UFACTORY Studio simulation

Daniel_Wang 🛡 **UFACTORY_Team**   **Aug 2024**

A way to run UFACTORY Studio simulation on your computer without a real robot.

1.Get the docker image

```
docker pull danielwang123321/uf-ubuntu-docker
```

2.Create and run container

Recommend, include web simulation and SDK ports

```
docker run -it --name uf_software -p 18333:18333 -p 502:502 -p 503:
```

Not recommend, only use UFACTORY Studio web simulation

```
docker run -it --name uf_software -p 18333:18333 danielwang123321/u
```

3.Run the xArm robot firmware and UFACTORY Studio

For example, start the UFACTORY Studio and firmware of xArm 6.

```
/xarm_scripts/xarm_start.sh 6 6
```

The 6 6 means xArm 6, change it accordingly if you prefer other robots:

```
5 5, xArm 5
6 6, xArm 6
7 7, xArm 7
6 9, Lite 6
6 12, 850
```

4.Access the UFACTORY Studio web simulation

Run a web browser and input `127.0.0.1:18333` or `localhost:18333`
If there is a prompt of "Unable to get robot SN …" comes out on the web simulation page,
click "Close" and then you can use the web simulation.

5. Connect the simulator and running codes on your host machine.

If you need connect the simulated robot and run your codes in your host computer, for example running your python codes, change the IP address to `127.0.0.1` and run.

6 Run the "Blockly-to-Python" codes with external IDE like VSCode or Pycharm

In case you copy the "Blockly-to-Python" codes from the internal Python IDE and run in the external IDE like VSCode or Pycharm on your computer, make sure add "check_joint_limit=False" in the line of instantiation like this

```
arm = XArmAPI('127.0.0.1', baud_checkset=False, check_joint_limit=F
```

Note:
1.Test under Ubuntu 24.04 x86-64 and Windows 11 x86-64
2.Some uesfull commands

- Show the running container

```
docker ps
```

- Stop the running container

```
docker stop <container ID or container name >
```

- Start the container "uf_software"

```
docker start uf_software
```

- Enter the shell of the container "uf_software"

```
docker exec -it uf_software /bin/bash
```

Release notes

2025.2.5

1. Add methoed of running "Blockly-to-Python" codes with external IDE like VSCode and Pycharm.
2. Modify the commands for Linux Ubuntu 24.04 x86-64

