

Control the Robot Arm

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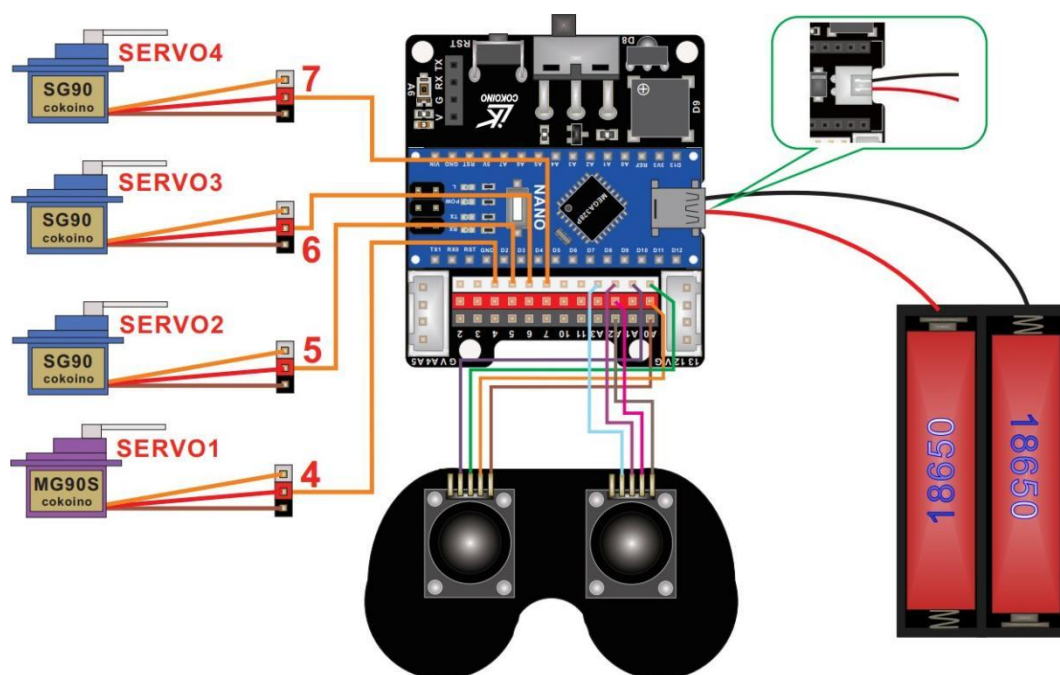
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1. Wiring and assembly inspection

After assembling the robotic arm, do not immediately turn on the power or upload the code, but first check whether the wiring of the robotic arm and the assembly of each component are correct.

1.1 Wiring inspection

Please refer to the following wiring diagram to check if the 4 servos are connected to the correct positions. Firstly, confirm that the signal pin of the servos is connected to the signal pin on the Nano Shield instead of GND. Secondly, confirm if each servos is connected to the corresponding pin position on the Nano Shield.



Wiring between the Modules and the Nano shield board

Module		Nano shield	
Module Name	Pin of module	Pin of Nano shield	Pin's color
SERVO1	S	4	white
	V	VCC	red
	G	GND	black
SERVO2	S	5	white
	V	VCC	red
	G	GND	black
SERVO3	S	6	white
	V	VCC	red
	G	GND	black
SERVO4	S	7	white
	V	VCC	red
	G	GND	black
Left Stick	VRy	A1	white
	VRX	A0	white
	+5V	VCC	red
	GND	GND	black
Right Stick	VRy	A3	white
	VRX	A2	white
	+5V	VCC	red
	GND	GND	black

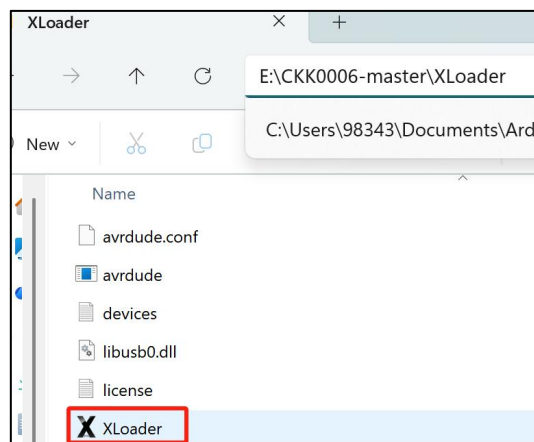
1.2 Structural inspection

Manually rotate the various axis parts of the robotic arm without turning on the power, and confirm that each axis rotates smoothly without any jamming or mechanical obstruction. If there are any problems, please carefully check where the assembly is wrong according to the assembly steps.

