Robot class

function runRobot(obj)

start

set(gcf,'WindowKeyPressFcn', @keyboard\_down,'CloseRequestFcn', @close\_window, 'WindowKeyReleaseFcn', @keyboard\_up)

robot = line(obj.Position(1), obj.Position(2),1.1,'marker','o','linewidth', 2);

program\_on = 1;

count = 0;

no

program\_on

yes

delete(gcf);

stop

count = count + 1;

userdataStore = [obj.Velocity obj.Angle obj.Position];

vel = [userdataStore(1)\*cosd(userdataStore(2)),userdataStore(1)\*sind(userdataStore(2))];

pos = userdataStore(3:4);

new\_position = pos + vel;

yes

new\_position(1) > obj.Xlim or new\_position(2) > obj.Ylim or new\_position(1) < 0 or new\_position(2) < 0

no

new\_position = pos

new\_position = pos + vel;

x1 = new\_position(1);

x2 = new\_position(1)+obj.Sensor.Range\*cosd(userdataStore(2))+obj.Sensor.Range\*tand(obj.Sensor.AOV/2)\*cosd(90-userdataStore(2));

x3 = new\_position(1)+obj.Sensor.Range\*cosd(userdataStore(2))-obj.Sensor.Range\*tand(obj.Sensor.AOV/2)\*cosd(90-userdataStore(2));

y1 = new\_position(2);

y2 = new\_position(2)+obj.Sensor.Range\*sind(userdataStore(2))-obj.Sensor.Range\*tand(obj.Sensor.AOV/2)\*sind(90-userdataStore(2));

y3 = new\_position(2)+obj.Sensor.Range\*sind(userdataStore(2))+obj.Sensor.Range\*tand(obj.Sensor.AOV/2)\*sind(90-userdataStore(2));

v1 = [y2-y1 -x2+x1];

v2 = [y3-y2 -x3+x2];

v3 = [y1-y3 -x1+x3];

v11 = [obj.Object(1)-x1 obj.Object(2)-y1];

v22 = [obj.Object(1)-x2 obj.Object(2)-y2];

v33 = [obj.Object(1)-x3 obj.Object(2)-y3];

d1 = dot(v1,v11);

d2 = dot(v2,v22);

d3 = dot(v3,v33);

set(robot, 'XData', x1, 'YData', y1,'ZData',1.1);

set(obj.Sensor.Orient,'XData',[x1 x2 x3 x1],'YData',[y1 y2 y3 y1],ZData',[1.1 1.1 1.1 1.1])

line(x1, y1,1.1,'marker','.','linewidth', 1,'Color','magenta');

no

d1 <= 0 and d2 <= 0 and d3 <= 0

yes

res = 0;

res = 1;

yes

count == obj.Sensor.Count

no

sensorDetection(x1,x2,x3,y1,y2,y3,res);

count = 0;

pause(0.05)

function obj = Robot(s)

start

obj.Sensor = s;

stop