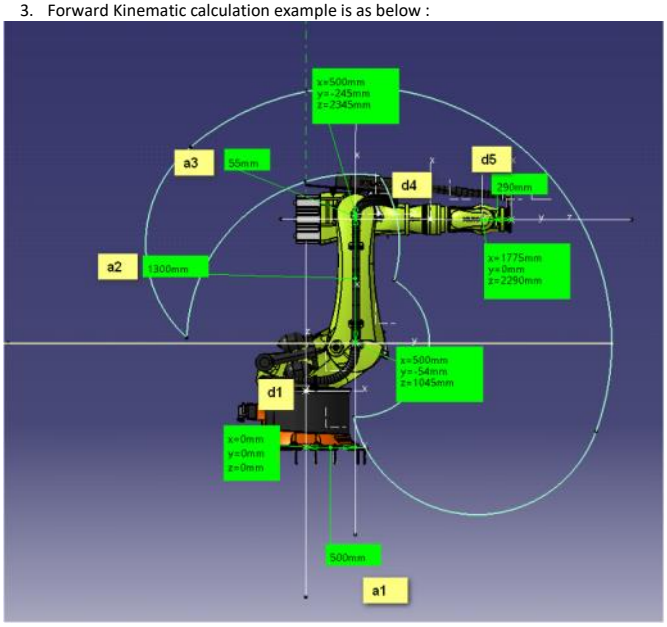
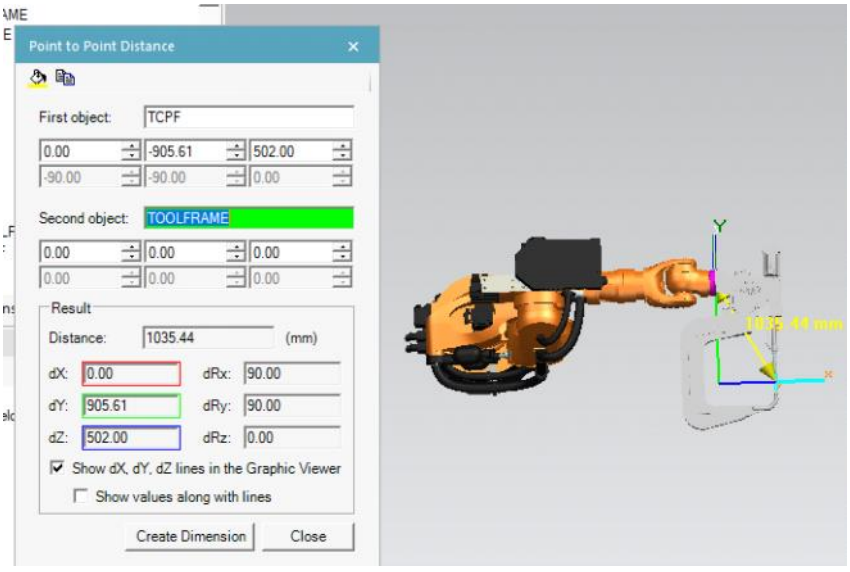
12. Example for KUKA Kinematic and Inverse Kinematic calculation

