',''on'');','...',...
        'set(u12,''checked'',''off'');','...',...
        'cla','...',...
        'I=imnoise(I,''salt & pepper'',0.02);','...',...

```

```

        'imshow(I)');
u12=uimenu('parent',u1,...
    'tag','u12',...
    'label','GAUSSIAN噪声',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'callback',[...
        'set(u12,''checked'',''on'');','...',...
        'set(u11,''checked'',''off'');','...',...
        'cla','...',...
        'I=imnoise(I,''gaussian'',0,0.005);','...',...
        'imshow(I)']);
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'string','均平过滤',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[30 100 50 20],...
    'callback',[...
        'cla','...',...
        'J=filter2(fspecial,''average'',3),I)/255;','...',...
        'imshow(J)']);
b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...
    'style','pushbutton',...
    'string','中值过滤',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[100 100 50 20],...

```

```

        'callback',[...
            'cla,',...
            'J=medfilt2(I,[3 3]);',...
            'imshow(J)');
b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'style','pushbutton',...
    'string','自适应过滤',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[170 100 50 20],...
    'callback',[...
        'cla,',...
        'J=wiener2(I,[5 5]);',...
        'imshow(J)']);
b4=uicontrol('parent',h0,...
    'units','points',...
    'tag','b4',...
    'style','pushbutton',...
    'string','关闭',...
    'fontsize',15,...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[90 50 70 30],...
    'callback','close');

```

实例74：图像的区域处理

```

h0=figure('toolbar','none',...
    'position',[198 56 350 468],...
    'name','实例74');

```

```

h1=axes('parent',h0,...
        'position',[0.25 0.45 0.5 0.5],...
        'visible','off');
I=imread('trees.tif');
imshow(I)
b1=uicontrol('parent',h0,...
            'units','points',...
            'tag','b1',...
            'style','pushbutton',...
            'string','区域过滤一',...
            'backgroundcolor',[0.75 0.75 0.75],...
            'position',[30 100 50 20],...
            'callback',[...
                'cla,',...
                'I=imread(''trees.tif'');',...
                'imshow(I)',...
                'BW=roipoly;',...
                'h=fspecial(''unsharp'');',...
                'I2=roifilt2(h,I,BW);',...
                'imshow(I2)']);
b2=uicontrol('parent',h0,...
            'units','points',...
            'tag','b2',...
            'style','pushbutton',...
            'string','区域过滤二',...
            'backgroundcolor',[0.75 0.75 0.75],...
            'position',[100 100 50 20],...
            'callback',[...
                'cla,',...

```

```

        'BW=imread(''text.tif'');','...
        'f=inline(''imadjust(x,[],[],0.01)'');','...
        'I2=roifilt2(I,BW,f);','...
        'imshow(I2)');
b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'style','pushbutton',...
    'string','区域填充',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[170 100 50 20],...
    'callback',[...
        'cla','...
        'load trees','...
        'I=ind2gray(X,map);','...
        'imshow(I)','...
        'I2=roifill;','...
        'imshow(I2)']);
b4=uicontrol('parent',h0,...
    'units','points',...
    'tag','b4',...
    'style','pushbutton',...
    'string','关闭',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[90 50 70 30],...
    'callback','close');

```

实例75：图像的颜色处置

```
h0=figure('toolbar','none',...
```

```

        'position',[198 56 350 468],...
        'name','实例75');
h1=axes('parent',h0,...
        'position',[0.12 0.45 0.75 0.5],...
        'visible','off');
I=imread('flowers.tif');
imshow(I)
b1=uicontrol('parent',h0,...
        'units','points',...
        'tag','b1',...
        'style','pushbutton',...
        'string','减少颜色',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[30 100 50 20],...
        'callback',[...
            'cla,',...
            '[X,map]=imread(''flowers.tif'');',...
            '[Y,map2]=imapprox(X,map,64);',...
            'image(Y),',...
            'colormap(map2)']);
b2=uicontrol('parent',h0,...
        'units','points',...
        'tag','b2',...
        'style','pushbutton',...
        'string','颜色抖动',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[100 100 50 20],...
        'callback',[...
            'cla,',...

```

```

        'I=imread(''flowers.tif'');','...',
        '[X,map]=rgb2ind(I,128,''nodither'');','...',
        'imshow(X)');
b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'style','pushbutton',...
    'string','颜色转换一',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[170 100 50 20],...
    'callback',[...
        'cla','...',
        'I=imread(''flowers.tif'');','...',
        'Y=rgb2ntsc(I);','...',
        'J=Y(:, :, 1);','...',
        'imshow(J)']);
b4=uicontrol('parent',h0,...
    'units','points',...
    'tag','b4',...
    'style','pushbutton',...
    'string','关闭',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[170 50 50 20],...
    'callback','close');
b5=uicontrol('parent',h0,...
    'units','points',...
    'tag','b5',...
    'style','pushbutton',...
    'string','颜色转换三',...

```