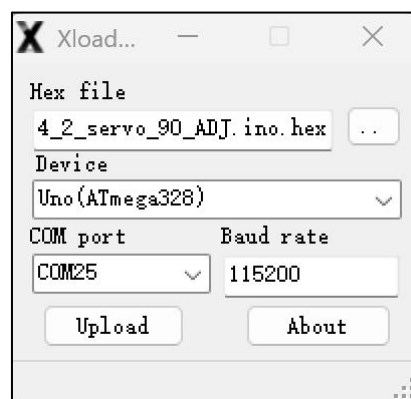
2. Upload the “Arm.ino.hex” to Nano board

2.1 Open the upload tool “XLoader”

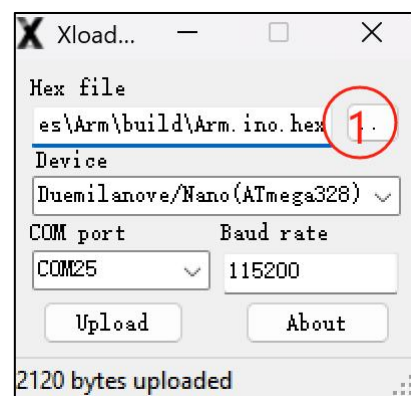
The “XLoader” is in this path [E:\CKK0006-master\XLoader](#)



2.2 Double click "XLoader" with the mouse to open the tool interface as follows

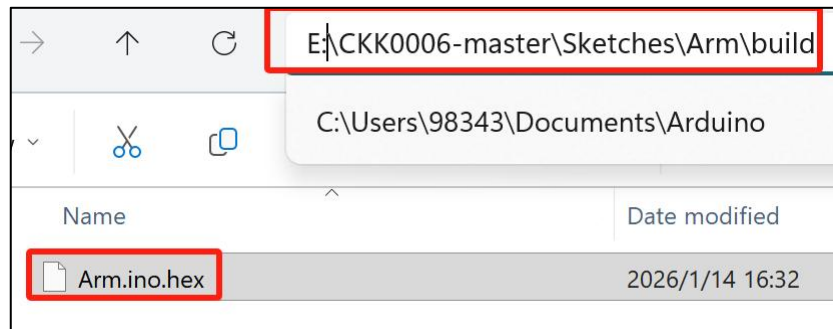


2.3 As shown in the figure, at position 1 of the XLoader tool interface, click with the mouse to select the file "Arm.ino.hex".

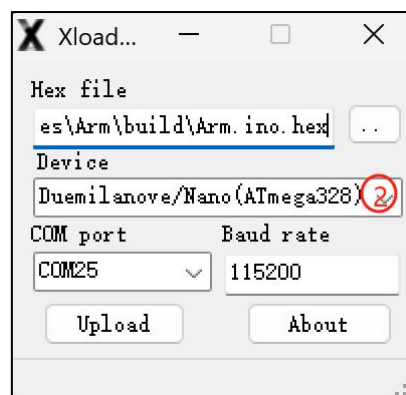


The file "**Arm.ino.hex**" is in this path

E:\CKK0006-master\Sketches\Servo_90_ADJ\build

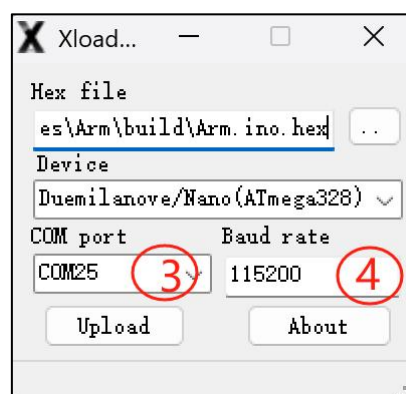


2.4 As shown in the figure, click on "**Nano (ATmega328)**" with the mouse at position 2 of the XLoader tool interface.

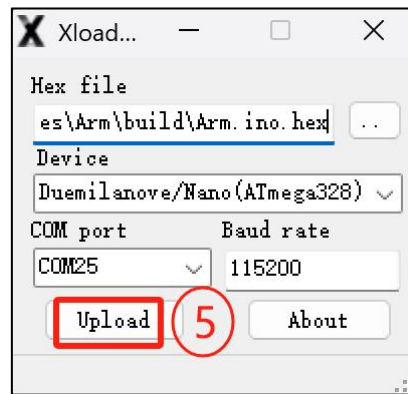


2.5 As shown in the figure, at position 3 of the XLoader tool interface, click and select the COM port of the control board with the mouse. The COM port is basically different on each computer. On my computer, it is COM25, so you can choose the corresponding port on your computer.

