Install

System requirements

- Ubuntu 18.04
- ROS Melodic

Install package dependencies

```
$ sudo apt-get install libhidapi-hidraw0 libhidapi-libusb0
$ pip install --user hid
$ sudo apt-get install python-dev libusb-1.0-0-dev libudev-dev
$ sudo pip install --upgrade setuptools
$ sudo pip install hidapi
```

Install HIDAPI

1. Clone hidapi from https://github.com/libusb/hidapi
2. Install dependencies as mentioned in hidapi repository:

```
$ sudo apt-get install libudev-dev libusb-1.0-0-dev libfox-1.6-dev
$ sudo apt-get install autotools-dev autoconf automake libtool
```

3. Run all the commands to build as mentioned in the readme of the repository:

```
$ ./bootstrap
$ ./configure
$ make
$ sudo make install
```

Build xArm_Lewansoul_ROS

1. Clone this repository

```
$ git clone https://github.com/diestra-ai/xArm_Lewansoul_ROS.git
```

2. Build

```
$ catkin_make
```

Run

1. Connect the robot to any USB port of your computer
2. Turn the robot on. You should see the pink and blue lights on the control card.
3. To control the robot with code you sould be in sudo mode

```
$ sudo -s
```

4. Run the following script to check the computer is able to detect and control the robot. You should be in the folder of xArm_Lewansoul_ROS

```
$ python xarm_hardware_interface/scripts/controller.py
```

- If the robot is correctly detected you should see the following output:

```
<easyhid.easyhid.Enumeration object at 0x7f9925e60c10>
HIDDevice:
    /dev/hidraw5 | 483:5750 | MyUSB_HID | LOBOT | 497806693832
    release_number: 513
    usage_page: 0
    usage: 0
    interface_number: 0
Connected to xArm device
[671 589 147 538 519 500]
Closing xArm device
```

  and robot should move to a vertical position and then open and close the gripper followed by rotating its second and third joints.
- If the robot is not detected the following output would appear:

```
<easyhid.easyhid.Enumeration object at 0x7f7d47dedc10>
Traceback (most recent call last):
  File "xarm_hardware_interface/scripts/controller.py", line 216, in <module>
    demo()
  File "xarm_hardware_interface/scripts/controller.py", line 188, in demo
    arm = XArm()
  File "xarm_hardware_interface/scripts/controller.py", line 52, in __init__
    assert len(devices) > 0
AssertionError
Closing xArm device
Exception AttributeError: "XArm instance has no attribute 'dev'" in <bound method XArm.__del__ of <__main__.XArm instance at 0x7f7d
4a4df730>> ignored
```

  in this case check that the robot is on and that you are running from sudo mode, or try another USB port or cable. Also maybe restart the system.

  With this python file you can use different functions to control the robot.
5. Control the robot using ROS

   To have the robot running in ROS, launch the following

```
$ roslaunch xarm_launch xarm.launch
```