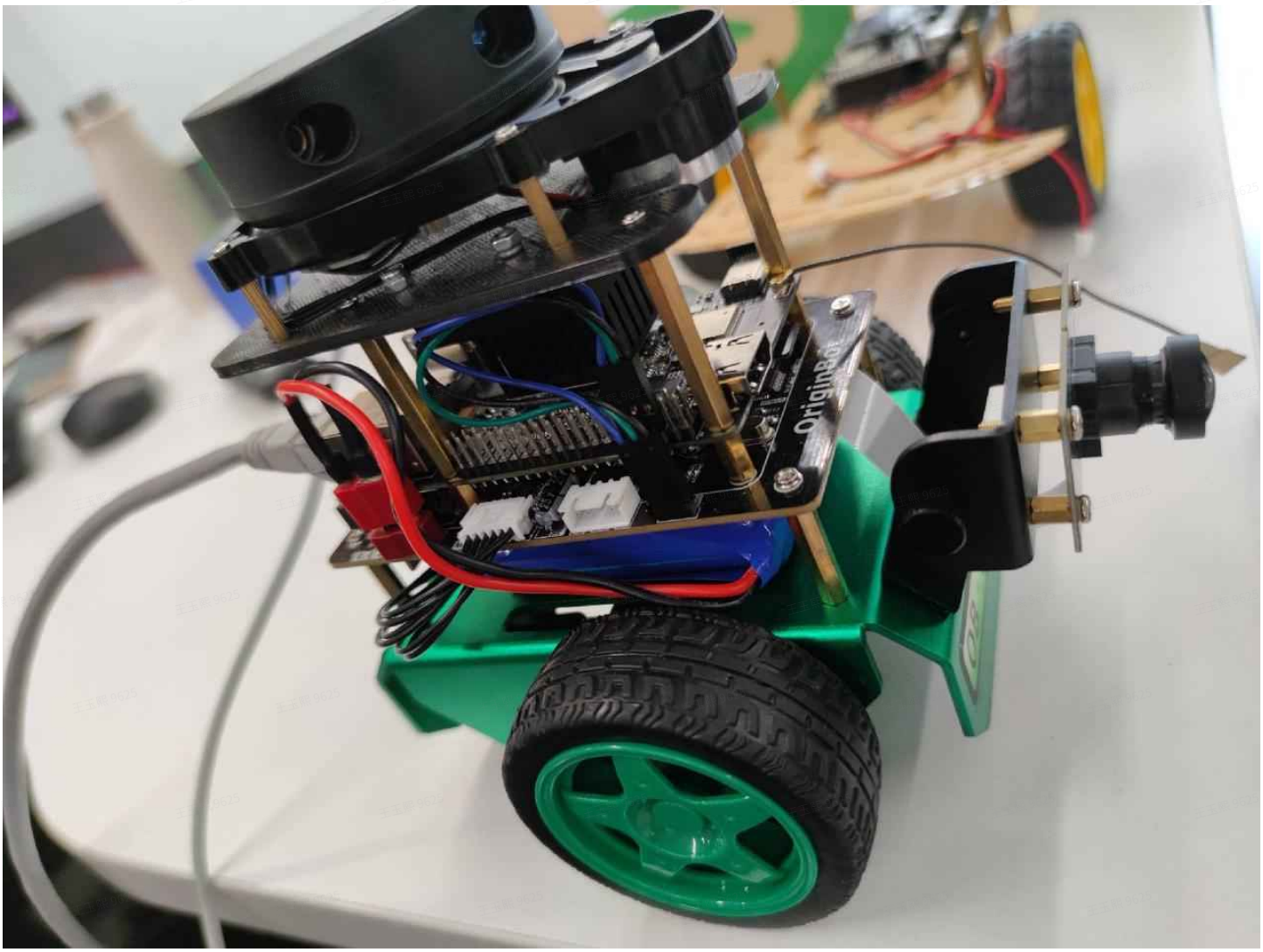
旭日x3派OE22安装ros2-humble



1. 下载包含ros2基础依赖环境的镜像：

下载地址：

链接：https://pan.baidu.com/s/1eaYuns6QNR4f4V5zVLg-oQ

提取码：1234

OE软件包源缺少很多ROS2源码编译过程中所需的依赖包，此镜像包含了部分非OE官方仓的依赖包以及自己编译的包：

eigen3-devel-3.3.9-3.noarch.rpm	python3-colcon-argcomplete-0.3.3-8.fc34.noarch.rpm	cl-asdf-20101028-21.noarch.rpm
fmt-7.1.3-3.aarch64.rpm	python3-colcon-bash-0.4.2-4.fc34.noarch.rpm	common-lisp-controller-7.4-23.noarch.rpm
fmt-devel-7.1.3-3.aarch64.rpm	python3-colcon-bazel-0.1.0-11.fc34.noarch.rpm	console-bridge-1.0.1-4.aarch64.rpm
google-benchmark-1.5.6-1.aarch64.rpm	python3-colcon-bundle-0.1.0-3.fc34.noarch.rpm	console-bridge-devel-1.0.1-4.aarch64.rpm
google-benchmark-devel-1.5.6-1.aarch64.rpm	python3-colcon-cd-0.1.1-7.fc34.noarch.rpm	log4cxx-0.11.0-4.aarch64.rpm
libsq3-20071018-29.aarch64.rpm	python3-colcon-cmake-0.2.26-2.fc34.noarch.rpm	log4cxx-devel-0.11.0-4.aarch64.rpm
libsq3-devel-20071018-29.aarch64.rpm	python3-colcon-common-extensions-0.2.1-5.fc34.noarch.rpm	poco-crypto-1.10.1-5.aarch64.rpm
lttng-tools-2.12.2-4.aarch64.rpm	python3-colcon-core-0.6.1-2.fc34.noarch.rpm	poco-data-1.10.1-5.aarch64.rpm
lttng-tools-devel-2.12.2-4.aarch64.rpm	python3-colcon-coveragepy-result-0.0.8-3.fc34.noarch.rpm	poco-debug-1.10.1-5.aarch64.rpm
opencv-4.5.2-6.aarch64.rpm	python3-colcon-defaults-0.2.5-4.fc34.noarch.rpm	poco-devel-1.10.1-5.aarch64.rpm
opencv-devel-4.5.2-6.aarch64.rpm	python3-colcon-devtools-0.2.2-5.fc34.noarch.rpm	poco-doc-1.10.1-5.aarch64.rpm
orocos-kdl-1.4.0-11.aarch64.rpm	python3-colcon-ed-0.1.2-2.fc34.noarch.rpm	poco-encodings-1.10.1-5.aarch64.rpm
orocos-kdl-devel-1.4.0-11.aarch64.rpm	python3-colcon-lcov-result-0.5.0-2.fc34.noarch.rpm	poco-foundation-1.10.1-5.aarch64.rpm
