ROBOANALYZER-BASED ONLINE COMPETITION (ROC) AS VIRTUAL SUMMER INTERNSHIP 2021

TEAM _C3

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Procedure:

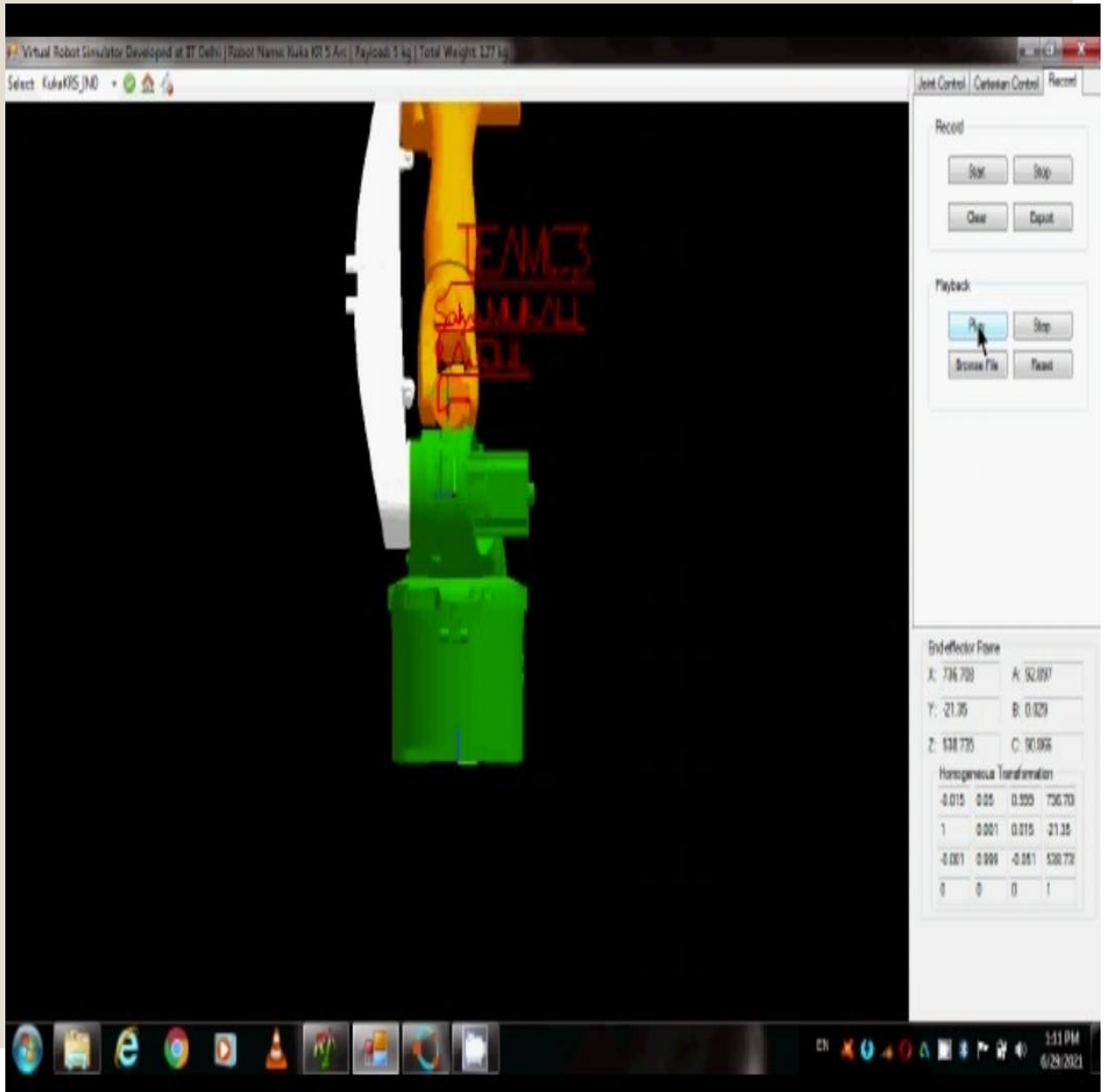
Firstly, For the trajectory of any object, we used softwares, Octave Online and MATLAB,where we wrote code to draw the desired shape.

```
octave:1> % MATLAB code to draw Indian flag

% initialising a zero matrix of 300X600X3
flag=uint8(zeros(300, 600, 3));
flag(:, :, :)=255;
%Saffron Color
flag(1:100, :, 1)=255;
flag(1:100, :, 2)=153;
flag(1:100, :, 3)=51;

%Green Color
flag(200:300, :, 1)=19;
flag(200:300, :, 2)=136;
flag(200:300, :, 3)=8;

%Ashok Chakra
for i=1:300
    for j=1:600
        if sqrt(power(i-150, 2)+ power(j-300, 2))>=40
            if sqrt(power(i-150, 2)+ power(j-300, 2))<=45
                flag(i, j, 1:2)=0;
            end
        end
    end
end
for i=110:190
    for j=260:340
        dist= (sqrt(power(i-150, 2)+power(j-300, 2)));
        k=round(atand((300-j)/(150-i)));
        if dist<=40 && mod(k, 15)==0
            flag(i, j, 1:2)=0;
        end
    end
end
% displaying the matrix as image
figure, imshow(flag)
```