Blockly support in SDK

Fabian_Leon   **Aug 2024**
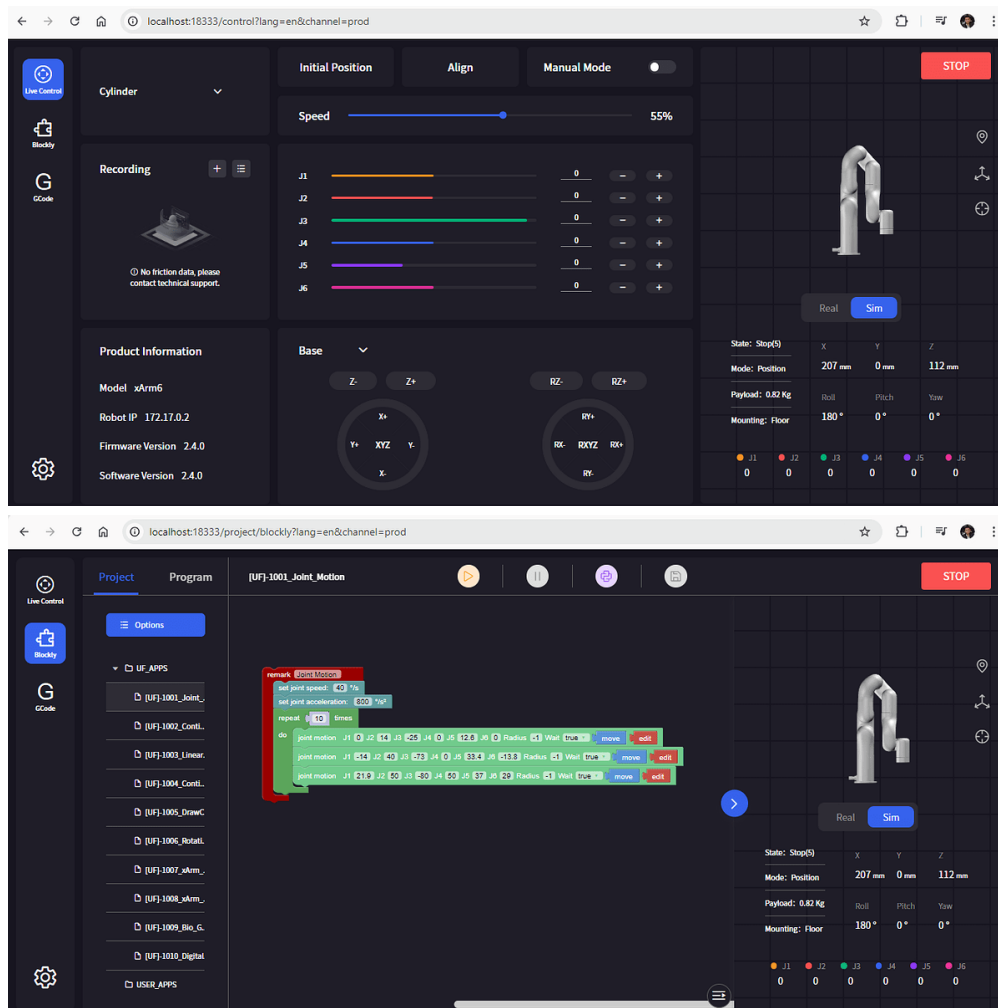
Hi Daniel

I tried your instructions, it's very easy now, thanks a lot. However, I had to modify some parts to make it work.

First, when I created the container, I had to expose port 18333 like this:

```
docker run -it --name uf_software -p 18333:18333 danielwang123321/
uf-ubuntu-docker
```

Lastly, even though the IP of the bot is the one you mention, I had to use **http://localhost:18333** to access the simulator in my web browser

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Daniel_Wang   **UFACTORY_Team**   **Aug 2024**

Hi Fabian,
Did you use the Windows?
I did a test on Windows 10 and found it do requires to expose the port while creating the container.
The url on windows is 172.0.0.1:18333 after execute the below command and start the robot software.

```
docker run -it --name uf_software -p 18333:18333 danielwang123321/
uf-ubuntu-docker
```

Let me modify the guidance.

Fabian_Leon   **Aug 2024**

Hi Daniel,

Yes, I use Windows 10

Daniel_Wang   **UFACTORY_Team**   **Aug 2024**

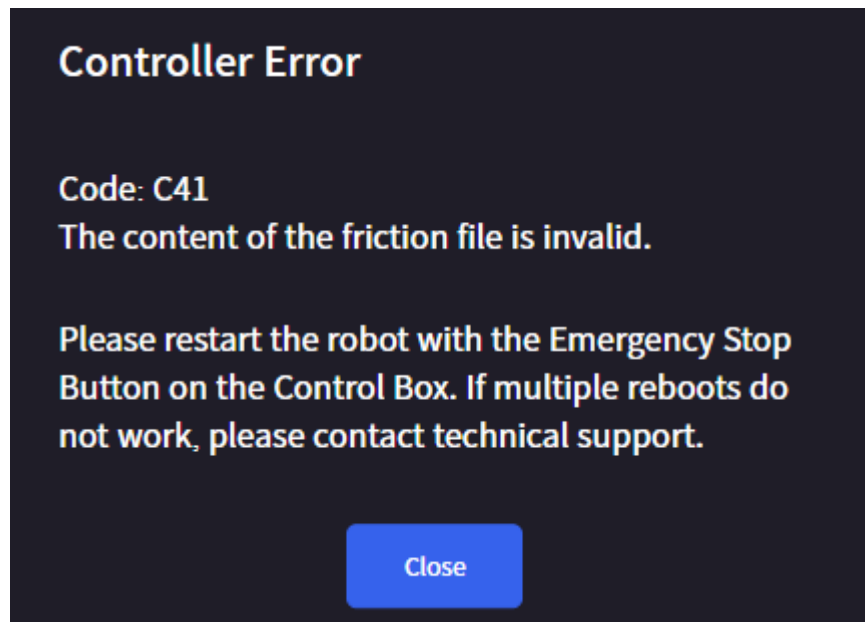Hi Fabian,
Thanks for your feedback, I did update the guidance for Windows.
Please let me know if you have any questions.