Sunday, June 5, 2022 11:18 AM

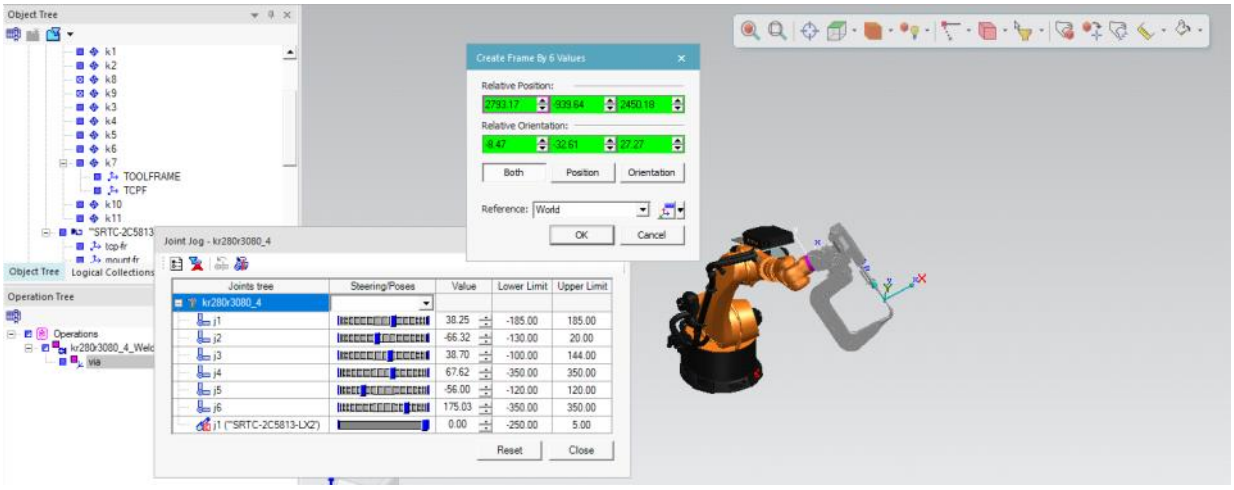
1. KUKA MODEL : KR280R3080;
2. DH Parameter is below :
   a1=500; d1=1045; a2=1300; a3=55; d4=1275; d5=290
3. Forward Kinematic calculation example is as below :



TCPX=0
TCPY=-905.61
TCPZ=502
TCPRX=0
TCPRY=-90
TCPRZ=-90



J1= 38.25;
J2=-66.32;
J3=38.7;
J4=67.62;
J5=-56;
J6=175.03;



Select Microsoft Visual Studio Debug Console

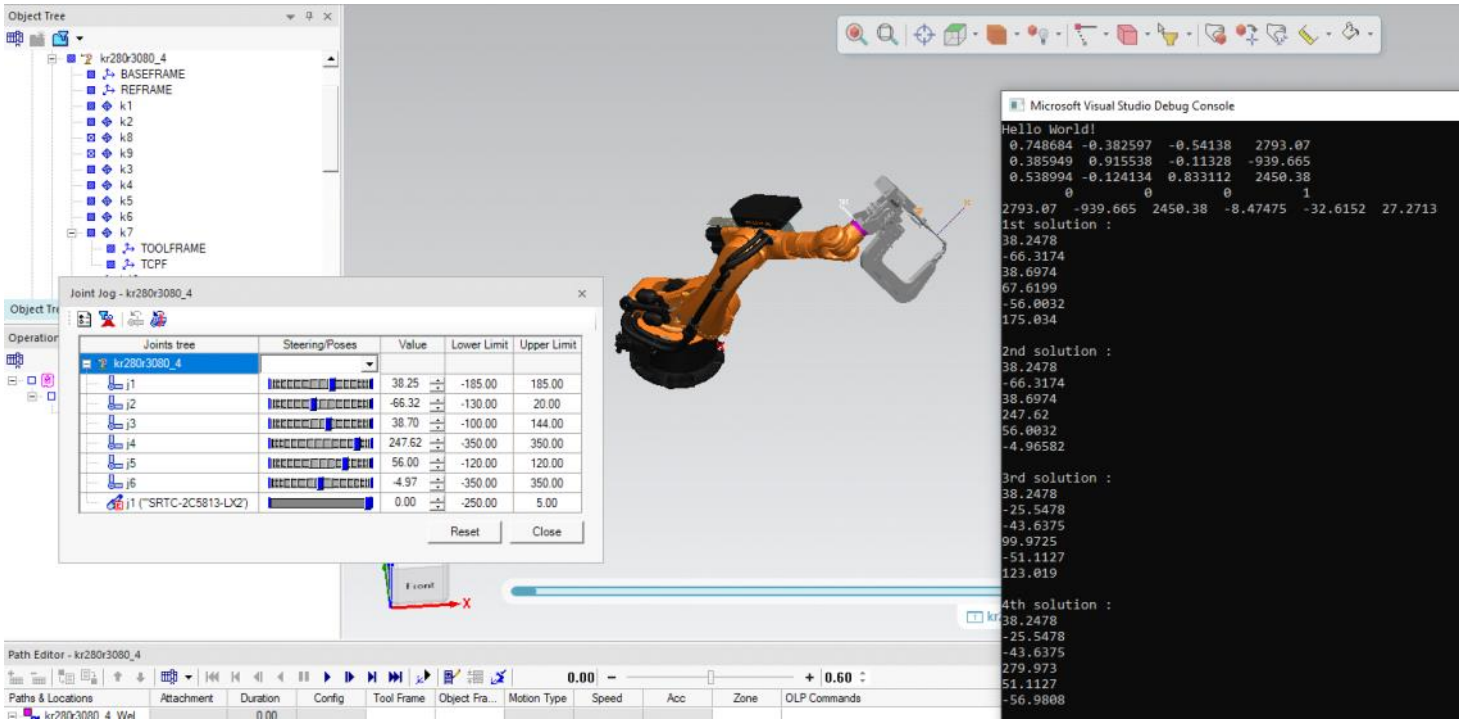
```
Hello World!
 0.748771 -0.382593 -0.541262   2793.08
 0.385875   0.91556 -0.113356  -939.695
 0.538928 -0.123982  0.833178    2450.2
        0         0         0         1
2793.08  -939.695  2450.2  -8.46388  -32.6107  27.2641
```