Then we converted the required coordinates of X,Y,Z into CSV file. Where we can get the values of all points wrt origin.

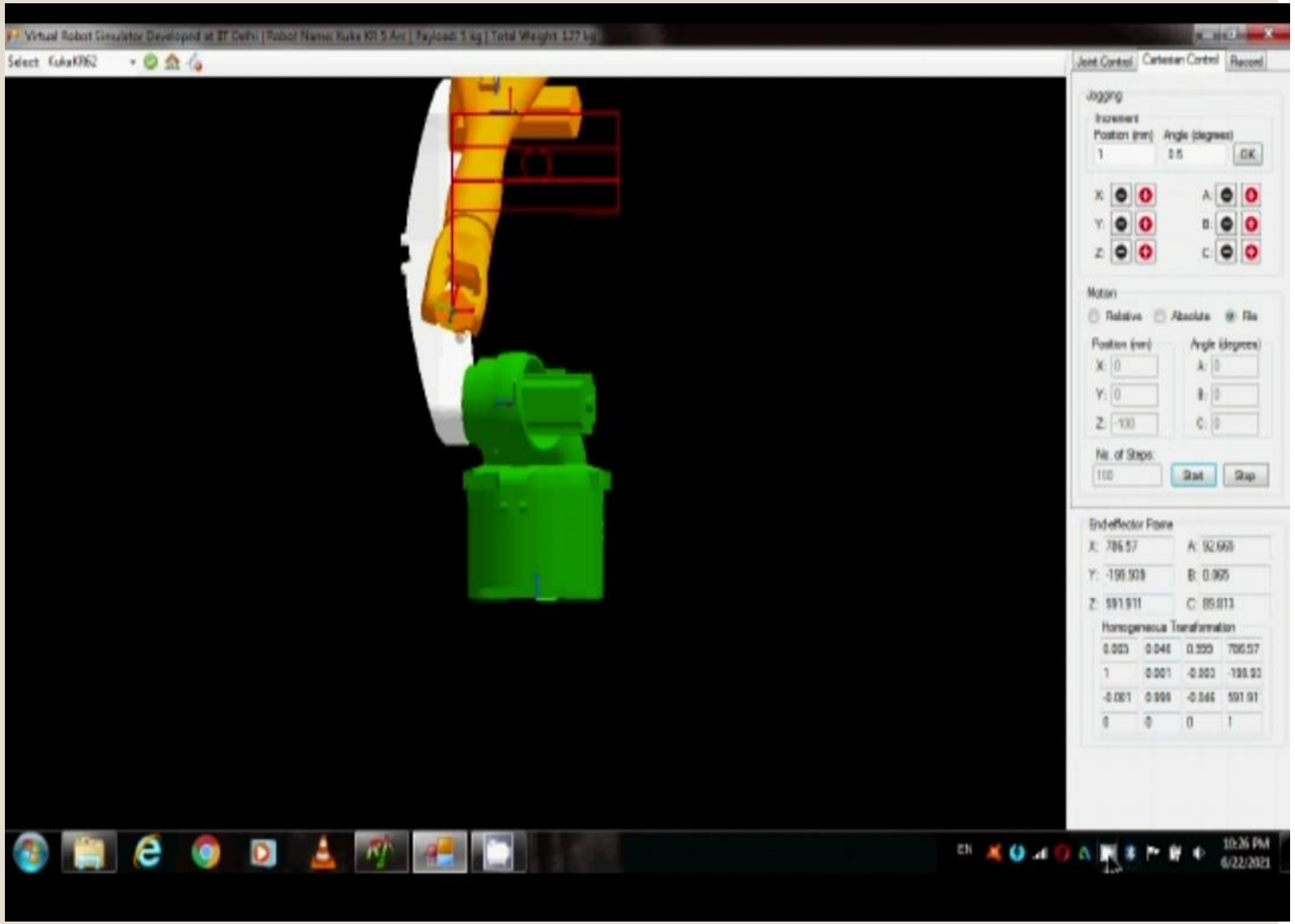
After obtaining x,y,z values, we inserted all these values into excel file.