Ian_H   **Dec 2024**

Hello, I have the simulator up and running, thanks for making that possible. The sim is telling me that the contents of the friction file are invalid. Is there a way I can get around this?
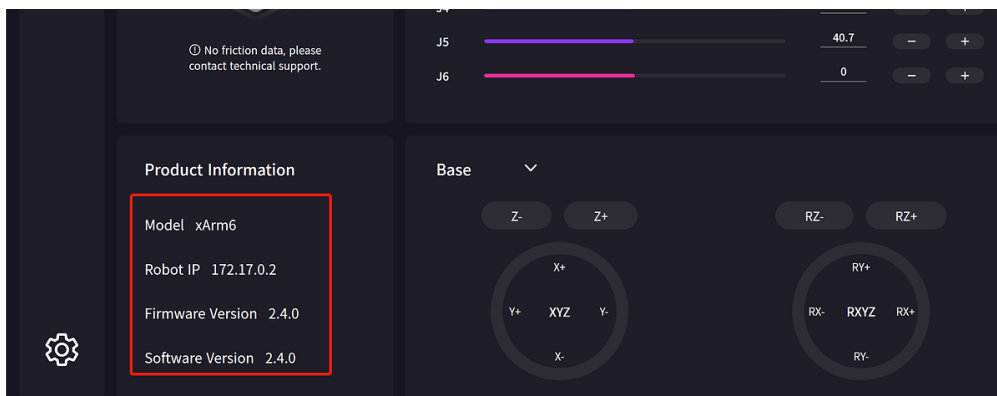

Daniel_Wang   **UFACTORY_Team**   **Dec 2024**

Please provide more information

1. The platform, windows or linux?
2. The firmware/software version of the information page like that.
3. Did you update the software/firmware?
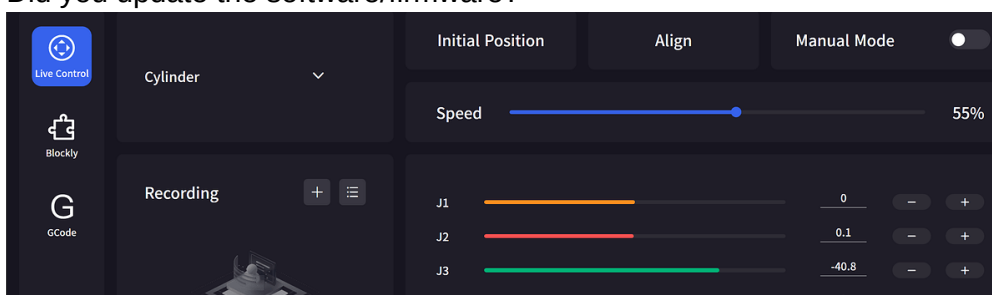
Ian_H   **Dec 2024**

Thanks for replying Daniel, I figured it out. I do not have an arm at the moment, I am only playing with the sim. I got around the alert to get the sim working.

Daniel_Wang   **UFACTORY_Team**   **Dec 2024**

Thank you for your feedback! We're glad to hear that you managed to resolve the issue. The purpose of our simulation environment is precisely to support users who may not have access to a physical robot temporarily, allowing them to learn and develop in a virtual environment.

