

Bootcamps for Emerging Technologies and essential Skills



Robotics and AI

WORKSHOP



TINKERCAD - ARDUINO

Class code:

1. Goto

<https://www.tinkercad.com/joinclass>

2. Enter the class code:

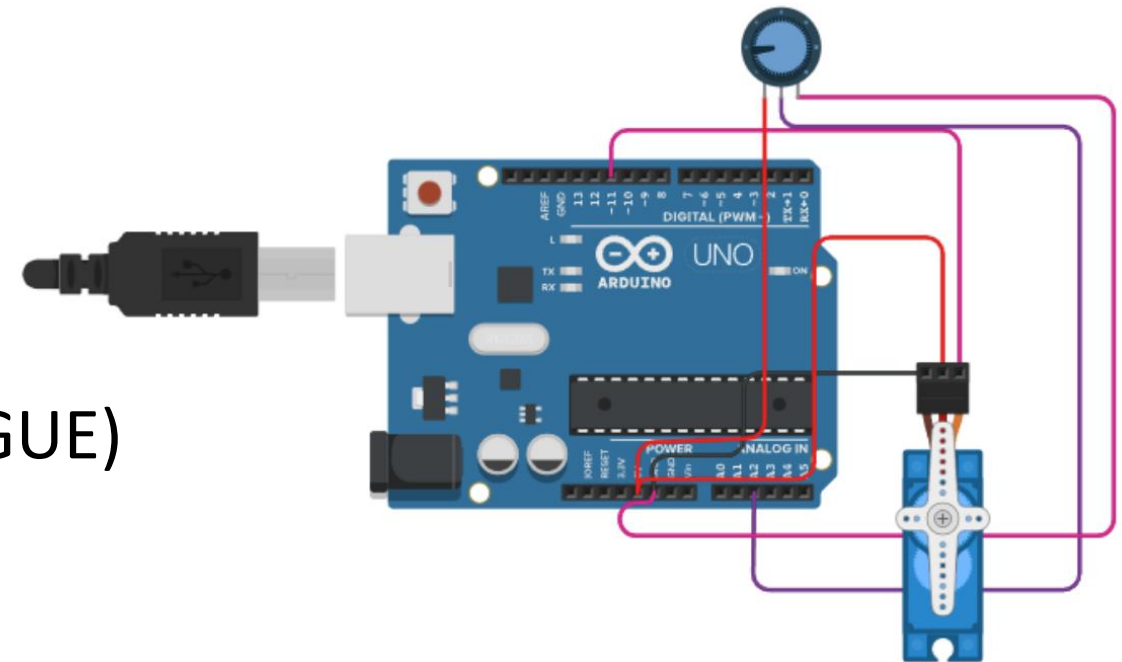
Or the url:

<https://www.tinkercad.com/joinclass/74U55LJMF>

74U 55L JMF

Rotate servo motor with potentiometer

- Start simulation
 - Rotate the potentiometer
- Check the code
 - SERVO 13 (DIGITAL)
 - POTENTIOMETER A2 (ANALOGUE)
- Change the code
 - Map value (45, 90, 360)



M.A.R.K robot

Make A Robot Kit, aka M.A.R.K is a versatile intelligent robotic platform designed for learning about Artificial Intelligence by implementing lane following, traffic sign identification, and other computer vision functions to put together a self-driving car.

