

for

Pitfall



گوشزد

43

2.19.1

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a4barlnk CuplrPnt)

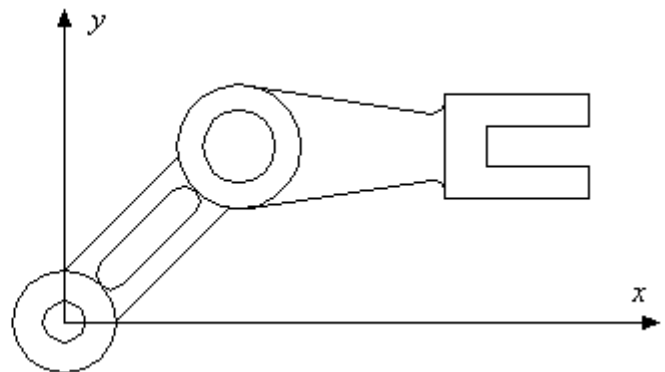
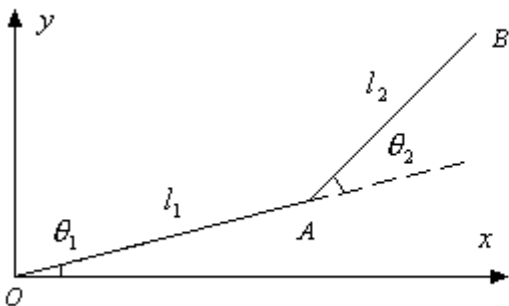
146

1.5.6

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2R

1.New.1



$\theta_2 \ \theta_1$

B A O

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$$x_o = 0, \ y_o = 0$$

$$x_A = l_1 \cos \theta_1, \ y_A = l_1 \sin \theta_1$$

$$x_B = x_A + l_2 \cos(\theta_1 + \theta_2), \ y_B = y_A + l_2 \sin(\theta_1 + \theta_2)$$

: Kin2R

```
function [x,y,xA,yA]=Kin2R(teta1,teta2,L1,L2)
xA=L1*cos(teta1);
yA=L1*sin(teta1);
x =xA+L2*cos(teta1+teta2);
y =yA+L2*sin(teta1+teta2);
```

LineAnimate

 θ_2 θ_1

:

```
function LineAnimate(t,q,L1,L2)
[xB,yB,xA,yA]=Kin2R(q(:,1),q(:,2),L1,L2);
X=[0;xA(:);xB(:)];
Y=[0;yA(:);yB(:)];
framesize=[min(X),max(X),min(Y),max(Y)];
n=length(t);
dt=[0;diff(t)];
for k=1:n
    plot([0,xA(k),xB(k)],[0,yA(k),yB(k)],'.-','r',...
         xB(1:k),yB(1:k),'r:');
    axis('equal','off',framesize)
    set(gcf,'DoubleBuffer','on')
    pause(dt(k));
    drawnow
    shg
end
```

$$\theta_1(t) = \theta_1(0) + \sin t - t ; \theta_1(0) = -18^\circ$$

$$\theta_2(t) = \theta_2(0) + \sin t - t ; \theta_2(0) = 36^\circ$$

$$l_1 = 0.5 , l_2 = 1.5$$

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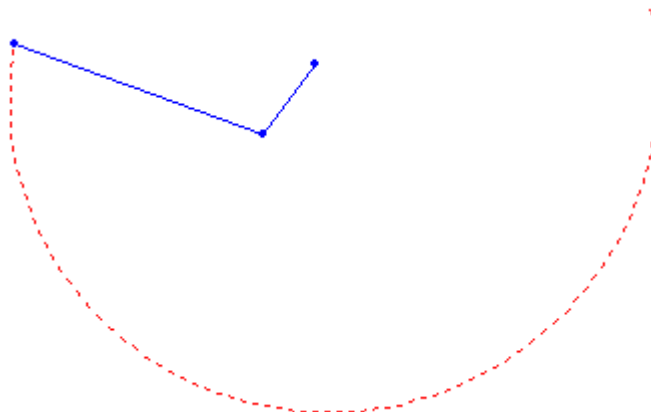
TestLineAnimate