If you encounter any further issues while using the simulator, please don't hesitate to reach out. We're here to assist you!

Wishing you continued success with your projects! 😊

mooncake   **Jan 14**

Hi Daniel,

Thanks a lot for the input. I also managed to use the simulator for days. However, I found that, once I restarted my laptop, I couldn't access the simulator but this can be solved by following the instructions again and removing the previous container.

This would cause some troubles because the scripts tried on the previous container would also disappear. Do you have advice on solving this?

Regards,
Lee

Daniel_Wang   **UFACTORY_Team**   **Jan 19**

> Daniel_Wang:
>
> 127.0.0.1:18333

Thanks for the feedback.
Maybe the problem is after you restarting your computer, you craeted a new container insteat of starting the previouse container. Here is the normal steps to start the previouse contrainer on Winodws. Please give a try and let me know the result.

1. Start the container by docker start command on your windows shell.

```
docker start uf_software
```

2. Enter the shell of the container

```
docker exec -it uf_software /bin/bash
```

3. Start the xArm 6 firmware and the ufactory studio on the shell of the container

```
/xarm_scripts/xarm_start.sh 6 6
```

Louis   **Jan 29**

Is it possible to connect to the simulated robot running in the Docker container via the UFactory XArm Python SDK? For example, if I want to write an example program with the Python SDK and run it on a simulated robot is it possible using this container?

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parksumin1017   **Jan 31**

I'm using the xArm Python SDK (v1.14.7) with a virtual robot that has an IP address but no serial number (SN). When calling `set_servo_angle()`, I get `ValueError: invalid literal for int() with base 10: ''` from `xarm.py` line 71 in `_is_out_of_joint_range()`. The function call flow is: `set_servo_angle()` → `_set_servo_angle_absolute()` → `_is_out_of_joint_range()`, where `self.sn[2:6]` is accessed but is empty, causing the error. Is there a way to use `set_servo_angle()` without requiring an SN in a virtual environment?

Daniel_Wang   **UFACTORY_Team**   **Feb 5**

Yes, please check the guidance above and I just update it.

Daniel_Wang   **UFACTORY_Team**   **Feb 5**

Yes, please check the step 6 of the guidance above, I just updated it.

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mooncake   **Feb 10**

> Daniel_Wang:
>
> `/xarm_scripts/xarm_start.sh 6 6`

Dear Daniel,

Amazing! It fully works with your new instructions.

Regards,
Lee

Daniel_Wang　　**UFACTORY_Team**　　　　　　　　　　　**Feb 11**

Great! Feel free to contact us if you have any questions.

MisterTFM　　　　　　　　　　　　　　　　　　　　　　**Apr 16**

what are the minimum hardware requirements to run UFACTORY Studio?

Raspberry Pi? PC with Windows 10?

Daniel_Wang　　**UFACTORY_Team**　　　　　　　　　　　**Apr 17**

Please refer to this post

> **UFACTORY Studio Minimum System Requirements**
>
> UFACTORY Studio Minimum System Requirements Minimum Requirements Platform
> Operating System Minimum RAM Minimum Processor Browser Requirements
> Windows Windows 10 / 11 4 GB Intel Core i5 6300U or above Chrome / Firefox / Edge
> (Chromium-based) Ubuntu 20.04 / 22.04 / 24.04 2 GB Intel Core i5 6300U or above
> Chrome / Firefox / Edge (Chromium-based) macOS macOS 11 (Big Sur) or later 4 GB
> Apple M1 or Intel i5 and above Chrome / Firefox / Edge (Chromium-based) or Safari
> Raspberry Pi Raspber…

MisterTFM　　　　　　　　　　　　　　　　　　　　　　**Apr 23**

Right clicking on the SAVE icon when in BLOCKY, PROGRAM mode, doesn't
"Right mouse click on the Blockly file name to download, rename,new folder,new file,import
or delete the file", as stated in manual.

Clicking the SAVE icon doesn't show any action.