



Cairo University
Faculty of Engineering
Credit Hours System

Mechanical Engineering Dept.

ME-Robotics: INTN125

Three Link Robotic Arm Simulation Project

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Submitted To:

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GUI Window(User Interface)

GUI

Three Link Robotic Arm Simulation

L1	Theta 1 Min	Theta 1 Max
5	0	210
L2	Theta 2 Min	Theta 2 Max
3	0	180
L3	Theta 3 Min	Theta 3 Max
2	0	270
Phi	250	

Draw Working Area

Draw Animation

Drawing the Working Area may take a while so please wait

Starting X

6

Starting Y

6

Ending X

2

Ending Y

8

Draw Line

DKPM

Angle 1

Angle 2

Angle 3

X =

Y =

Calculate & Draw

IKPM

X

Y

Angle 1

Angle 2

Angle 3

Calculate

Calculate Green Theroem

Approximate Green Theroem

Drawing the boundaries of robotic arm and calculating the x-y coordinates by giving the 3 angles.

GUI

Three Link Robotic Arm Simulation

L1	Theta 1 Min	Theta 1 Max
5	0	210
L2	Theta 2 Min	Theta 2 Max
3	0	180
L3	Theta 3 Min	Theta 3 Max
2	0	270
Phi	250	

Draw Working Area

Draw Animation

Drawing the Working Area may take a while so please wait

Starting X

6

Starting Y

6

Ending X

2

Ending Y

8

Draw Line

DKPM

Angle 1

40

Angle 2

50

Angle 3

20

X =

3.1462

Y =

8.0933

Calculate & Draw

IKPM

X

Y

Angle 1

Angle 2

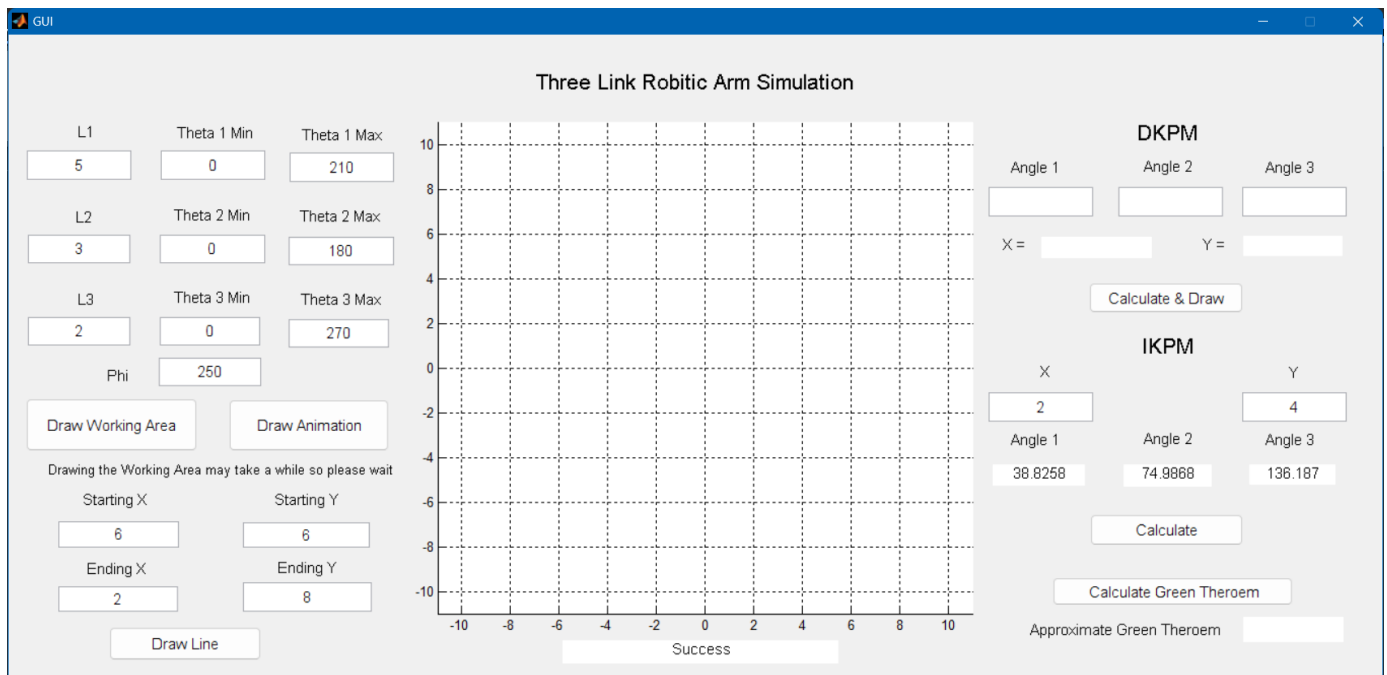
Angle 3

Calculate

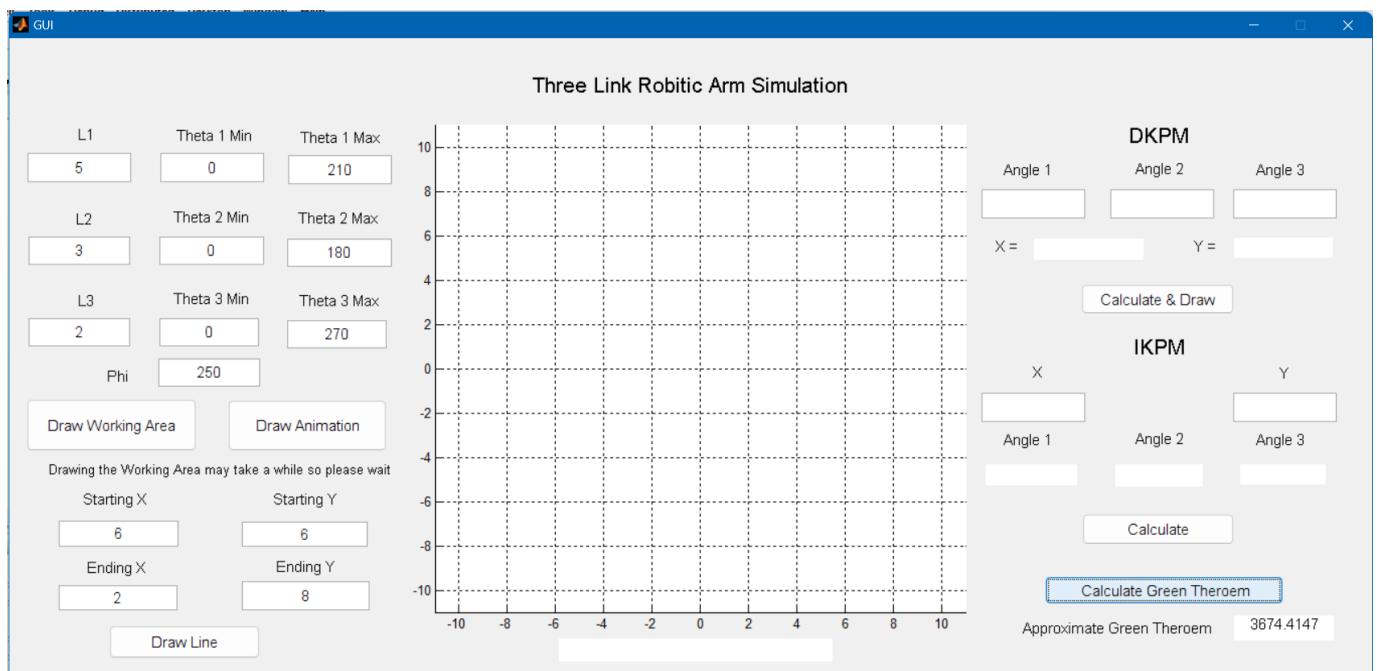
Calculate Green Theroem

Approximate Green Theroem

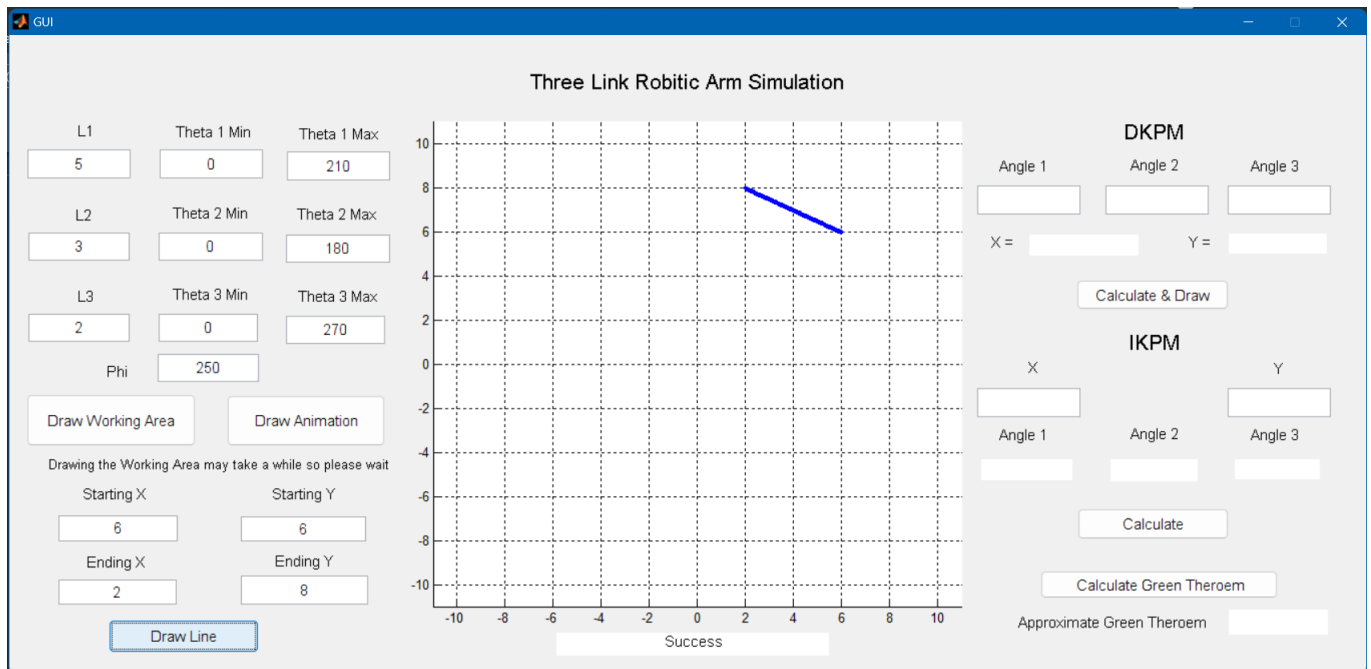
Using IKPM function to get three angles using given x-y coordinates.