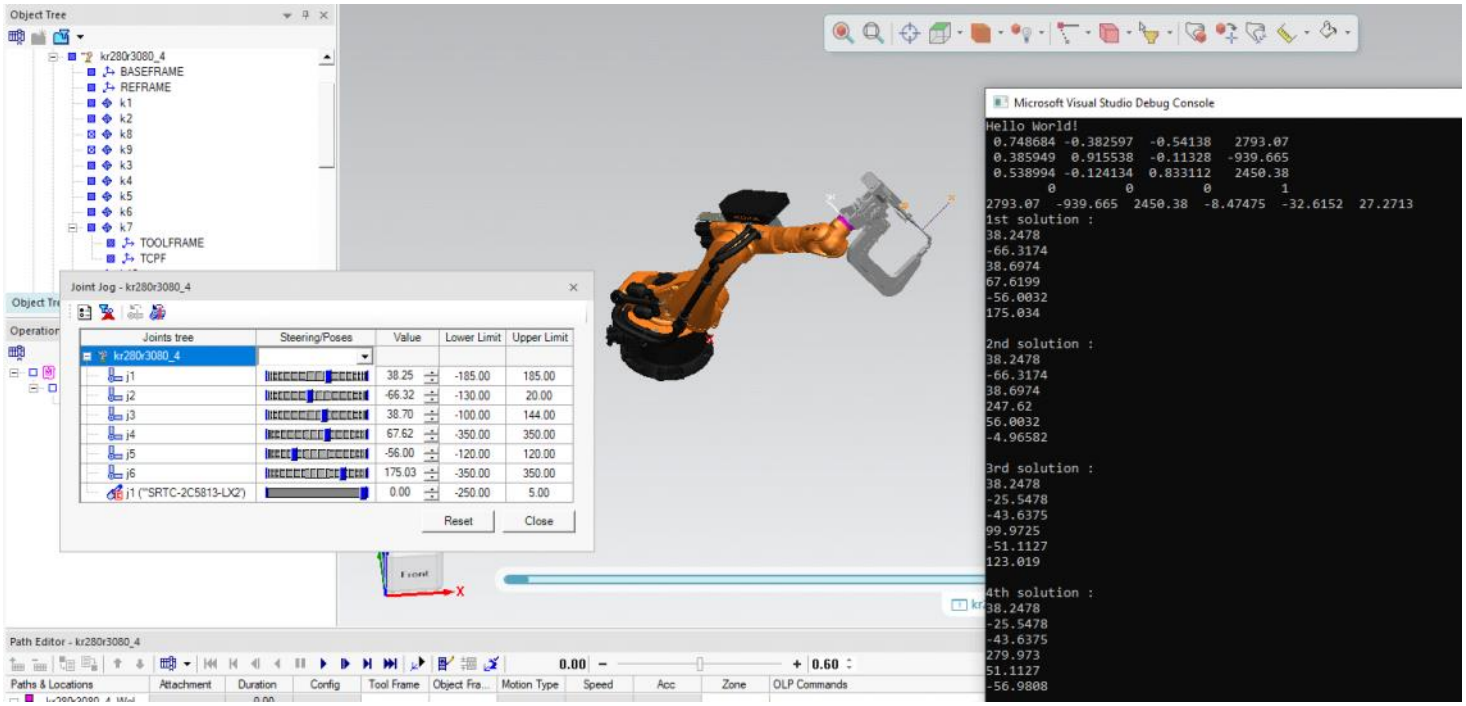
4. Inverse Kinematic calculation example is as below:

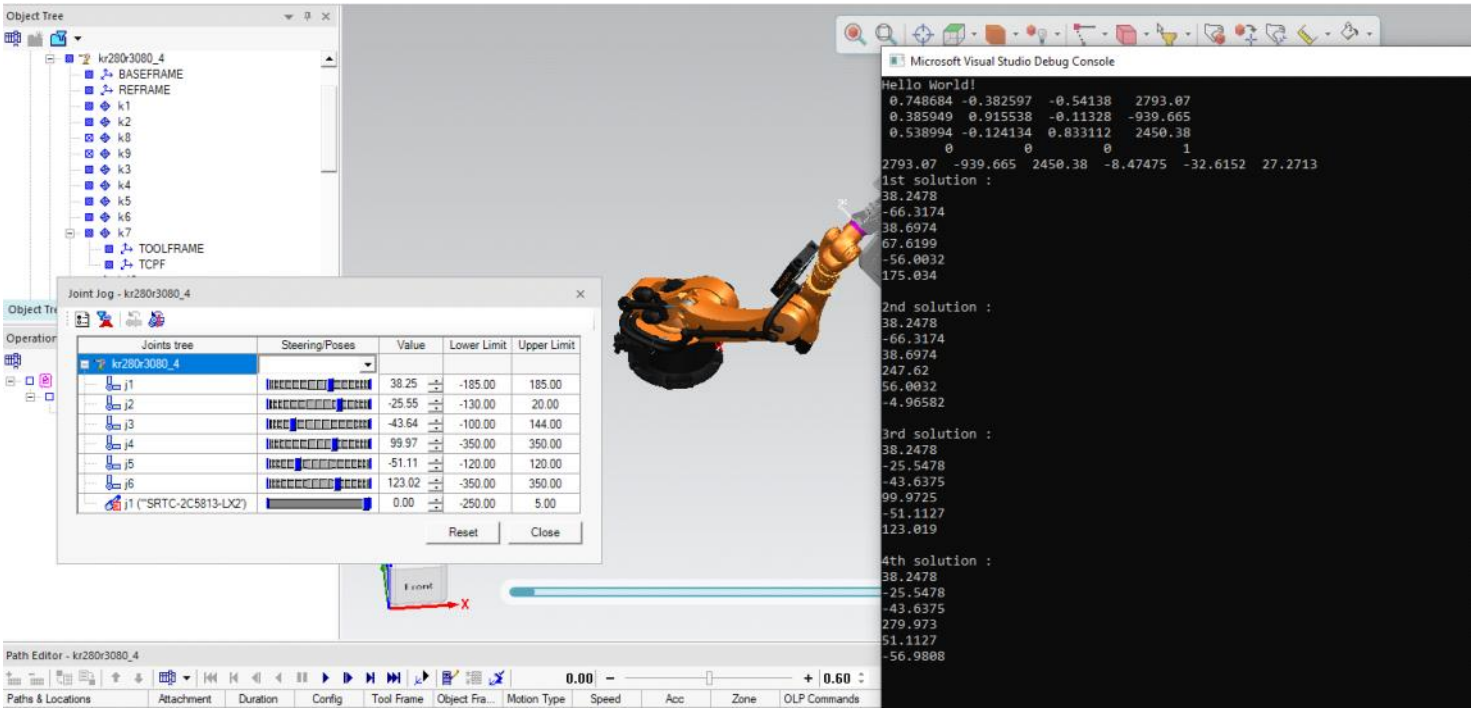
   TCPX = -502;
   TCPY = 0;
   TCPZ = 905.61;
   TCPRX =90;
   TCPRY = 0;
   TCPRZ = 90; // FROM TCP To Flange frame;