```

        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[100 50 50 20],...
        'callback',[...
            'cla,',...
            'I=imread(''flowers.tif'');',...
            'J=rgb2ycbcr(I);',...
            'imshow(J)'];
b6=uicontrol('parent',h0,...
    'units','points',...
    'tag','b6',...
    'style','pushbutton',...
    'string','颜色转换二',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[30 50 50 20],...
    'callback',[...
        'cla,',...
        'I=imread(''flowers.tif'');',...
        'J=rgb2hsv(I);',...
        'imshow(J)']);

```

实例76：交换显示图像

```

h0=figure('toolbar','none',...
    'position',[198 56 500 500],...
    'name','实例76');
h1=axes('parent',h0,...
    'position',[0.15 0.5 0.7 0.5],...
    'visible','off');
u1=uimenu('parent',h0,...
    'label','加载图像',...

```

```

'backgroundcolor',[0.753 0.753 0.753],...
'tag','u1',...
'callback',[...
    '[X,map]=imread(''800.jpg'',''jpg'');','...
    'Y=imresize(X,2);','...
    'image(Y),','...
    'colormap(map),','...
    'axis image,','...
    'camva(camva/2.5),','...
    'disp(''单击鼠标左键点取需要的点''),'...
    'disp(''单击鼠标右键确定最后一个点''),'...
    'while 1,','...
    '[x,y]=ginput(1);','...
    'if ~strcmp(get(gcf,''selectiontype''),'normal'),'...
    'break,','...
    'end,','...
    'ct=camtarget;','...
    'dx=x-ct(1);','...
    'dy=y-ct(2);','...
    'camdolly(dx,dy,ct(3),''movetarget'',''data''),'...
    'drawnow,','...
    'end'];
u2=uimenu('parent',h0,...
    'label','关闭',...
    'backgroundcolor',[0.753 0.753 0.753],...
    'tag','u2',...
    'callback','close');

```

实例77：矢量数据的显示

```

h0=figure('toolbar','none',...
    'position',[198 56 450 468],...
    'name','实例77');
h1=axes('parent',h0,...
    'position',[0.3 0.45 0.5 0.5],...
    'visible','off');
load wind
b1huidiao=[...
    'cla','...',
    'xmin = min(x(:));','...',
    'xmax = max(x(:));','...',
    'ymax = max(y(:));','...',
    'zmin = min(z(:));','...',
    'wind_speed = sqrt(u.^2 + v.^2 + w.^2);','...',
    'hsurfaces =
slice(x,y,z,wind_speed,[xmin,100,xmax],ymax,zmin);','...',

    'set(hsurfaces,''FaceColor'', ''interp'', ''EdgeColor'', ''none''),','...',
    'hcont =
contourslice(x,y,z,wind_speed,[xmin,100,xmax],ymax,zmin);','...',

    'set(hcont,''EdgeColor'', [.7,.7,.7], ''LineWidth'',.5),','...',
    '[sx,sy,sz] = meshgrid(80,20:10:50,0:5:15);','...',
    'hlines = streamline(x,y,z,y,v,w,sx,sy,sz);','...',
    'set(hlines,''LineWidth'',2, ''Color'', ''r''),','...',
    'view(3),','...',
    'daspect([2,2,1]),','...',
    'axis tight'];
b2huidiao=[...

```

```

'cla, ', ...
'wind_speed = sqrt(u.^2 + v.^2 + w.^2);, ', ...
'hiso = patch(isosurface(x,y,z,wind_speed,40));, ', ...
'isonormals(x,y,z,wind_speed,hiso), ', ...

'set(hiso, 'FaceColor', 'red', 'EdgeColor', 'none');, ', ...
'hcap =

patch(isocaps(x,y,z,wind_speed,40), 'FaceColor', 'interp', 'EdgeColor', 'none');, ', ...
'colormap hsv, ', ...
'daspect([1,1,1]);, ', ...
'[f_verts] =
reducepatch(isosurface(x,y,z,wind_speed,30),0.07);, ', ...
'h1 =
coneplot(x,y,z,u,v,w,verts(:,1),verts(:,2),verts(:,3),3);, ', ...

'set(h1, 'FaceColor', 'blue', 'EdgeColor', 'none');, ', ...
'xrange = linspace(min(x(:)),max(x(:)),10);, ', ...
'yrange = linspace(min(y(:)),max(y(:)),10);, ', ...
'zrange = 3:4:15;, ', ...
'[cx,cy,cz] = meshgrid(xrange,yrange,zrange);, ', ...
'h2 = coneplot(x,y,z,u,v,w,cx,cy,cz,2);, ', ...