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```
% TestLineAnimate
clear, close all
t=linspace(0,2.5,200)';
q10=-18*pi/180;
q20= 36*pi/180;
teta1=q10+sin(t)-t;
teta2=q20+sin(t)-t;
q=[teta1,teta2];
lineanimate(t,q,0.5,1.5)
```

:

>> TestLineAnimate



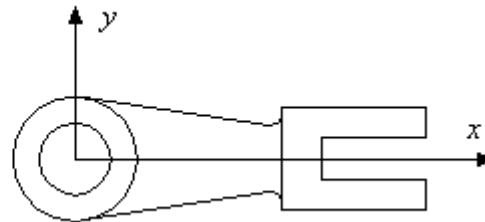
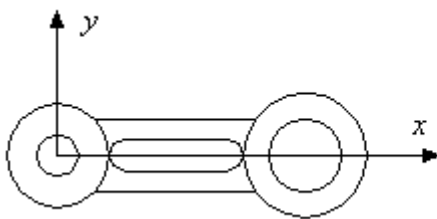
Help



واهنما

set, gcf,
drawnow

2.New.1



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Link2 Link1

```
function [xt,yt,m]=Link1(L)
[x1,y1]=circle(5,0,0);
[x2,y2]=circle(2,0,0);
[x3,y3]=circle(6,L,0);
[x4,y4]=circle(3.5,L,0);
t1=(90:5:270)*pi/180;
t2=(-90:5:90)*pi/180;
x5=[6.5+1.5*cos(t1),(L-7.5)+1.5*cos(t2),6.5]';
y5=[1.5*sin(t1),1.5*sin(t2),1.5]';
x6=[sqrt(5^2-3.5^2),L-sqrt(6^2-3.5^2)]';
y6=[3.5,3.5]';
x7=x6;
y7=-y6;
xt=[];yt=[];
for k=1:7
    x=eval(['x',num2str(k)]);
    y=eval(['y',num2str(k)]);
    m(k)=length(x);
    xt=[xt;x];
    yt=[yt;y];
end
```

```
function [xt,yt,m]=Link2(L)
[x1,y1]=circle(6,0,0);
[x2,y2]=circle(3.5,0,0);
x3=[L-7,L-7,L+7,L+7,L-3,L-3,L+7,L+7,L-7,L-7]';
y3=[0,5,5,2,2,-2,-2,-5,-5,0]';
x42=L-8.1494;
```

```

y42=3.2204;
d=6^4*x42^2-(x42^2+y42^2)*(6^2-y42^2)*6^2;
x41=(6^2-sqrt(d))/(x42^2+y42^2);
AB=sqrt((x42^2+y42^2));
alfa1=atan(y42/x42);
alfa2=acos(6/AB);
alfa=alfa1+alfa2;
x41=6*cos(alfa);
y41=6*sin(alfa);
x4=[x41,x42]';
y4=[y41,y42]';
x5=x4;
y5=-y4;
x06=L-8;y06=4.2092;
alfa6=atan(0.1494/0.9888);
t6=(-pi/2-alfa6:(pi/2+alfa6)/10:0)';
x6=x06+1*cos(t6);
y6=y06+1*sin(t6);
x7=x6;
y7=-y6;
xt=[];yt=[];
for k=1:7
    x=eval(['x',num2str(k)]);
    y=eval(['y',num2str(k)]);
    m(k)=length(x);
    xt=[xt;x];
    yt=[yt;y];
end

```

:

Circle

```

function [x,y]=circle(R,x0,y0)
t=(0:pi/10:2*pi)';
x=x0+R*cos(t);
y=y0+R*sin(t);

```

:

transfer

```

function [xnew,ynew]=transfer(x,y,m,a,b,teta)
xnew=a+x*cos(teta)-y*sin(teta);
ynew=b+y*cos(teta)+x*sin(teta);
p=length(m);
for i=1:p
    if i==1
        L=1;
        R=m(1);
    else
        L=1+sum(m(1:i-1));
        R=sum(m(1:i));
    end
    x=xnew(L:R);
    y=ynew(L:R);
    if i==2
        fill(x,y,'b')
    else
        plot(x,y,'k')
    end
    hold on
    axis off
end

```

```
v=[-20,60,-10,50];
axis equal
axis(v)
title('Animation of 2R Robot Manipolator')
```

TestArmAnimate