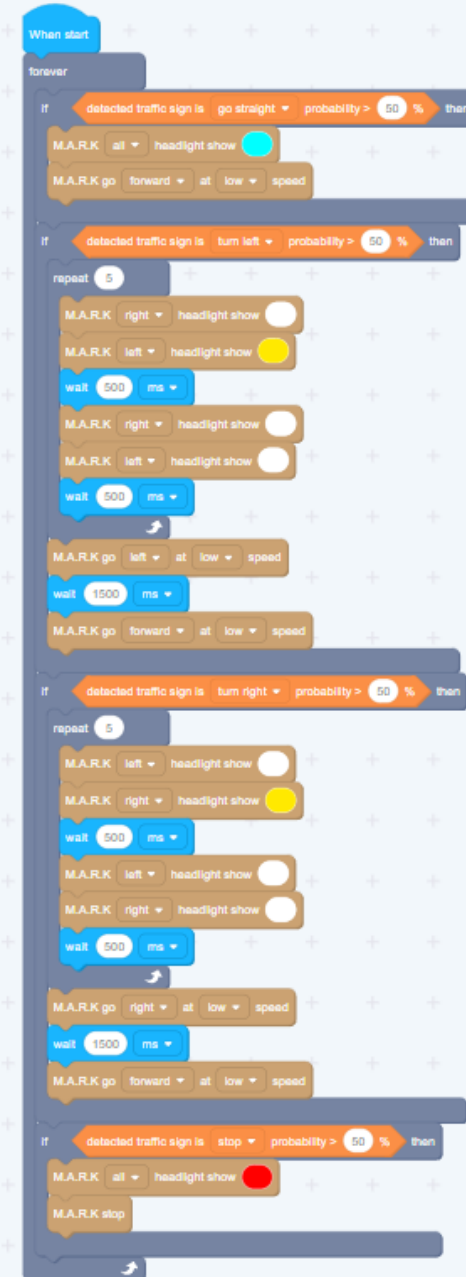


M.A.R.K robot

Go to:

www.ide.tinkergen.com

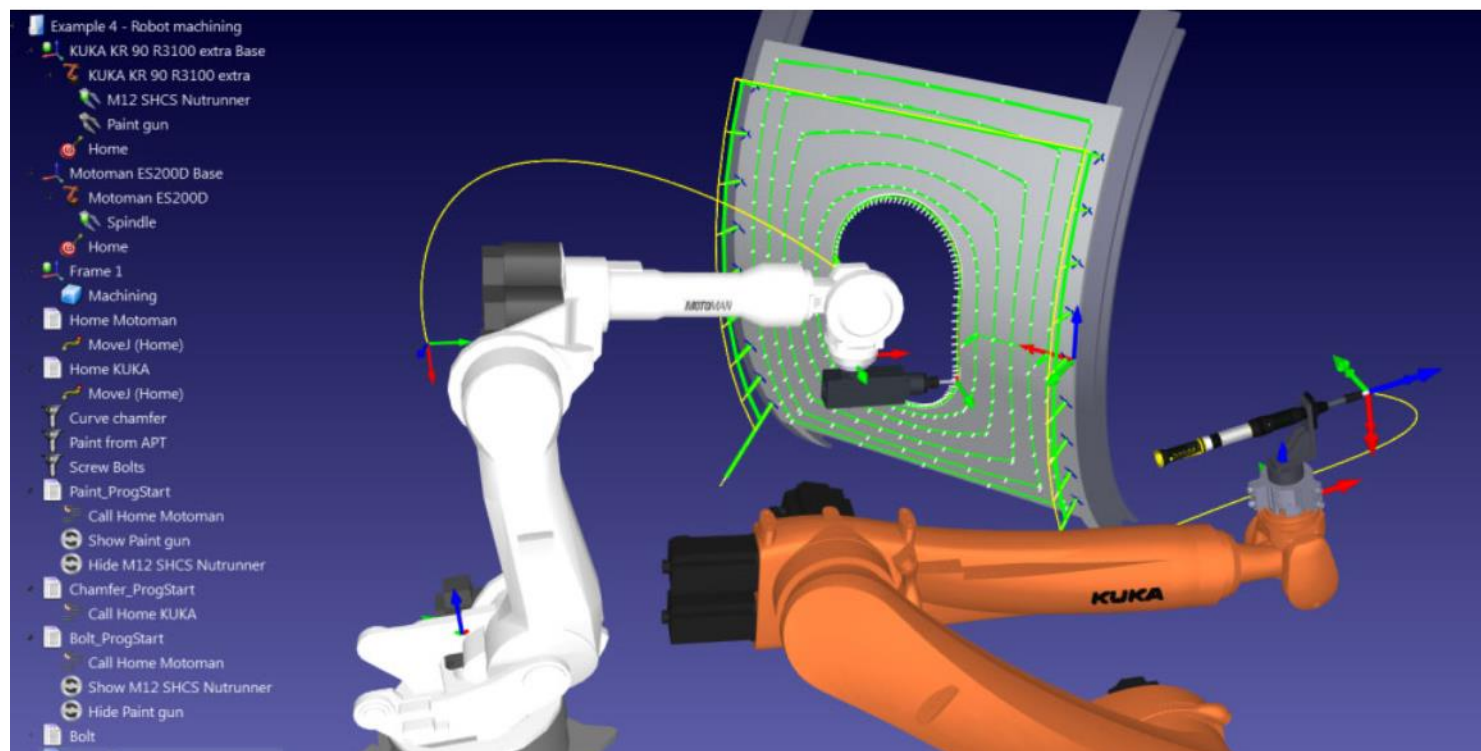
And code using visual programming language!