'set(h2, 'FaceColor', 'green', 'EdgeColor', 'none');, ', ...
'axis tight, ', ...
'box on, ', ...
'camproj perspective, ', ...
'camzoom(1.25), ', ...
'view(65,45), ', ...

```

```

        'camlight(-45,45),',...
        'lighting phong,',...
        'set(hcap, ''AmbientStrength'',.6)'];
b1=uicontrol('parent',h0,...
    'style','pushbutton',...
    'units','points',...
    'tag','b1',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'string','可视化',...
    'position',[50 100 60 20],...
    'callback',blhuidiao);
b2=uicontrol('parent',h0,...
    'style','pushbutton',...
    'units','points',...
    'tag','b2',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'string','锥形图',...
    'position',[200 100 60 20],...
    'callback',b2huidiao);
b3=uicontrol('parent',h0,...
    'style','pushbutton',...
    'units','points',...
    'tag','b3',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'string','关闭',...
    'position',[125 60 60 20],...
    'callback','close');

```

实例78：图像分析（2）

```

h0=figure('toolbar','none',...
    'position',[198 56 350 468],...
    'name','实例78');
h1=axes('parent',h0,...
    'position',[0.25 0.45 0.5 0.5],...
    'visible','off');
load imdemos flower
imshow(flower)
colormap(copper)
n=size(X,1);
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'string','轮廓图',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[30 100 50 20],...
    'callback',[...
        'cla','...',...
        '[X,map]=imread(''flowers.tif'');','...',...
        'X=double(flower);','...',...
        'X=(0.25/256)*X;','...',...
        'C=copper(35);','...',...
        'set(gca,''colororder'',C(21:35,:),''box'',''on'');','...',...
        'imcontour(X,3);','...',...
        'axis([1 n 1 n]),','...',...
        'axis(''ij''),'...',...
        'axis(''square'')']);
b2=uicontrol('parent',h0,...

```

```

    'units','points',...
    'tag','b2',...
    'style','pushbutton',...
    'string','伪彩图',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[100 100 50 20],...
    'callback',[...
        'cla,',...
        'D=-del2(X);,',...
        'pcolor(D),',...
        'axis([1 n 1 n]),',...
        'axis(''ij''),',...
        'shading(''flat'')'];
b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'style','pushbutton',...
    'string','3D表面图',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[170 100 50 20],...
    'callback',[...
        'cla,',...
        'D=-del2(X);,',...
        'surf(X,D),',...
        'colormap(copper),',...
        'axis([1 n 1 n 0 1]),',...
        'axis(''ij''),',...
        'shading(''flat''),',...
        'view(-20,75);']);

```

```

b4=uicontrol('parent',h0,...
    'units','points',...
    'tag','b4',...
    'style','pushbutton',...
    'string','关闭',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[80 50 80 30],...
    'callback','close');

```

实例79：图像逻辑操作

```

h0=figure('toolbar','none',...
    'position',[198 56 350 468],...
    'name','实例79');
h1=axes('parent',h0,...
    'position',[0.25 0.45 0.5 0.5],...
    'visible','off');
load imdemos bacteria
imshow(bacteria)
k1=~(bacteria>100);
k2=filter2(fspecial('laplacian'),bacteria);
k3=(k2>-4)&k1;
k4=erode(k1)&(k3==0);
[r,c]=find(k4);
k5=bwselect(k1,c,r);
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'string','二值分割图',...

```

```

        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[30 110 50 20],...
        'callback',[...
            'cla,',...
            'imshow(k1)']]);
b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...
    'style','pushbutton',...
    'string','滤波结果图',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[100 110 50 20],...
    'callback',[...
        'cla,',...
        'imshow(k2)']]);
b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'style','pushbutton',...
    'string','阈值化图',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[170 110 50 20],...
    'callback',[...
        'cla,',...
        'imshow(k3)']]);
b4=uicontrol('parent',h0,...
    'units','points',...
    'tag','b4',...
    'style','pushbutton',...

```

```

        'string','目标的核',...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[30 60 50 20],...
        'callback',[...
            'cla,',...
            'imshow(k4)'];
b5=uicontrol('parent',h0,...
    'units','points',...
    'tag','b5',...
    'style','pushbutton',...
    'string','目标分割图',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[100 60 50 20],...
    'callback',[...
        'cla,',...
        'imshow(k5)']);
b6=uicontrol('parent',h0,...
    'units','points',...
    'tag','b6',...
    'style','pushbutton',...
    'string','关闭',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[170 60 50 20],...
    'callback','close');

```

实例80：进度条的使用

```

h0=figure('toolbar','none',...
    'position',[198 56 350 450],...
    'name','实例80');

```

```

h1=axes('parent',h0,...
        'position',[0.25 0.45 0.6 0.5],...
        'visible','off');
I=imread('flowers.tif');
imshow(I)
b1=uicontrol('parent',h0,...
            'units','points',...
            'tag','b1',...
            'style','pushbutton',...
            'string','转换',...
            'backgroundcolor',[0.75 0.75 0.75],...
            'position',[50 80 60 25],...
            'callback',[...
                'handlek=waitbar(0, ''initializing.....'');','...',...
                'pause(0.5),'...',...
                'i=1;','...',...
                'while i<=100,','...',...