We do some modifications , then we used the file to draw some particular trajectory using Roboanalyser Software.

	A	B	C	D	E	F
1	0.219608	99	-38	-179.547	209	-90.3962
2	0.43922	98.99898	-37.9991	-179.094	209.0017	-90.7923
3	0.658821	98.99692	-37.9974	-178.641	209.005	-91.1885
4	0.878415	98.99383	-37.9948	-178.188	209.0101	-91.5844
5	1.097974	98.98973	-37.9913	-177.736	209.0168	-91.9801
6	1.317514	98.98458	-37.987	-177.284	209.0252	-92.3756
7	1.537011	98.97841	-37.9818	-176.832	209.0352	-92.7707
8	1.756487	98.97122	-37.9757	-176.38	209.047	-93.1655
9	1.9759	98.96298	-37.9688	-175.929	209.0603	-93.5598
10	2.195266	98.95373	-37.9609	-175.478	209.0754	-93.9536
11	2.414573	98.94346	-37.9523	-175.028	209.0921	-94.3468
12	2.633817	98.93217	-37.9427	-174.579	209.1105	-94.7394
13	2.852986	98.91984	-37.9323	-174.13	209.1305	-95.1312
14	3.07207	98.90649	-37.921	-173.683	209.1522	-95.5223
15	3.291064	98.89213	-37.9089	-173.236	209.1754	-95.9126
16	3.509958	98.87675	-37.8959	-172.789	209.2003	-96.3019
17	3.728784	98.86035	-37.882	-172.344	209.2269	-96.6904
18	3.947485	98.84293	-37.8673	-171.9	209.255	-97.0778
19	4.166097	98.82449	-37.8517	-171.457	209.2847	-97.4643
20	4.166097	98.82449	-37.8517	-171.457	209.2847	-97.4643
21	3.935488	98.84502	-37.8691	-171.923	209.2517	-97.0577

