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```
function juggle(catch_height, jointstates) %% elbow 1.2 and 1.8
```

ROS setup

```
%Publisher
RefPub = rospublisher('reference','geometry_msgs/Vector3');
RefMsg = rosmessage('geometry_msgs/Vector3');


%Subscriber
ball_pos = rossubscriber('/object_update');
sub = rossubscriber('/encoder','geometry_msgs/Vector3');
```

```
Error using juggle (line 4)
The global ROS node is not initialized. Use "rosinit" to start the
 global node and connect to a ROS network.
```

SETUP IK

```
[gik, posTgt, jointConst, robot, ~ ,  ~]=setupIK();
```

TOSS

```
RefMsg.X = jointstates(1); RefMsg.Y =  jointstates(2); RefMsg.Z =
 jointstates(3);
send(RefPub,RefMsg);
```

CATCH

```
obj_index = 1;
start=tic;
while true
    %Find ball
    coords = receive(ball_pos,1);
    %ik
    posTgt.TargetPosition = [coords.Objects(obj_index).X/1000
 coords.Objects(obj_index).Y/1000 catch_height];
    tic
    [q,~] = gik(homeConfiguration(robot),posTgt, jointConst); %Inverse
 Kinematics
```

```
    toc
    RefMsg.X = -q(1).JointPosition; RefMsg.Y =  -q(2).JointPosition;
 RefMsg.Z = -q(3).JointPosition;

    %publish motion
    send(RefPub,RefMsg);
    if toc(start)>1
        break
    end
end
disp('Out of catch')

end
```

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