                'waitbar(i/100,handlek,[num2str(i),' '%finished''],handlek),'...',...
                'i=i+1;','...',...
                'pause(0.05),'...',...
                'end','...',...
                'pause(1.5),'...',...
                'cla','...',...
                'delete(handlek),'...',...
                'Y=rgb2ntsc(I);','...',...
                'J=Y(:, :, 1);','...',...
                'imshow(J)']);
b2=uicontrol('parent',h0,...

```

```

'units','points',...
'tag','b2',...
'style','pushbutton',...
'string','关闭',...
'backgroundcolor',[0.75 0.75 0.75],...
'position',[150 80 60 25],...
'callback','close');

```

实例81: MRI数据的显示

```

load mri
D = squeeze(D);
h0=figure('toolbar','none',...
    'position',[198 56 450 468],...
    'name','实例81');
h1=axes('parent',h0,...
    'position',[0.3 0.45 0.5 0.5],...
    'visible','off');
image_num = 8;
image(D(:, :, image_num))
axis image
colormap(map)
x = xlim;
y = ylim;
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[50 100 60 20],...

```

```

    'string','二维图',...
    'callback',[...
        'cla,',...
        'contourslice(D,[],[],image_num)',...
        'axis ij,',...
        'xlim(x)',...
        'ylim(y)',...
        'daspect([1,1,1]),',...
        'colormap(''default'')']);
b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...
    'style','pushbutton',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[250 100 60 20],...
    'string','三维图',...
    'callback',[...
        'cla,',...
        'phandles = contourslice(D,[],[],[1,12,19,27],8);',...
        'view(3);',...
        'axis tight,',...
        'set(phandles,''LineWidth'',2)']);
b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'style','pushbutton',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[50 50 60 20],...
    'string','立体图',...

```

```

        'callback',[...
            'cla','...',
            'Ds = smooth3(D);','...',
            'hiso =
patch(isosurface(Ds,5),'FaceColor',[1,.75,.65],'EdgeColor','none');','...',
            'hcap =
patch(isocaps(D,5),'FaceColor','interp','EdgeColor','none');','...',
            'colormap(map)','...',
            'view(45,30)','...',
            'axis tight','...',
            'daspect([1,1,.4]),','...',
            'lightangle(45,30)','...',
            'lighting phong','...',
            'isonormals(Ds,hiso)','...',
            'set(hcap,''AmbientStrength'',.6),','...',

'set(hiso,''SpecularColorReflectance'',0,''SpecularExponent'',50)'];
b4=uicontrol('parent',h0,...
    'units','points',...
    'tag','b4',...
    'style','pushbutton',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[250 50 60 20],...
    'string','关闭',...
    'callback','close');

```

实例82：图像类型转换

```
h0=figure('toolbar','none',...
    'position',[198 56 350 468],...
    'name','实例82');
h1=axes('parent',h0,...
    'position',[0.2 0.45 0.5 0.5],...
    'visible','off');
load earth
clims = [10 60];
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'string','强度图像',...
    'position',[30 120 50 20],...
    'callback',[...
        'cla,',...
        'imagesc(X,clims),',...
        'colormap(gray)']);
b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...
    'style','pushbutton',...
    'string','索引图像',...
    'position',[100 120 50 20],...
    'callback',[...
        'cla,',...
        'image(X),',...
        'colormap(map),',...

```

```

        'axis image']);
b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'style','pushbutton',...
    'string','真彩图像',...
    'position',[170 120 50 20],...
    'callback',[...
        'cla,',...
        'image(X),',...
        'axis image']);
b4=uicontrol('parent',h0,...
    'units','points',...
    'tag','b4',...
    'style','pushbutton',...
    'string','关闭',...
    'position',[100 50 50 20],...
    'callback','close');

```

实例83：特殊的图像显示技术

```

h0=figure('toolbar','none',...
    'position',[198 56 350 468],...
    'name','实例83');
h1=axes('parent',h0,...
    'position',[0.25 0.45 0.5 0.5],...
    'visible','off');
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...

```

```

        'backgroundcolor',[0.75 0.75 0.75],...
        'style','pushbutton',...
        'string','颜色条',...
        'position',[30 120 50 20],...
        'callback',[...
            'cla,',...
            'I = imread(''plane.jpg'');',...
            'imshow(I)',...
            'colorbar']];
b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'style','pushbutton',...
    'position',[100 120 50 20],...
    'string','单帧显示',...
    'callback',[...
        'cla,',...
        'load mri;',...
        'imshow(D(:,:,7))']];
b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'style','pushbutton',...
    'string','动画显示',...
    'position',[30 60 50 20],...
    'callback',[...
        'cla,',...

```

```

        'load mri','...',...
        'montage(D,map)','...',...
        'mov=immovie(D,map);','...',...
        'colormap(map)','...',...
        'movie(mov)');
b4=uicontrol('parent',h0,...
    'units','points',...
    'tag','b4',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'style','pushbutton',...
    'string','纹理映射',...
    'position',[170 60 50 20],...
    'callback',[...
        'cla','...',...
        '[x,y,z] = cylinder;','...',...
        'I = imread(''girls.jpg'');','...',...
        'warp(x,z,y,I);']);
b5=uicontrol('parent',h0,...
    'units','points',...
    'tag','b5',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'style','pushbutton',...
    'string','关闭',...
    'position',[100 60 50 20],...
    'callback','close');
b6=uicontrol('parent',h0,...
    'units','points',...
    'tag','b6',...
    'backgroundcolor',[0.75 0.75 0.75],...

```