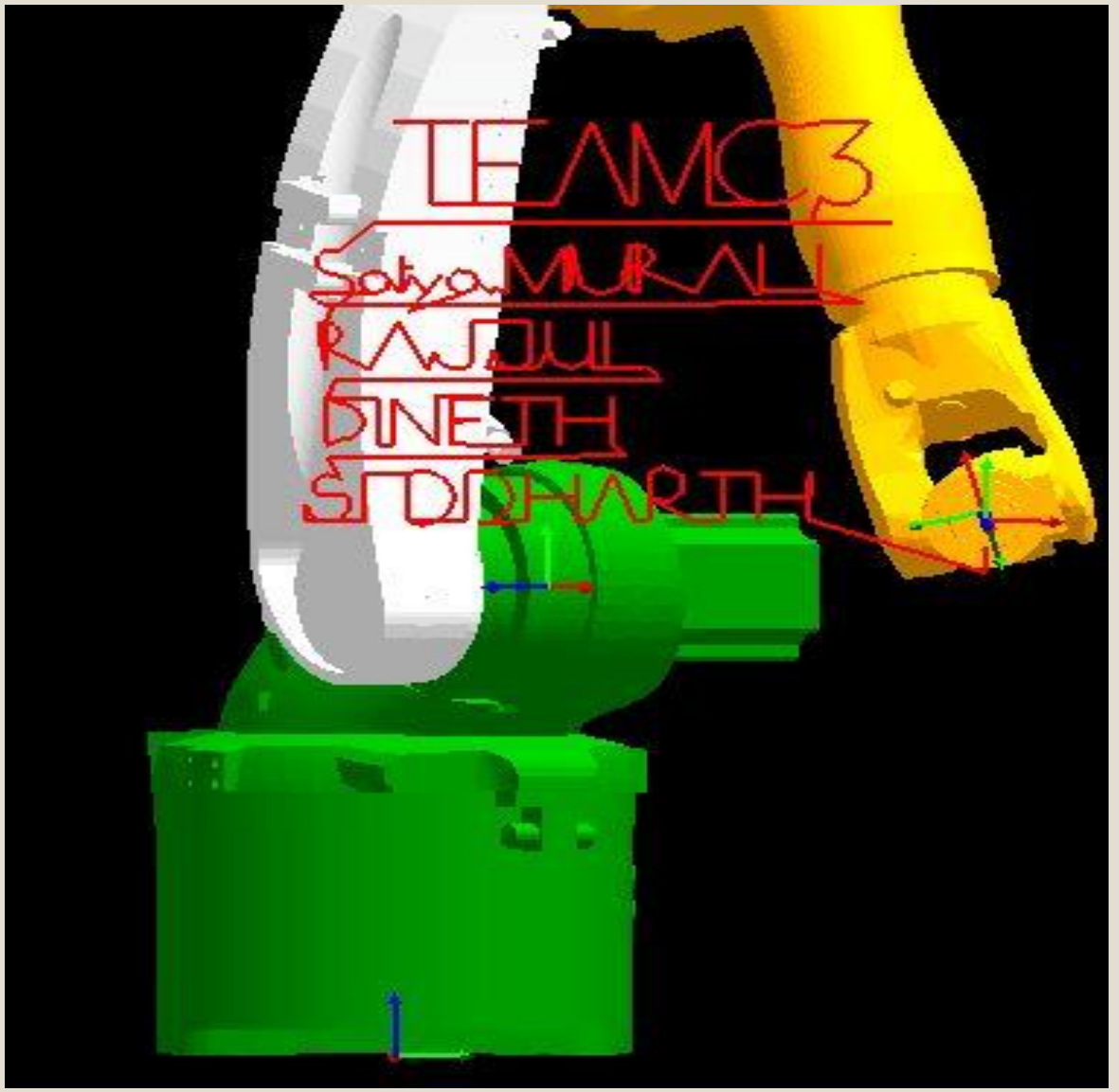
1.We know that all the structures can be made with simply two geometries, lines and circles. Same process is used here to draw the letters.All the block letters are of these two geometries.

2.First calculate the ‘CARTESIAN COORDINATES’ of the end points of the letters. For example, to draw the letter ‘L’ we need to know 3 coordinate points.



- 3.After that we write the codes to draw the straight lines and circular parts.

```
%drawing C3
theta1Array=linspace((3/2)*pi,1.72*pi,5);
for i=1:5
  theta=theta1Array(i);
  p=p17+[0; r*cos(theta); r*sin(theta)];
  index=alreadyexistspoints18+i;
  pxArray(index)=p(1);
  pyArray(index)=p(2);
  pzArray(index)=p(3);
end
alreadyexistspoints19=length(pxArray);
theta2Array=linspace(-0.22*pi,-(5/3)*pi,n);
for i=1:n
  theta=theta2Array(i);
  p=p17+[0; r*cos(theta); r*sin(theta)];
  index=alreadyexistspoints19+i;
  pxArray(index)=p(1);
  pyArray(index)=p(2);
  pzArray(index)=p(3);
end
alreadyexistspoints20=length(pxArray);
delp19=p19-p18;
for i=1:10
  t=t1Array(i);
  p=p18+t*delp19;
  index=alreadyexistspoints20+i;
  pxArray(index)=p(1);
  pyArray(index)=p(2);
```



- The designs we have made are Our National flag, an artistic border frame and our team members names :
- 1) Satyajit 2) Murali 3) Rajjul 4)Dineth 5) Sidharth