   rx = -8.47;
   ry = -32.61;
   rz = 27.27;

   Tx = 2793.17;
   Ty = -939.64;
   Tz = 2450.18;




Object Tree
kr280r3080_4
BASEFRAME
REFRAME
k1
k2
k8
k9
k3
k4
k5
k6
k7
TOOLFRAME
TCPF
Joint Jog - kr280r3080_4
Joints tree
Steering/Poses
Value
Lower Limit
Upper Limit
kr280r3080_4
j1 38.25 -185.00 185.00
j2 -66.32 -130.00 20.00
j3 38.70 -100.00 144.00
j4 67.62 -350.00 350.00
j5 -56.00 -120.00 120.00
j6 175.03 -350.00 350.00
j1 ("SRTC-2C5813-LX2") 0.00 -250.00 5.00
Reset
Close
Front
Path Editor - kr280r3080_4
0.00
0.60
Paths & Locations
Attachment
Duration
Config
Tool Frame
Object Fra...
Motion Type
Speed
Acc
Zone
OLP Commands
Microsoft Visual Studio Debug Console
Hello World!
0.748684 -0.382597 -0.54138 2793.07
0.385949 0.915538 -0.11328 -939.665
0.538994 -0.124134 0.833112 2450.38
0 0 0 1
2793.07 -939.665 2450.38 -8.47475 -32.6152 27.2713
1st solution :
38.2478
-66.3174
38.6974
67.6199
-56.0032
175.034
2nd solution :
38.2478
-66.3174
38.6974
247.62
56.0032
-4.96582
3rd solution :
38.2478
-25.5478
-43.6375
99.9725
-51.1127
123.019
4th solution :
38.2478
-25.5478
-43.6375
279.973
51.1127
-56.9808