```

'style','pushbutton',...
'string','多帧显示',...
'position',[170 120 50 20],...
'callback',[...
    'cla,',...
    'load mri,',...
    'montage(D,map)']]);

```

实例84：图像的几何操作

```

h0=figure('toolbar','none',...
    'position',[198 56 400 468],...
    'name','实例84');
h1=axes('parent',h0,...
    'position',[0.25 0.45 0.5 0.5],...
    'visible','off');
I=imread('plane.jpg','jpg');
imshow(I)
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'style','pushbutton',...
    'string','图像旋转',...
    'position',[200 120 50 20],...
    'callback',[...
        'cla,',...
        'k=str2num(get(e1,''string''));',...
        'I=imread(''plane.jpg'',''jpg'');',...
        'J=imrotate(I,k,''bilinear'');',...

```

```

        'imshow(J)');
b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'style','pushbutton',...
    'string','图像剪切',...
    'position',[200 80 50 20],...
    'callback',[...
        'cla,',...
        'imshow plane.jpg,',...
        'I=imcrop;',...
        'imshow(I)']);
b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'style','pushbutton',...
    'string','关闭',...
    'position',[120 30 50 20],...
    'callback','close');
e1=uicontrol('parent',h0,...
    'units','points',...
    'tag','e1',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'style','edit',...
    'horizontalalignment','right',...
    'position',[50 80 100 20]);
t1=uicontrol('parent',h0,...

```

```

'units','points',...
'tag','t1',...
'backgroundcolor',[0.75 0.75 0.75],...
'style','text',...
'string','请输入旋转角度 (0~90) 度',...
'fontsize',12,...
'position',[40 100 130 20]);

```

实例85：拉个朗日插值

```

h0=figure('toolbar','none',...
    'position',[200 50 350 450],...
    'name','实例85');
h1=axes('parent',h0,...
    'position',[0.10 0.45 0.8 0.5],...
    'visible','off');
x=0:0.2:2*pi;
y=sin(x);
plot(x,y)
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'string','拉格朗日插值',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[20 60 70 20],...
    'callback',[...
        'cla,',...
        'strn=get(e1,''string'');',...
        'n=str2num(strn);',...

```

```

        'i=1;;',...
        'x=0:0.2:2*pi;;',...
        'for t=0:0.2:2*pi;',...
        'y(i)=sin(t);',...
        'L(i)=lag(t,n);',...
        'i=i+1;;',...
        'end;',...
        'plot(x,y,''b*'',x,L,''r-''),'',...
        'legend(''sin(x)'',''插值函数'');',...
        'axis([0 7 -1.5 1.5])');

b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...
    'style','pushbutton',...
    'string','误差比较',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[170 60 70 20],...
    'callback',[...
        'strn=get(e1,''string'');',...
        'n=str2num(strn);',...
        'strm=get(e2,''string'');',...
        'm=str2num(strm);',...
        'dd=abs(sin(m)-lag(m,n));',...
        'msgbox([''误差为: ',num2str(dd)],''计算结果'')']);

e1=uicontrol('parent',h0,...
    'units','points',...
    'tag','e1',...
    'style','edit',...
    'fontsize',12,...

```

```

        'string','5',...
        'horizontalalignment','right',...
        'backgroundcolor',[1 1 1],...
        'position',[50 100 40 20]);
e2=uicontrol('parent',h0,...
    'units','points',...
    'tag','e2',...
    'style','edit',...
    'fontsize',12,...
    'string','1.20',...
    'horizontalalignment','right',...
    'backgroundcolor',[1 1 1],...
    'position',[200 100 40 20]);
t1=uicontrol('parent',h0,...
    'units','points',...
    'tag','t1',...
    'style','text',...
    'string','阶数: ',...
    'fontsize',12,...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[20 100 30 20]);
t2=uicontrol('parent',h0,...
    'units','points',...
    'tag','t2',...
    'style','text',...
    'string','误差点: ',...
    'fontsize',12,...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[160 100 40 20]);

```

```

b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'style','pushbutton',...
    'string','关闭',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[100 20 60 20],...
    'callback','close');

```

实例86：三次样条插值法

```

h0=figure('toolbar','none',...
    'position',[200 50 350 450],...
    'name','实例86');
h1=axes('parent',h0,...
    'position',[0.10 0.45 0.8 0.5],...
    'visible','off');
x=0:0.2:2*pi;
y=sin(x);
plot(x,y)
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'string','三次样条插值',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[20 60 70 20],...
    'callback',[...
        'y=0,',...
        'sy=0,',...

```

```

'strn1=get(e2,'string');,',...
'n1=str2num(strn1);,',...
'strn2=get(e3,'string');,',...
'n2=str2num(strn2);,',...
'x=n1:0.2:n2;, ',...
'i=1;, ',...
'for t=n1:0.2:n2,',...
'y(i)=sin(t);, ',...
'sy(i)=san(t,n1,n2);, ',...
'i=i+1;, ',...
'end,',...
'plot(x,y,'b*',x,sy,'r-'),',...
'axis([0 7 -1.5 1.5]),',...
'legend('sin(x)','N-Hermite插值')'];
b2=uicontrol('parent',h0,...
'units','points',...
'tag','b2',...
'style','pushbutton',...
'string','误差比较',...
'backgroundcolor',[0.75 0.75 0.75],...
'position',[170 60 70 20],...
'callback',[...
'strdn1=get(e2,'string');, ',...
'n1=str2num(strdn1);, ',...
'strdn2=get(e3,'string');, ',...
'n2=str2num(strdn2);, ',...
'strdn=get(e1,'string');, ',...
'dn=str2num(strdn);, ',...
'dd=abs(sin(dn)-san(dn,n1,n2));, ',...

```