RoboDK

Offline programming and simulation software for industrial robots.





RoboDK - Library

- offers a collection of robots, examples, tools, external axes, add-ins and post processors
- find and download your robots, look for examples, install addins or learn more about how to configure your post processor to generate program for your controllers.

RoboDK

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Brand





- ☐ QJAR
- ☐ Rainbow Robotics
- ☐ Reir
- ☒ RoboDK 11
- ☐ Robostar
- ☐ Rokae
- ☐ Servotronics
- ☐ Shibaura Machine
- ☐ Siasun
- ☐ Staubli
- ☐ Techman Robot
- ☐ Toney
- ☐ uFactory
- ☐ Universal Robots
- ☐ Wilkata

Type

Axes

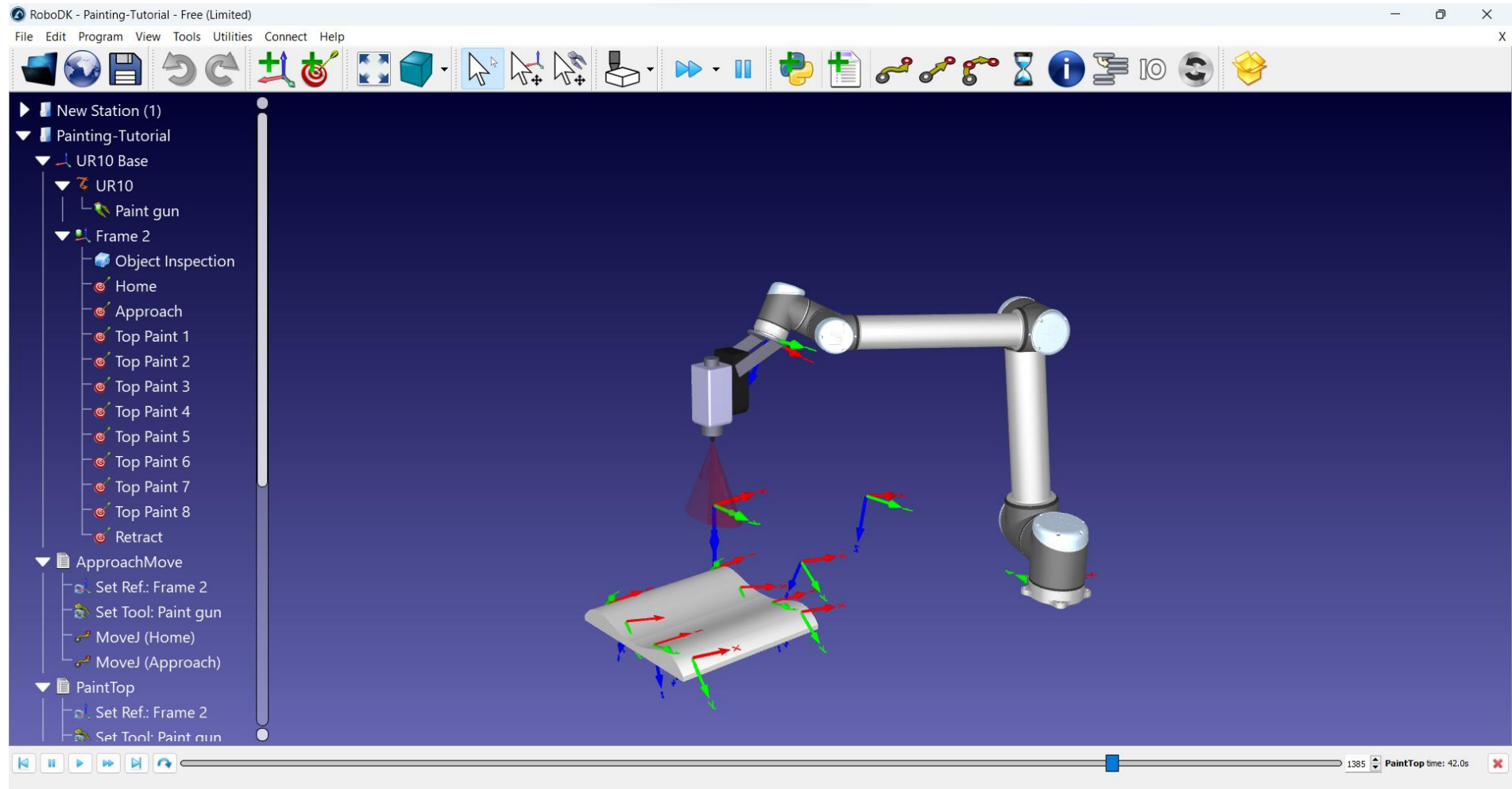
Reach

			
Brand RoboDK	Brand RoboDK	Brand RoboDK	Brand RoboDK
Model RDK-1100	Model RDK-1440	Model RDK-2200	Model RDK-COBOT-1200
Axes 6	Axes 6	Axes 6	Axes 6
Reach 1100 mm	Reach 1440 mm	Reach 2200 mm	Reach 1200 mm
Payload 10 kg	Payload 10 kg	Payload 30 kg	Payload 10 kg
Repeatability 0.050 mm	Repeatability 0.050 mm	Repeatability 0.050 mm	Repeatability 0.050 mm

			
Brand RoboDK	Brand RoboDK	Brand RoboDK	Brand RoboDK
Model RDK-2100-PA	Model RDK-SCARA-750	Model Logo Plate 100x100mm	Model Logo Shield D100mm
Type Paletizing	Type SCARA	Type Object	Type Object
Axes 4	Axes 4		
Reach 2100 mm	Reach 750 mm		



