

Alpha Human H1 Software Update Tutorial



Note:

1. It is recommended to update all the firmware of nvidia nano, odroid, and stm32, and then restart the robot's power supply.
2. The odroid must be the `Alpha Human H1` system, and the stm32 must be the `Alpha Human H1` STM32 control board

1. Download Firmware

Address: https://github.com/opensourcerobot/Alpha_Human_gym

2. nvidia nano update

File Location: `/hardware/nvidia_nano/sim2real`

- SSH login

代码块

```
1 ssh nvidia@192.168.1.xxx # password: 1
```

- Delete the original firmware

代码块

```
1 sudo rm -r /home/nvidia/sim2real
```

- Copy the new firmware

代码块

```
1 scp -r /hardware/nvidia_nano/sim2real nvidia@192.168.1.xxx:/home/nvidia/
```

After that, follow the instructions in `README.md` to compile and run the inference code.

3. Odroid Update

File Location: `/hardware/odroid`

- ssh登录odroid

```
ssh odroid@192.168.1.xxx # password: 1 or odroid
```

- Check and kill the process

View running processes

代码块

```
1 top
```

Process names are: `control_task_*`, `hardware_task_*`, `navigation_task_*`

Kill these three processes, where PID represents the PID of each of the three processes

代码块

```
1 sudo kill PID
```

Run again

代码块

```
1 top
```

Ensure that the three processes have been killed.

- Erase the original firmware

代码块

```
1 sudo rm /etc/rc.local
2 sudo rm -r /home/odroid/H1
3 sudo rm /home/odroid/rc.local
```

- Return `Alpha_Human_gym` Copy new firmware

代码块

```
1 scp -r /hardware/odroid/H1 odroid@192.168.1.xxx:/home/odroid/
2 scp /hardware/odroid/rc.local odroid@192.168.1.xxx:/home/odroid/
```

- Log in to the odroid via ssh again

```
ssh odroid@192.168.1.xxx # password: 1 or odroid
```

Copy `rc.local` to `/etc/`, and change the permissions of the executable file

代码块

```
1  sudo cp rc.local /etc/
2  sudo chmod 777 /etc/rc.local
3  sudo chmod 777 control_task_h1 # or control_task_h1_12dof
4  sudo chmod 777 hardware_task_h1
5  sudo chmod 777 navigation_task_h1
```

Restart the odroid via the command line

代码块

```
1  sudo reboot
```

If two motors are installed on the head, which is H1 with 12 degrees of freedom, it is necessary to modify the `control_task_h1` process in `rc.local` to `control_task_h1_12dof`.

4. STM32 Update

```
/hardware/stm32/h1.hex
```

- Hardware Connection

Use STLink or other downloaders that support SWD download to connect to the SWD interface of the STM32 control board `-+CD`.

- Software Download

Use `STM32 ST-LINK Utility` to download `/hardware/stm32/h1.hex` to stm32.

5. Check the correctness of the update

- Restart the power supply after all firmware updates are completed.
- `stm32+odroid`: A pleasant melody plays, indicating that the firmware is operating normally.
- `nvidia nano`: After starting inference, there is return data:

```
act send:-0.76 2.1 5.7 0.3 3.2 -0.19 -2.1 1.6 -6.3 -1.2
```