```

        'msgbox([''误差为: '' , num2str(dd)], ''计算结果'')');
e1=uicontrol('parent',h0,...
    'units','points',...
    'tag','e1',...
    'style','edit',...
    'fontsize',12,...
    'string','1.20',...
    'horizontalalignment','right',...
    'backgroundcolor',[1 1 1],...
    'position',[200 100 40 20]);
t1=uicontrol('parent',h0,...
    'units','points',...
    'tag','t1',...
    'style','text',...
    'string','误差点: ',...
    'fontsize',12,...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[160 100 40 20]);
e2=uicontrol('parent',h0,...
    'units','points',...
    'tag','e2',...
    'style','edit',...
    'fontsize',12,...
    'string','1.00',...
    'horizontalalignment','right',...
    'backgroundcolor',[1 1 1],...
    'position',[20 85 40 20]);
t2=uicontrol('parent',h0,...
    'units','points',...

```

```

        'tag','t2',...
        'style','text',...
        'string','第一节: ',...
        'fontsize',12,...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[15 105 50 20]);
e3=uicontrol('parent',h0,...
    'units','points',...
    'tag','e3',...
    'style','edit',...
    'fontsize',12,...
    'string','3.00',...
    'horizontalalignment','right',...
    'backgroundcolor',[1 1 1],...
    'position',[100 85 40 20]);
t3=uicontrol('parent',h0,...
    'units','points',...
    'tag','t3',...
    'style','text',...
    'string','第二节: ',...
    'fontsize',12,...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[95 105 50 20]);
b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'style','pushbutton',...
    'string','关闭',...
    'backgroundcolor',[0.75 0.75 0.75],...

```

```

'position',[100 20 60 20],...
'callback','close');

```

实例87：NEWTON插值

```

h0=figure('toolbar','none',...
    'position',[200 50 350 450],...
    'name','实例87');
h1=axes('parent',h0,...
    'position',[0.10 0.45 0.8 0.5],...
    'visible','off');
x=0:0.2:2*pi;
y=sin(x);
plot(x,y)
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'string','牛顿插值',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[20 60 70 20],...
    'callback',[...
        'strn=get(e1,''string'');','...',...
        'n=str2num(strn);','...',...
        'x=0:0.2:2*pi;','...',...
        'i=1;','...',...
        'for t=0:0.2:2*pi,','...',...
        'y(i)=sin(t);','...',...
        'ynt(i)=newton(t,n);','...',...
        'i=i+1;','...',...
    ]

```

```

        'end, ', ...
        'plot(x,y, ''b*'', x, ynt, ''r-'' ), ', ...
        'axis([0 7 -1.5 1.5]), ', ...
        'legend(''sin(x)'', ''牛顿插值'')');

b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...
    'style','pushbutton',...
    'string','误差比较',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[170 60 70 20],...
    'callback',[...
        'strn=get(e1, ''string'');', ...
        'n=str2num(strn);', ...
        'strdn=get(e2, ''string'');', ...
        'dn=str2num(strdn);', ...
        'dd=abs(sin(dn)-newton(dn,n));', ...
        'msgbox([''误差为: ', num2str(dd)], ''计算结果'')']);

e1=uicontrol('parent',h0,...
    'units','points',...
    'tag','e1',...
    'style','edit',...
    'fontsize',12,...
    'string','5',...
    'horizontalalignment','right',...
    'backgroundcolor',[1 1 1],...
    'position',[50 100 40 20]);

e2=uicontrol('parent',h0,...
    'units','points',...

```

```

        'tag','e2',...
        'style','edit',...
        'fontsize',12,...
        'string','1.20',...
        'horizontalalignment','right',...
        'backgroundcolor',[1 1 1],...
        'position',[200 100 40 20]);

t1=uicontrol('parent',h0,...
    'units','points',...
    'tag','t1',...
    'style','text',...
    'string','节点数: (<6) ',...
    'fontsize',12,...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[10 100 40 30]);

t2=uicontrol('parent',h0,...
    'units','points',...
    'tag','t2',...
    'style','text',...
    'string','误差点: ',...
    'fontsize',12,...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[160 100 40 20]);

b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'style','pushbutton',...
    'string','关闭',...
    'backgroundcolor',[0.75 0.75 0.75],...

```