RoboDK – Paint Robot

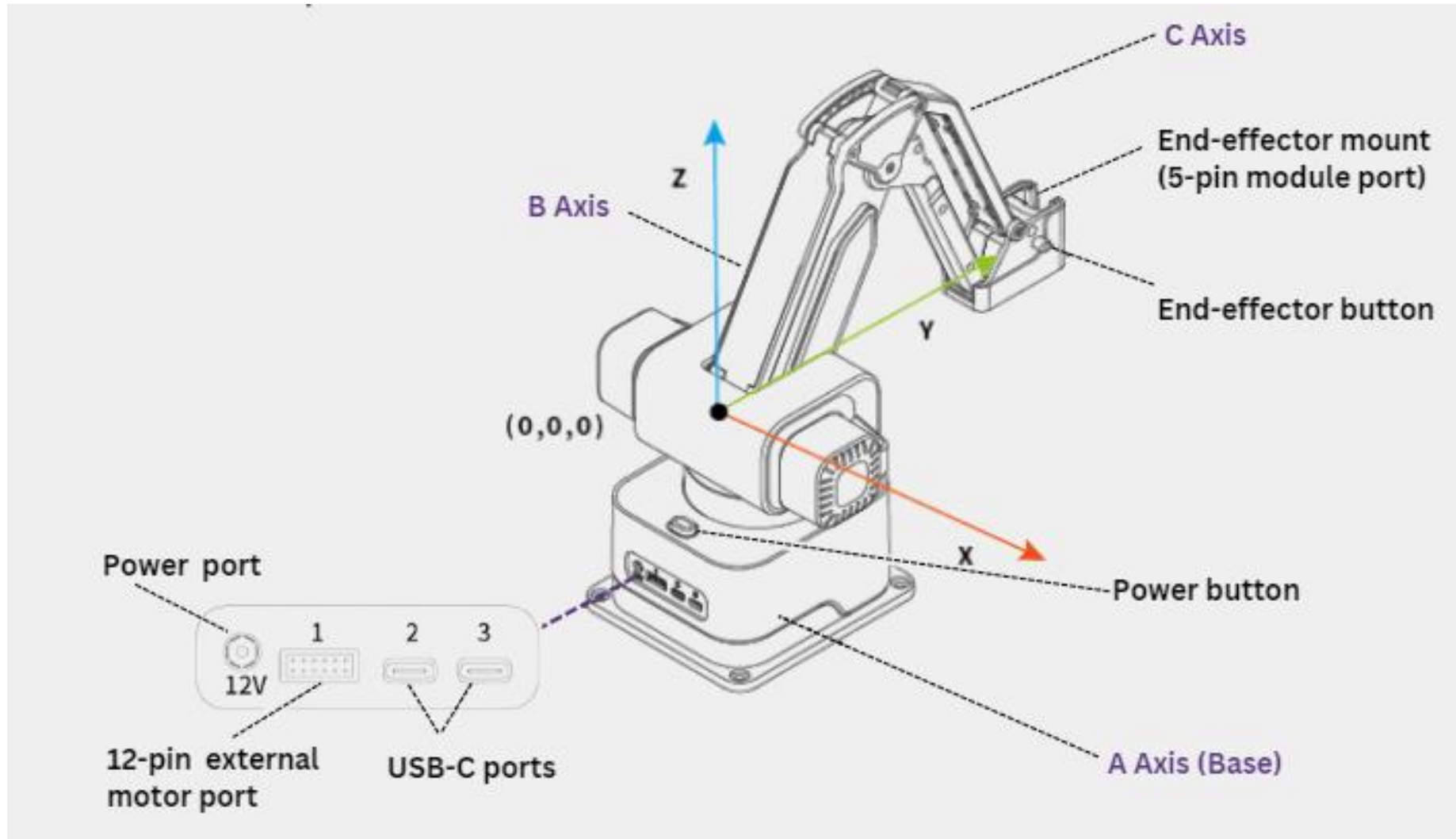


DexARM

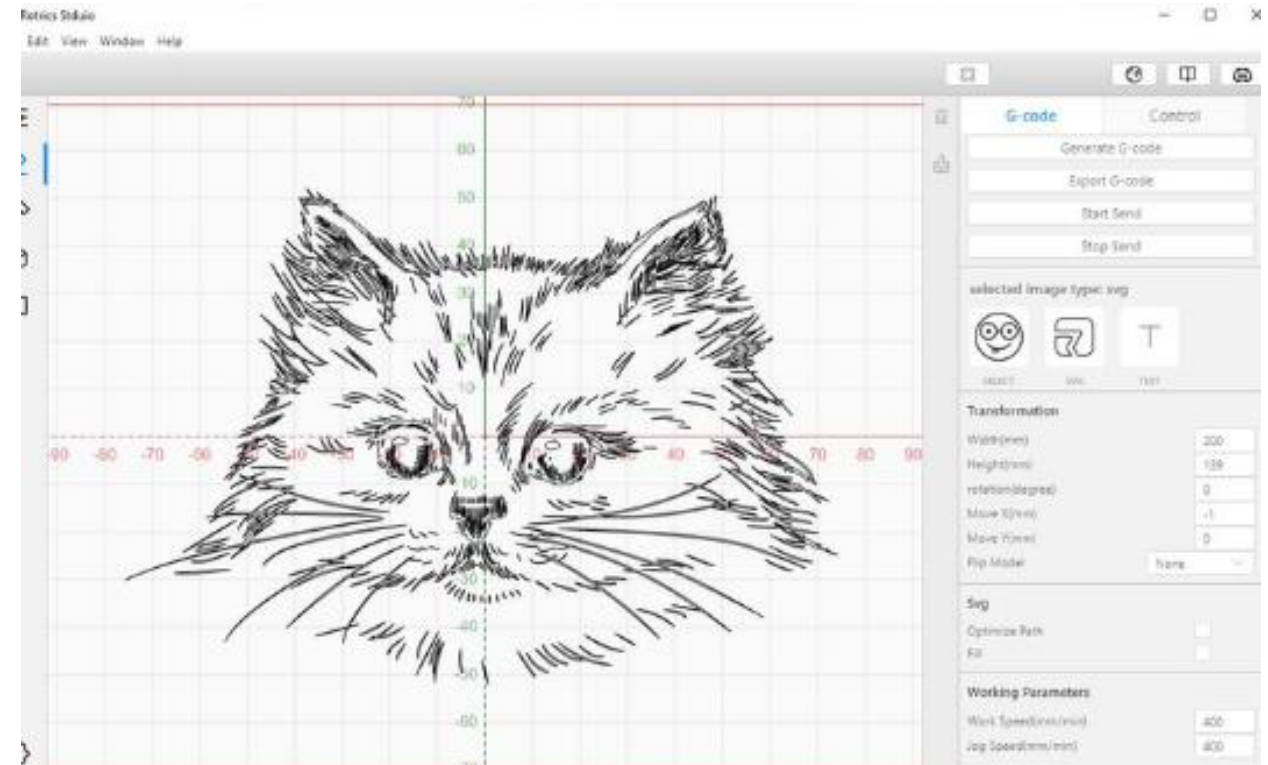
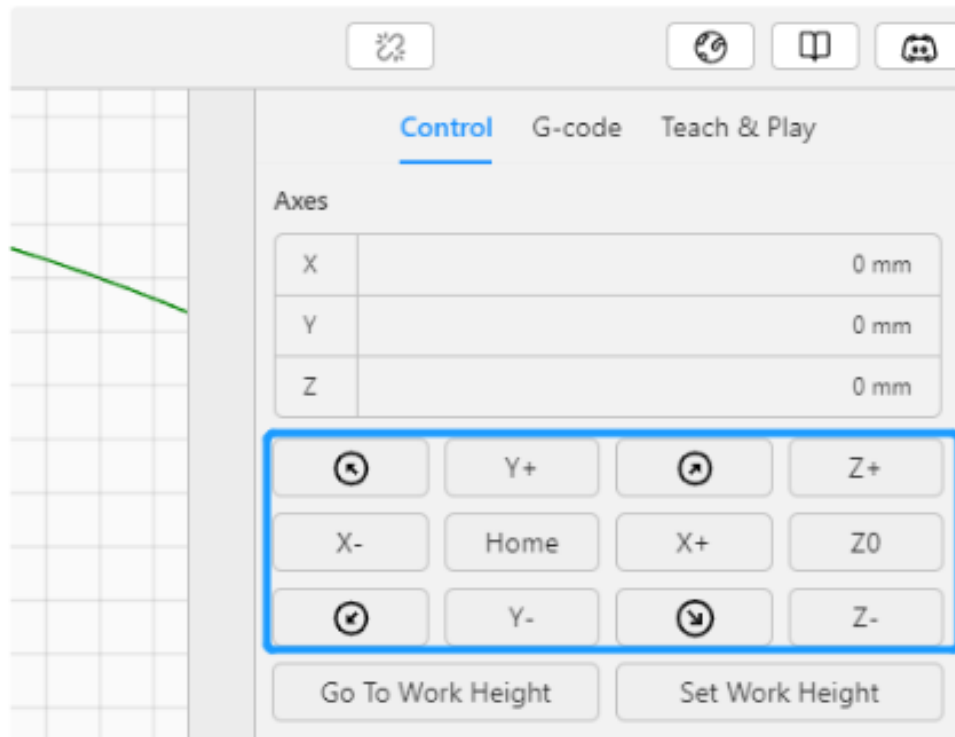
- Multifunctional and multinodular robotic arm
- 4 DOF
- Modules and accessories:
 - 3D Printing Module and Kit
 - Laser Engraving Module and Kit
 - Rotary Soft Gripper Module
 - Rotary Suction Cup Module
 - Pen Holder Module
 - 3.5-inch Touchscreen
 - AI camera