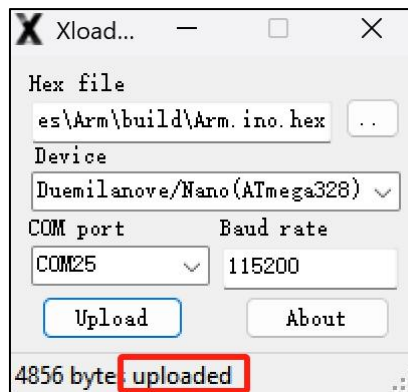
At position 4 of the interface, change the baud rate to 115200



2.6 As shown in the figure, at position 5 of the XLoader tool interface, click "**Upload**" once with the mouse to upload the code to the control board.

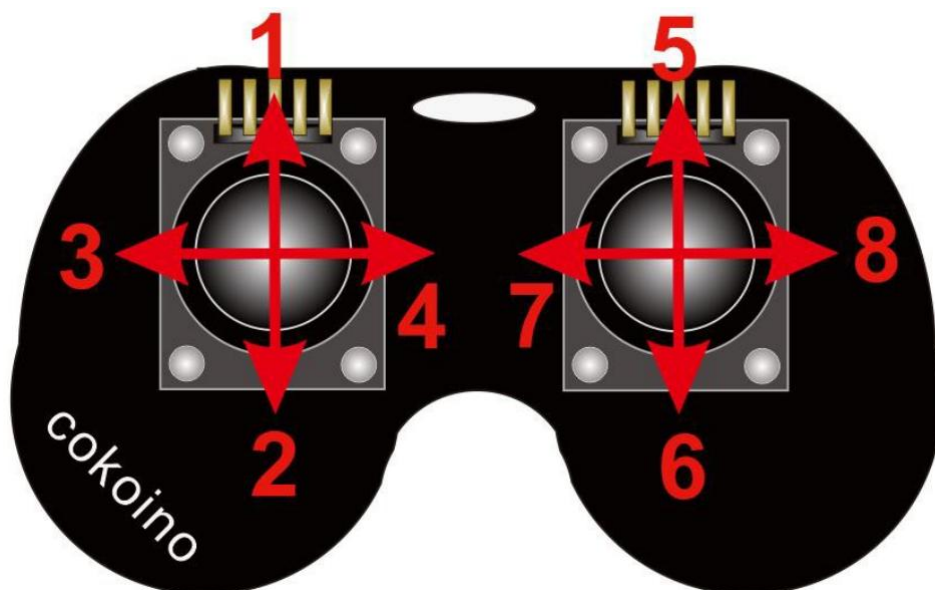


2.7 Upload successfully displays 'uploaded'.