```
% TestArmAnimate
clear
close all
L1=24;
L2=27;
[x1,y1,m1]=link1(L1);
[x2,y2,m2]=link2(L2);
figure('numbertitle','off','name','Mosafer M.')
for j=1:20
    teta1=(25+5*j)*pi/180;
    teta2=(-2+2*j)*pi/180;
    transfer(x1,y1,m1,0,0,teta1);
    transfer(x2,y2,m2,L1*cos(teta1),L1*sin(teta1),teta2);
    shg
    if j==1
        text(15,0,'Press any key for animation.','color','red','FontSize',13)
        set(gcf,'DoubleBuffer','on')
        pause
    end
    drawnow
    shg
    hold off
end
```

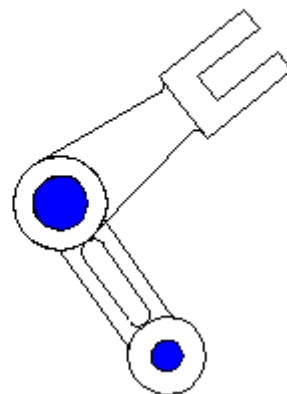
: TestArmAnimate

>> TestArmAnimate

Animation of 2R Robot Manipolator



Animation of 2R Robot Manipolator

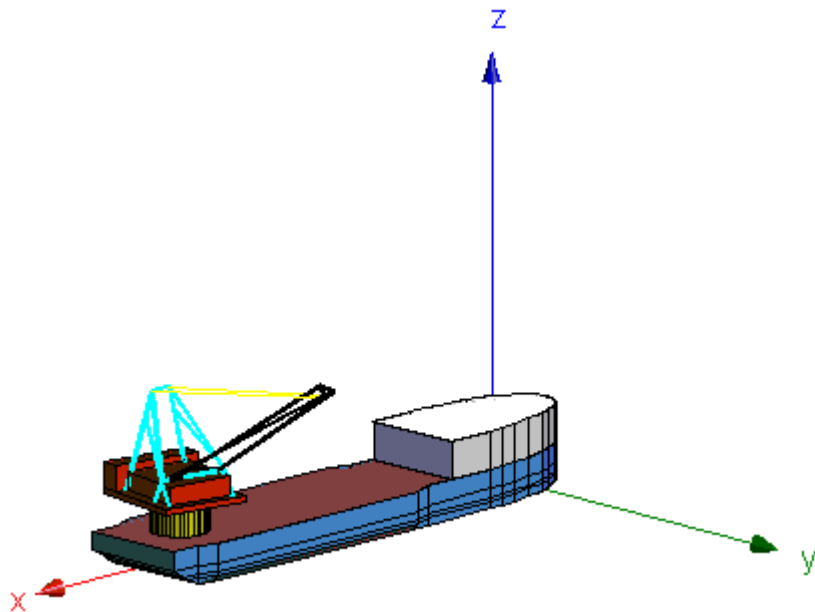


1200

3.New.1



>> ShipAnimate



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1200

http://www.sharemation.com/mmnrecipes/SIMAB_1200_3D_Animation.pdf

http://www.geocities.com/mmnrecipes/SIMAB_1200_3D_Animation.pdf

<http://blog.360.yahoo.com/blog-k4Xy2w88fr8PtajVmHXxkmKM>

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<http://www.sharemation.com/mmnrecipes/Animation.zip>

<http://mmnrecipes.blogspot.com>

http://www.sharemation.com/mmnrecipes/Numerical_Recipes.html

http://www.geocities.com/mmnrecipes/Numerical_Recipes.html

Pitfall

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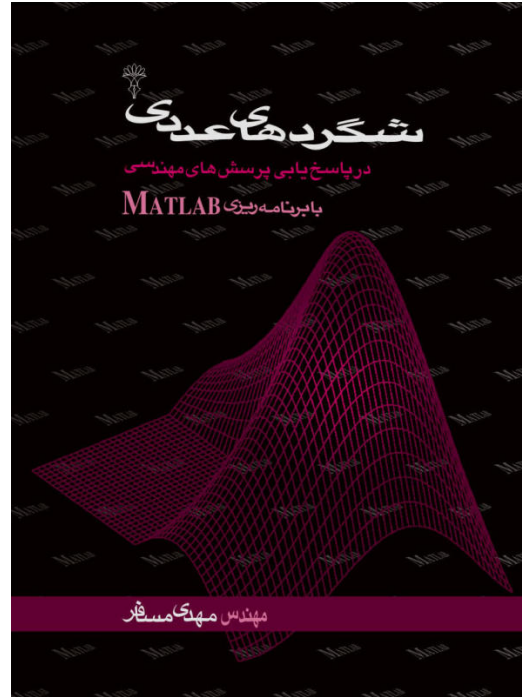
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mmnrecipes@yahoo.com

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MATLAB



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<http://mmnrecipes.blogspot.com>

http://www.sharemation.com/mmnrecipes/Numerical_Recipes.html

http://www.geocities.com/mmnrecipes/Numerical_Recipes.html