x=-32.5;

y=41.87;

z=30.84;

q1= sym('q1');

q2= sym('q2');

q3= sym('q3');

q4= sym('q4');

q5= sym('q5');

q6= sym('q6');

L1= 10;

L2= 10;

L3= 10;

L4= 10;

Fx= cos((pi\*(q1 - 90))/180)\*sin((pi\*(q2 - 90))/180)\*(L2 + q3) - L4\*(sin((pi\*(q5 + 90))/180)\*(sin((pi\*(q1 - 90))/180)\*sin((pi\*(q4 + 90))/180) - cos((pi\*(q1 - 90))/180)\*cos((pi\*(q2 - 90))/180)\*cos((pi\*(q4 + 90))/180)) + cos((pi\*(q1 - 90))/180)\*cos((pi\*(q5 + 90))/180)\*sin((pi\*(q2 - 90))/180)) + L3\*cos((pi\*(q1 - 90))/180)\*sin((pi\*(q2 - 90))/180)-x;

Fy=L4\*(sin((pi\*(q5 + 90))/180)\*(cos((pi\*(q1 - 90))/180)\*sin((pi\*(q4 + 90))/180) + cos((pi\*(q2 - 90))/180)\*cos((pi\*(q4 + 90))/180)\*sin((pi\*(q1 - 90))/180)) - cos((pi\*(q5 + 90))/180)\*sin((pi\*(q1 - 90))/180)\*sin((pi\*(q2 - 90))/180)) + sin((pi\*(q1 - 90))/180)\*sin((pi\*(q2 - 90))/180)\*(L2 + q3) + L3\*sin((pi\*(q1 - 90))/180)\*sin((pi\*(q2 - 90))/180)-y;

Fz= L1 - L4\*(cos((pi\*(q2 - 90))/180)\*cos((pi\*(q5 + 90))/180) + cos((pi\*(q4 + 90))/180)\*sin((pi\*(q2 - 90))/180)\*sin((pi\*(q5 + 90))/180)) + cos((pi\*(q2 - 90))/180)\*(L2 + q3) + L3\*cos((pi\*(q2 - 90))/180)-z;

F=[Fx;Fy;Fz];

A1= jacobian(Fx,[q1,q2,q3,q4,q5,q6]);

A2= jacobian(Fy,[q1,q2,q3,q4,q5,q6]);

A3= jacobian(Fz,[q1,q2,q3,q4,q5,q6]);

FJ= [A1;A2;A3];

%inverseFJ= transpose(FJ)\*(inv(FJ\*transpose(FJ)));

qold=[50;50;50;50;50;50];

i=20;

dog=true;

while (i>0 && dog)

q1=qold(1,1);

q2=qold(2,1);

q3=qold(3,1);

q4=qold(4,1);

q5=qold(5,1);

q6=qold(6,1);

Fsub= eval(subs(F));

FJsub= eval(subs(FJ));

inverseFJsub= transpose(FJsub)\*(inv(FJsub\*transpose(FJsub)));

qnew=qold-inverseFJsub\*Fsub;

%disp(inverseFJsub\*Fsub);

count=0;

disp("Old Q = " +qold);

disp(" New Q = " +qnew);

for xx = 1:6

if ((qnew(xx,1)-qold(xx,1)<0.1) && (qnew(xx,1)-qold(xx,1)>-0.1 ))

count=count+1;

end

end

if( count == 6)

dog=false;

end

i=i-1;

qold=qnew;

disp("count = "+( 20-i));

end

q1=qnew(1,1);

q2=qnew(2,1);

q3=qnew(3,1);

q4=qnew(4,1);

q5=qnew(5,1);

q6=qnew(6,1);

disp(qnew);

ITERATION in command window:

"Old Q = 50"

"Old Q = 50"

"Old Q = 50"

"Old Q = 50"

"Old Q = 50"

"Old Q = 50"

" New Q = 42.8804"

" New Q = 34.2946"

" New Q = 23.7967"

" New Q = 50.1239"

" New Q = 45.4519"

" New Q = 50"

count = 1

"Old Q = 42.8804"

"Old Q = 34.2946"

"Old Q = 23.7967"

"Old Q = 50.1239"

"Old Q = 45.4519"

"Old Q = 50"

" New Q = 42.6165"

" New Q = 26.3343"

" New Q = 29.0439"

" New Q = 50.7482"

" New Q = 45.0826"

" New Q = 50"

count = 2

"Old Q = 42.6165"

"Old Q = 26.3343"

"Old Q = 29.0439"

"Old Q = 50.7482"

"Old Q = 45.0826"

"Old Q = 50"

" New Q = 42.6498"

" New Q = 27.0498"

" New Q = 29.415"

" New Q = 50.6973"

" New Q = 45.1975"

" New Q = 50"

count = 3

"Old Q = 42.6498"

"Old Q = 27.0498"

"Old Q = 29.415"

"Old Q = 50.6973"

"Old Q = 45.1975"

"Old Q = 50"

" New Q = 42.6497"

" New Q = 27.0445"

" New Q = 29.4201"

" New Q = 50.6977"

" New Q = 45.1975"

" New Q = 50"

count = 4

42.6497

27.0445

29.4201

50.6977

45.1975

50.0000