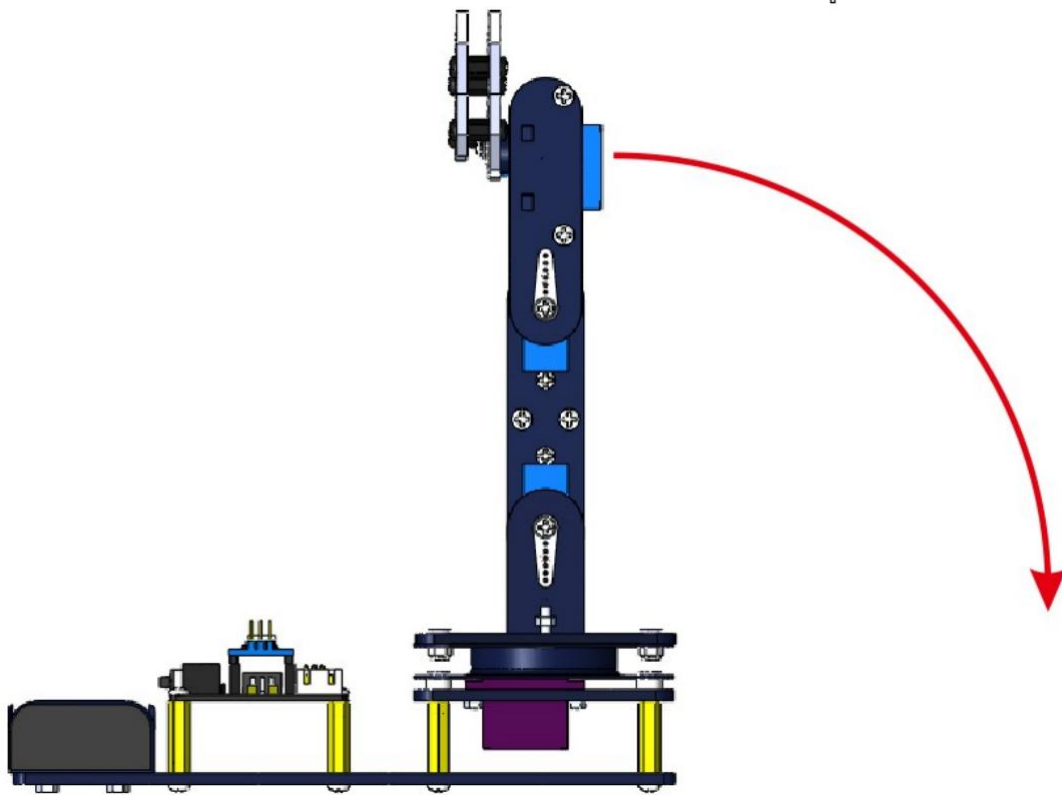


3. How to control the robotic arm

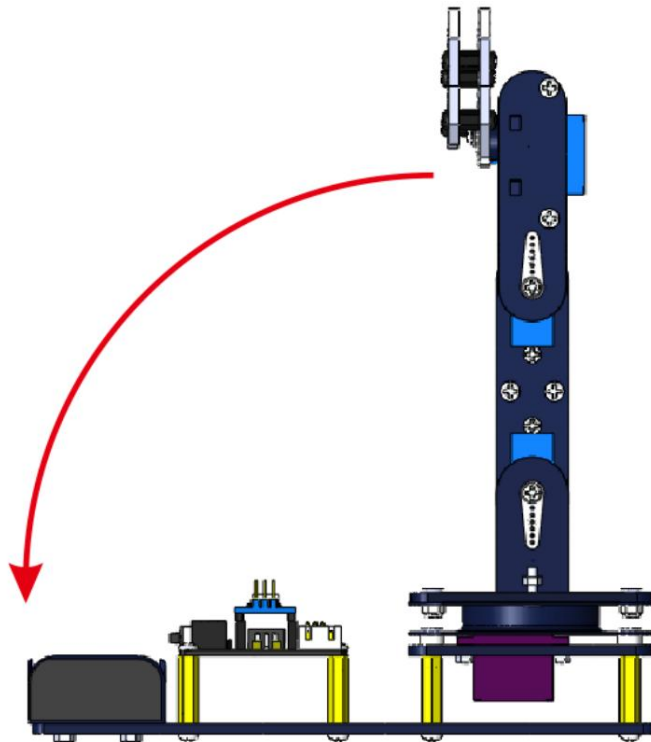
The following explains how the joystick controller controls the robot work by marking the direction of the joystick controller with numbers:



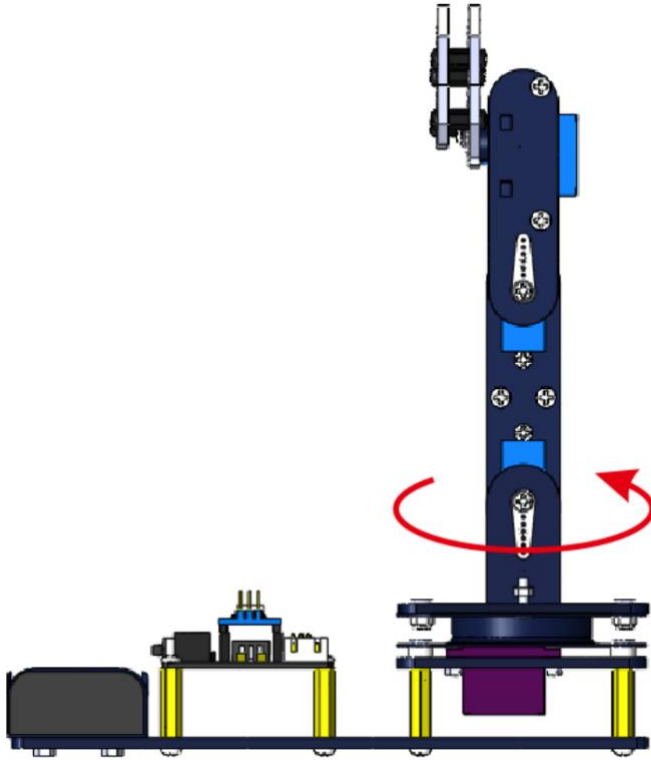
Number 1: The robotic arm stretches forward