DexARM



DexARM – Rotrics Studio



DexARM – Rotrics Studio

Scratch File Save Example 1 - Control DexArm with keyboard

Motion

- say hello
- move home
- move to work origin
- move to position x 0 y 350 z 0
- move relative x 0 y 0 z 10
- move rectangle at left-top of width 40
- move circle at left radius 10 mm
- rotate wrist clockwise 45 degree
- rotate wrist to 15 degree
- keep rotate wrist clockwise at speed 10

Front End

- air picker pick
- soft gripper grip

How to use:
W : Y+
S : Y-
A : X-
D : X+

**Q : Z-
E : Z+**

when q key pressed
move relative x 0 y 0 z -5

when w key pressed
move relative x 0 y 5 z 0

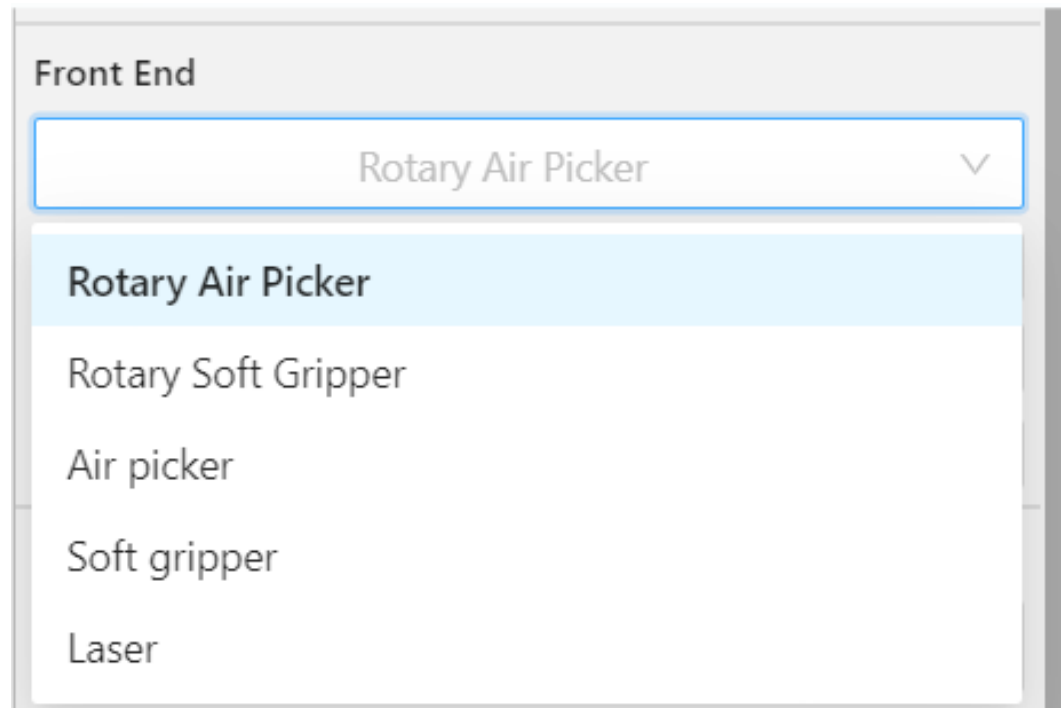
when e key pressed
move relative x 0 y 0 z 5