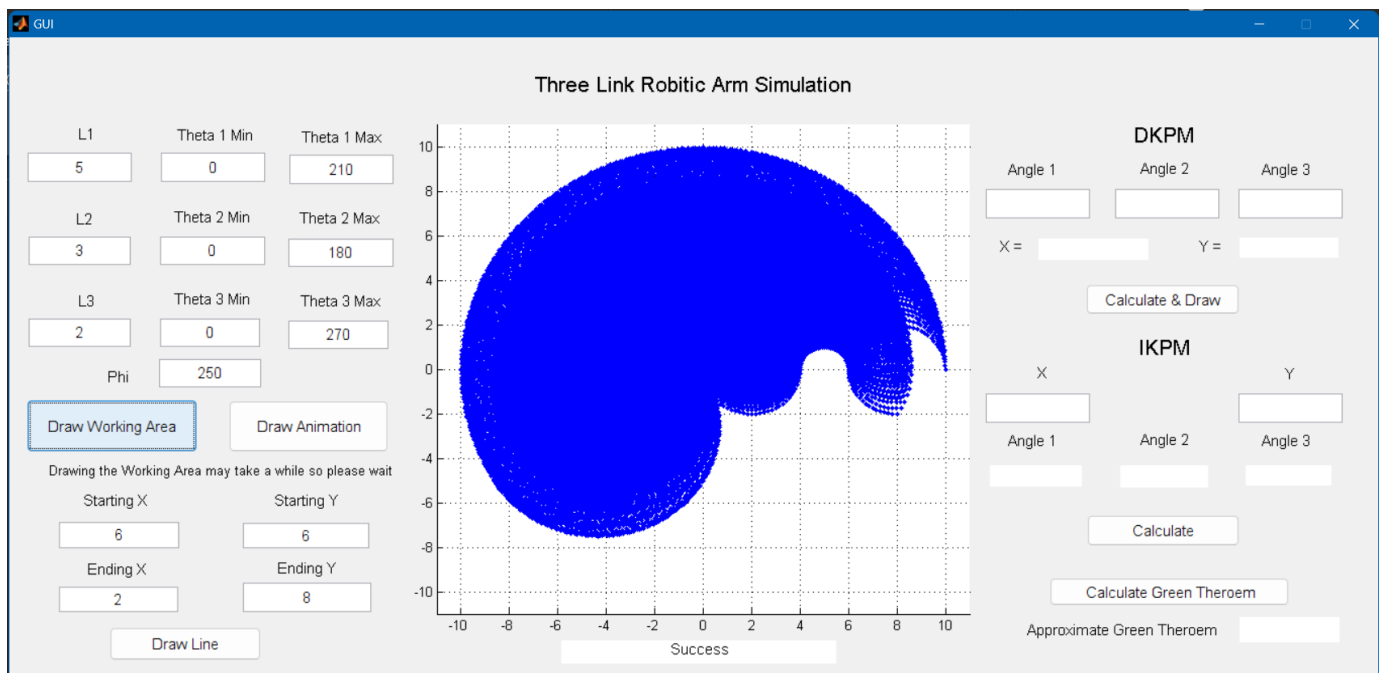
Calculating green theorem using L1,L2,L3,Three Theta Min, Three Theta Max.



Generation of straight line trajectory between two points in the working area if it out of range a message will be shown under the axes.



Drawing working Area



Just a Snapshot to the animation figure