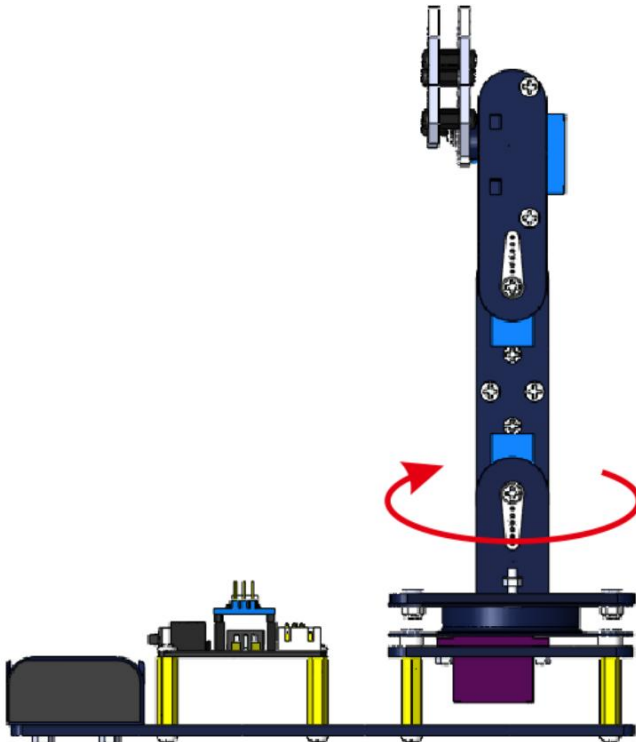
Number 2: Robot arm stretches back



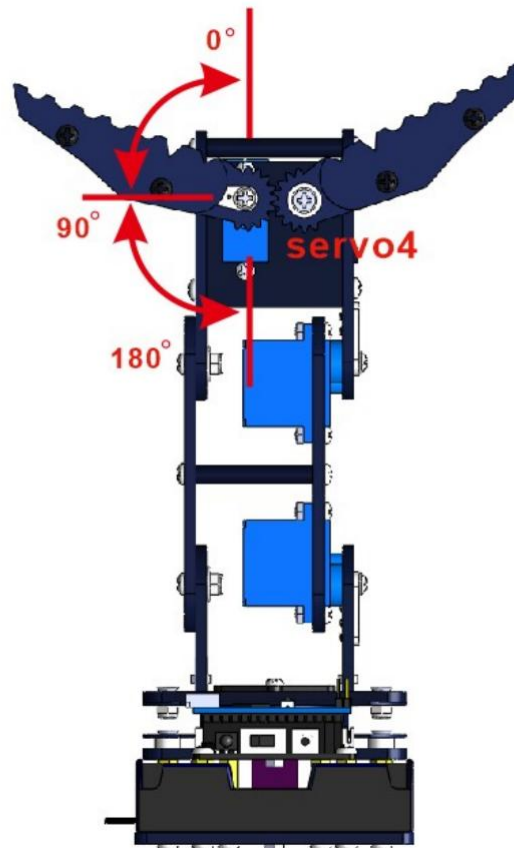
Number 3: The base of the robotic arm rotates to the left



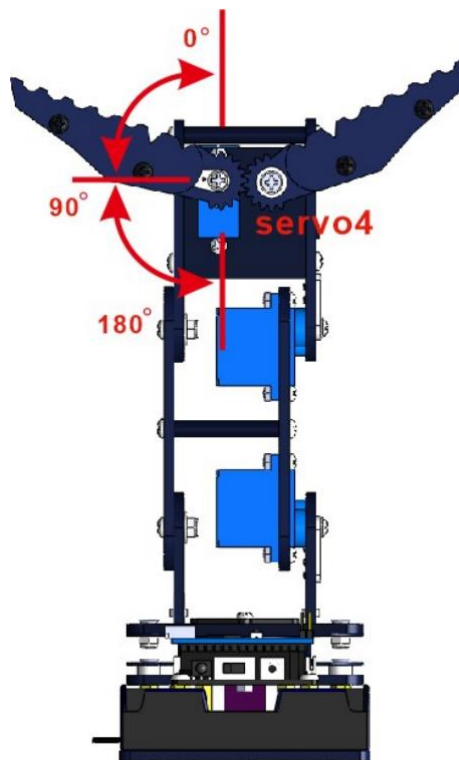
Number 4: The base of the robotic arm rotates to the right



Number 5: Claw of robotic arm close up



Number 6: The claw of the robot arm opens



Number 7: Push the right joystick to the left direction once(number 7 direction), and an action will be recorded. In the program we provide, the robotic arm can record up to 10 actions continuously. When the robot records 10 actions, the buzzer will sound once, and then it will start to record 10 actions repeatedly. After 10 actions are completed, the buzzer will sound again once.

Number 8: Perform recorded actions

Push the right joystick to the right direction (number 8 direction), the buzzer will sound and the robot will perform the recorded action, after the action is completed, the buzzer will sound again.