```

'position',[100 20 60 20],...
'callback','close');

```

实例88: hermite插值

```

h0=figure('toolbar','none',...
    'position',[200 50 350 450],...
    'name','实例88');
h1=axes('parent',h0,...
    'position',[0.10 0.45 0.8 0.5],...
    'visible','off');
x=0:0.2:2*pi;
y=sin(x);
plot(x,y)
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'string','Hermite插值',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[20 60 70 20],...
    'callback',[...
        'strn1=get(e2,''string'');','...',...
        'n1=str2num(strn1);','...',...
        'strn2=get(e3,''string'');','...',...
        'n2=str2num(strn2);','...',...
        'x=0:0.2:2*pi;','...',...
        'i=1;','...',...
        'for t=0:0.2:2*pi','...',...
        'y(i)=sin(t);','...',...
    ]

```

```

        'ynt(i)=hermite(t,n1,n2);','...
        'i=i+1;','...
        'end','...
        'plot(x,y,'b*',x,ynt,'r-'),','...
        'axis([0 7 -1.5 1.5]),','...
        'legend('sin(x)','Hermite插值')');
b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...
    'style','pushbutton',...
    'string','误差比较',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[170 60 70 20],...
    'callback',[...
        'strn1=get(e2,'string');','...
        'n1=str2num(strn1);','...
        'strn2=get(e3,'string');','...
        'n2=str2num(strn2);','...
        'dn=str2num(strdn);','...
        'dd=abs(sin(dn)-hermite(dn,n1,n2));','...
        'msgbox(['误差为:',num2str(dd)],'计算结果')']);
e1=uicontrol('parent',h0,...
    'units','points',...
    'tag','e1',...
    'style','edit',...
    'fontsize',12,...
    'string','1.20',...
    'horizontalalignment','right',...
    'backgroundcolor',[1 1 1],...

```

```

        'position',[200 100 40 20]);
t1=uicontrol('parent',h0,...
    'units','points',...
    'tag','t1',...
    'style','text',...
    'string','误差点: ',...
    'fontsize',12,...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[160 100 40 20]);
e2=uicontrol('parent',h0,...
    'units','points',...
    'tag','e2',...
    'style','edit',...
    'fontsize',12,...
    'string','1.00',...
    'horizontalalignment','right',...
    'backgroundcolor',[1 1 1],...
    'position',[20 85 40 20]);
t2=uicontrol('parent',h0,...
    'units','points',...
    'tag','t2',...
    'style','text',...
    'string','第一节点: ',...
    'fontsize',12,...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[15 105 50 20]);
e3=uicontrol('parent',h0,...
    'units','points',...
    'tag','e3',...

```

```

        'style','edit',...
        'fontsize',12,...
        'string','3.00',...
        'horizontalalignment','right',...
        'backgroundcolor',[1 1 1],...
        'position',[100 85 40 20]);
t3=uicontrol('parent',h0,...
    'units','points',...
    'tag','t3',...
    'style','text',...
    'string','第二节点: ',...
    'fontsize',12,...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[95 105 50 20]);
b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'style','pushbutton',...
    'string','关闭',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[100 20 60 20],...
    'callback','close');

```

实例89: newton形式的hermite插值

```

h0=figure('toolbar','none',...
    'position',[200 50 350 450],...
    'name','实例89');
h1=axes('parent',h0,...
    'position',[0.10 0.45 0.8 0.5],...

```

```

        'visible','off');
x=0:0.2:2*pi;
y=sin(x);
plot(x,y)
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'string','N-Hermite插值',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[20 60 70 20],...
    'callback',[...
        'strn1=get(e2,''string'');','...',...
        'n1=str2num(strn1);','...',...
        'strn2=get(e3,''string'');','...',...
        'n2=str2num(strn2);','...',...
        'x=0:0.2:2*pi;','...',...
        'i=1;','...',...
        'for t=0:0.2:2*pi','...',...
        'y(i)=sin(t);','...',...
        'ynh(i)=nhermite(t,n1,n2);','...',...
        'i=i+1;','...',...
        'end','...',...
        'plot(x,y,''b*'',x,ynh,''r-''),'',...
        'axis([0 7 -1.5 1.5]),','...',...
        'legend(''sin(x)'',''N-Hermite插值'')']);
b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...

```

```

'style','pushbutton',...
'string','误差比较',...
'backgroundcolor',[0.75 0.75 0.75],...
'position',[170 60 70 20],...
'callback',[...
    'strdn1=get(e2,''string'');','...',...
    'n1=str2num(strdn1);','...',...
    'strdn2=get(e3,''string'');','...',...
    'n2=str2num(strdn2);','...',...
    'strdn=get(e1,''string'');','...',...
    'dn=str2num(strdn);','...',...
    'dd=abs(sin(dn)-nhermite(dn,n1,n2));','...',...
    'msgbox([''误差为: ',num2str(dd)],''计算结果'')'];
e1=uicontrol('parent',h0,...
    'units','points',...
    'tag','e1',...
    'style','edit',...
    'fontsize',12,...
    'string','1.20',...
    'horizontalalignment','right',...
    'backgroundcolor',[1 1 1],...
    'position',[200 100 40 20]);
t1=uicontrol('parent',h0,...
    'units','points',...
    'tag','t1',...
    'style','text',...
    'string','误差点: ',...
    'fontsize',12,...
    'backgroundcolor',[0.75 0.75 0.75],...

```