Object Tree
kr280r3080_4
BASEFRAME
REFRAME
k1
k2
k8
k9
k3
k4
k5
k6
k7
TOOLFRAME
TCPF
Joint Jog - kr280r3080_4
Joints tree
Steering/Poses
Value
Lower Limit
Upper Limit
kr280r3080_4
j1 38.25 -185.00 185.00
j2 -25.55 -130.00 20.00
j3 -43.64 -100.00 144.00
j4 99.97 -350.00 350.00
j5 -51.11 -120.00 120.00
j6 123.02 -350.00 350.00
j1 ("SRTC-2C5813-LX2") 0.00 -250.00 5.00
Reset
Close
Front
Path Editor - kr280r3080_4
0.00
0.60
Paths & Locations
Attachment
Duration
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Tool Frame
Object Fra...
Motion Type
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OLP Commands
Microsoft Visual Studio Debug Console
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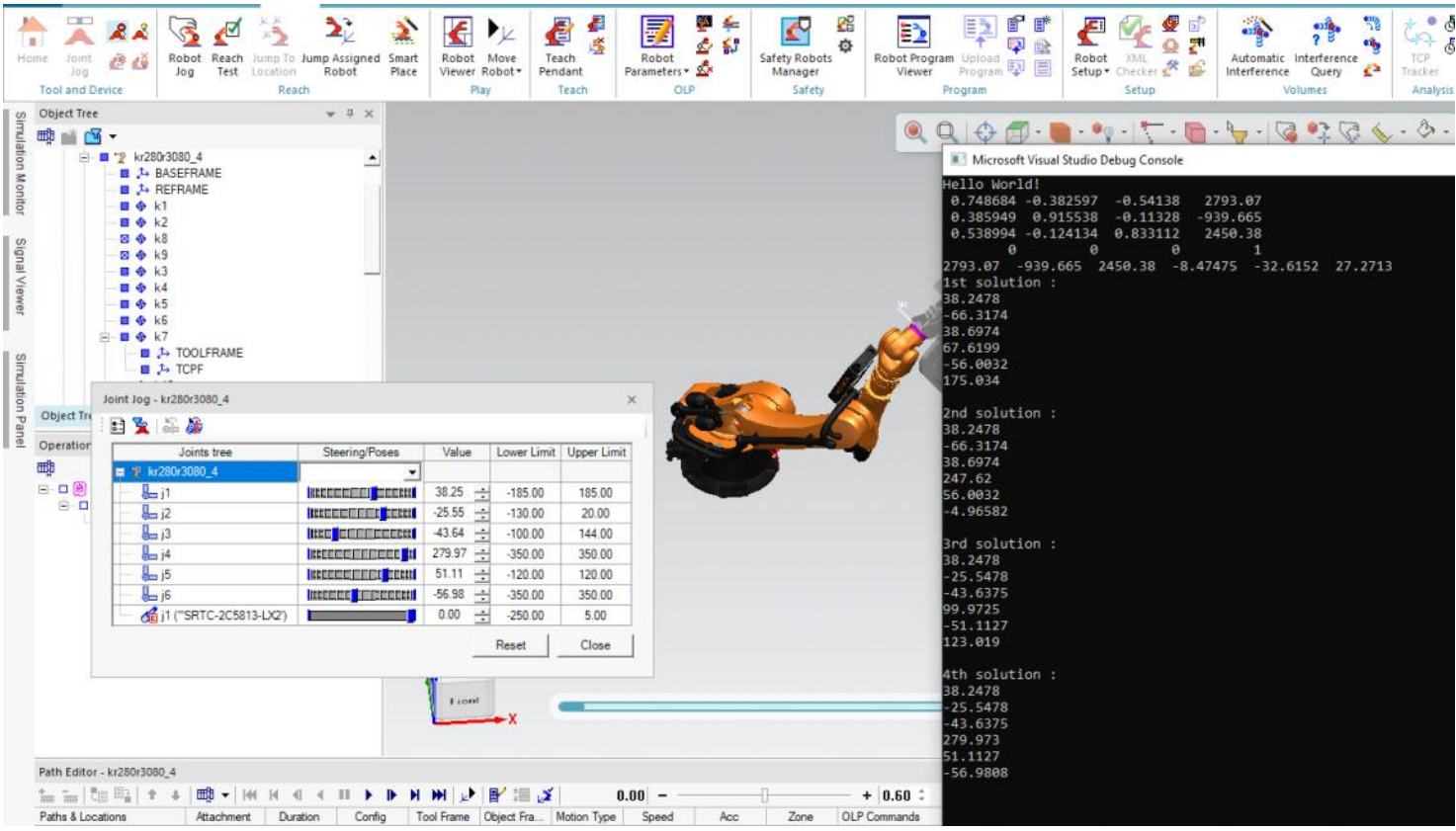
Object Tree
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BASEFRAME
REFRAME
k1
k2
k8
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Joint Jog - kr280r3080_4
Joints tree
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j5 51.11 -120.00 120.00
j6 -56.98 -350.00 350.00
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Reset
Close
Path Editor - kr280r3080_4
Paths & Locations
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Duration
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Tool Frame
Object Fra...
Motion Type
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Microsoft Visual Studio Debug Console
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0.385949 0.915538 -0.11328 -939.665
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0 0 0 1
2793.07 -939.665 2450.38 -8.47475 -32.6152 27.2713
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