when a key pressed
move relative x -5 y 0 z 0

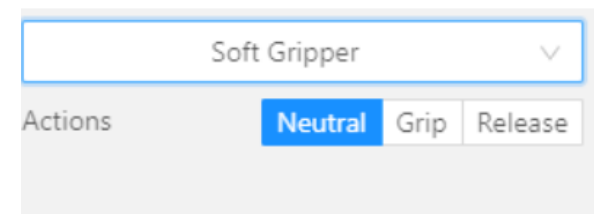
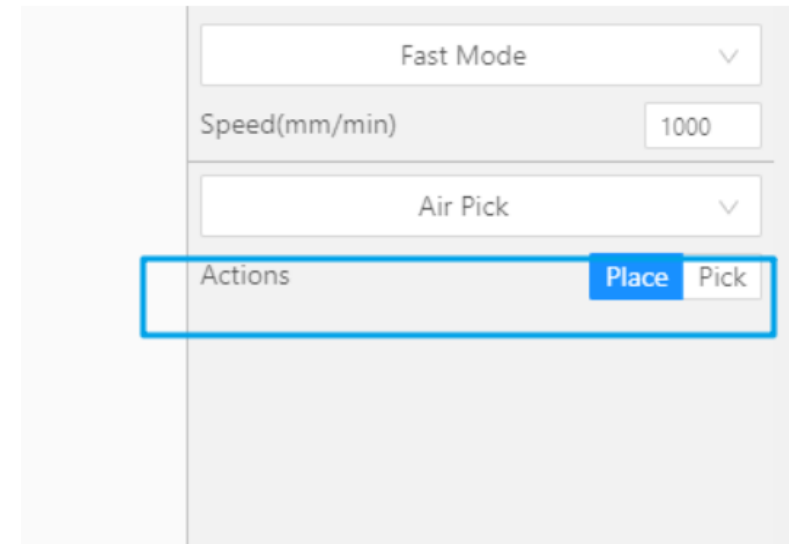
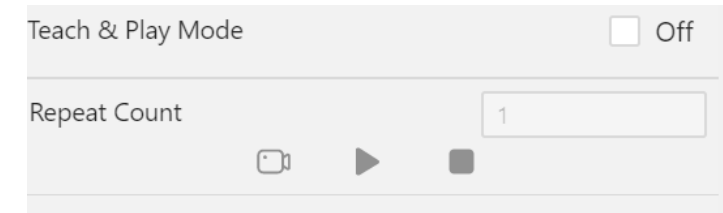
when d key pressed
move relative x 5 y 0 z 0

when s key pressed
move relative x 0 y -5 z 0

DexARM – Teach and Play



Step 1: Choose the end-effector






Step 2: Control pneumatic actions





DexARM – Teach and Play

Teach & Play Mode ☐ Off

Repeat Count

Control Gcode Teach & Play

	Y+		Z+
X-	Home	X+	Z0
	Y-		Z-

Go To Work Origin

Set Work Origin

20	10	5	1	0.2	0.1
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STEP 4: REPEAT STEPS 2-3
STEP 5: PLAY

Step 3: Move object



For more information:

www.betesproject.eu

www.facebook.com/BETESproject



Thank you!

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