```

        'position',[160 100 40 20]);
e2=uicontrol('parent',h0,...
    'units','points',...
    'tag','e2',...
    'style','edit',...
    'fontsize',12,...
    'string','1.00',...
    'horizontalalignment','right',...
    'backgroundcolor',[1 1 1],...
    'position',[20 85 40 20]);
t2=uicontrol('parent',h0,...
    'units','points',...
    'tag','t2',...
    'style','text',...
    'string','第一节点: ',...
    'fontsize',12,...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[15 105 50 20]);
e3=uicontrol('parent',h0,...
    'units','points',...
    'tag','e3',...
    'style','edit',...
    'fontsize',12,...
    'string','3.00',...
    'horizontalalignment','right',...
    'backgroundcolor',[1 1 1],...
    'position',[100 85 40 20]);
t3=uicontrol('parent',h0,...
    'units','points',...

```

```

        'tag','t3',...
        'style','text',...
        'string','第二节点:',...
        'fontsize',12,...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[95 105 50 20]);
b3=uicontrol('parent',h0,...
    'units','points',...
    'tag','b3',...
    'style','pushbutton',...
    'string','关闭',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[100 20 60 20],...
    'callback','close');

```

实例90：平方根法

```

h0=figure('toolbar','none',...
    'position',[200 150 450 250]);
h1=axes('parent',h0,...
    'position',[0.05 0.15 0.65 0.6],...
    'visible','off');
I=imread('abmatrix.bmp','bmp');
image(I)
axis off
huidiao=[...
    'a=[1 0 3 0;0 2 1 2;3 1 15 0;0 2 0 4];;',...
    'b=[1 6 5 8]'';',...
    'r=[a,b];;',...
    'n=4;;',...

```

```

        'tic','...',
        'x=ch(a,b,n);','...',
        'time1=toc;','...',
        'T=num2str(time1);','...',
        'set(e1,''string'',[T,''秒'']);','...',

```

```

        'msgbox([''X=
        ['', num2str(x(1)), num2str(x(2)), num2str(x(3)), num2str(x(4)), ''']'', ''方程组的解'');'];

```

```

        t1=uicontrol('parent',h0,...
        'units','points',...
        'tag','t1',...
        'style','text',...
        'string','方程组如下:',...
        'fontsize',15,...
        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[20 150 100 20]);

```

```

        e1=uicontrol('parent',h0,...
        'units','points',...
        'tag','e1',...
        'style','edit',...
        'horizontalalignment','right',...
        'backgroundcolor',[1 1 1],...
        'position',[290 100 30 20]);

```

```

        t2=uicontrol('parent',h0,...
        'units','points',...
        'tag','t2',...
        'style','text',...
        'string','计算时间:',...
        'fontsize',15,...

```

```

        'backgroundcolor',[0.75 0.75 0.75],...
        'position',[250 125 80 20]);
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'string','平方根法',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[250 60 60 20],...
    'callback',huidiao);
b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...
    'string','关闭',...
    'style','pushbutton',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[250 30 60 20],...
    'callback','close');

```

实例91: gauss消去法

```

h0=figure('toolbar','none',...
    'position',[200 150 450 250],...
    'name','实例91');
h1=axes('parent',h0,...
    'position',[0.05 0.15 0.65 0.6],...
    'visible','off');
I=imread('abmatrix.bmp','bmp');
image(I)
axis off

```

```

huidiao=[...
    'a=[1 2 4 1 7;2 3 0 1 8;4 1 7 6 1;1 1 0 2 1;1 3 0 1
1;];','...',...
    'b=[15 14 19 5 6]'';','...',...
    'r=[a,b];','...',...
    'n=5;','...',...
    'tic','...',...
    'x=gauss(r,n);','...',...
    'time1=toc;','...',...
    'T=num2str(time1);','...',...
    'set(e1,''string'',[T,''秒'']);','...',...

'msgbox([''X=
'',num2str(x(1)),num2str(x(2)),num2str(x(3)),num2str(x(4)),num2str(x(5)),''']'',''方程组的
解'');'];

t1=uicontrol('parent',h0,...
    'units','points',...
    'tag','t1',...
    'style','text',...
    'string','方程组如下: ',...
    'fontsize',15,...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[20 150 100 20]);
e1=uicontrol('parent',h0,...
    'units','points',...
    'tag','e1',...
    'style','edit',...
    'horizontalalignment','right',...
    'backgroundcolor',[1 1 1],...

```

```

        'position',[290 100 30 20]);
t2=uicontrol('parent',h0,...
    'units','points',...
    'tag','t2',...
    'style','text',...
    'string','计算时间: ',...
    'fontsize',15,...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[250 125 80 20]);
b1=uicontrol('parent',h0,...
    'units','points',...
    'tag','b1',...
    'style','pushbutton',...
    'string','GS消去法',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[250 60 60 20],...
    'callback',huidiao);
b2=uicontrol('parent',h0,...
    'units','points',...
    'tag','b2',...
    'string','关闭',...
    'style','pushbutton',...
    'backgroundcolor',[0.75 0.75 0.75],...
    'position',[250 30 60 20],...
    'callback','close');

```