python3-lark-parser-0.9.0-2.fc34.noarch.rpm	python3-colcon-library-path-0.2.1-10.fc34.noarch.rpm	poco-json-1.10.1-5.aarch64.rpm
python3-lttng-2.12.2-4.aarch64.rpm	python3-colcon-metadata-0.2.5-2.fc34.noarch.rpm	poco-jwt-1.10.1-5.aarch64.rpm
python3-pygraphviz-1.7-1.fc34.aarch64.rpm	python3-colcon-mixin-0.2.0-3.fc34.noarch.rpm	poco-mongodb-1.10.1-5.aarch64.rpm
python3-pykdl-1.4.0-11.aarch64.rpm	python3-colcon-notification-0.2.13-4.fc34.noarch.rpm	poco-mysql-1.10.1-5.aarch64.rpm
spdlog-1.8.5-1.aarch64.rpm	python3-colcon-output-0.2.12-2.fc34.noarch.rpm	poco-net-1.10.1-5.aarch64.rpm
spdlog-devel-1.8.5-1.aarch64.rpm	python3-colcon-package-information-0.3.3-4.fc34.noarch.rpm	poco-netssl-1.10.1-5.aarch64.rpm
tango-icon-theme-0.8.90-22.noarch.rpm	python3-colcon-package-selection-0.2.10-2.fc34.noarch.rpm	poco-odbc-1.10.1-5.aarch64.rpm
tinyxml-2.6.2-24.aarch64.rpm	python3-colcon-parallel-executor-0.2.4-8.fc34.noarch.rpm	poco-pagecompiler-1.10.1-5.aarch64.rpm
tinyxml-devel-2.6.2-24.aarch64.rpm	python3-colcon-pkg-config-0.1.0-9.fc34.noarch.rpm	poco-sqlite-1.10.1-5.aarch64.rpm
tinyxml2-7.0.1-8.aarch64.rpm	python3-colcon-powershell-0.3.6-5.fc34.noarch.rpm	poco-util-1.10.1-5.aarch64.rpm
tinyxml2-devel-7.0.1-8.aarch64.rpm	python3-colcon-python-setup-py-0.2.7-2.fc34.noarch.rpm	poco-xml-1.10.1-5.aarch64.rpm
uncrustify-0.72.0-2.aarch64.rpm	python3-colcon-recursive-crawl-0.2.1-4.fc34.noarch.rpm	poco-zip-1.10.1-5.aarch64.rpm
python3-catkin-sphinx-0.3.1-4.fc34.noarch.rpm	python3-colcon-ros-0.3.21-2.fc34.noarch.rpm	sbcl-2.0.1-8.aarch64.rpm
python3-catkin_pkg-0.4.23-2.fc34.noarch.rpm	python3-colcon-ros-bazel-0.0.1-9.fc34.noarch.rpm	python3-rosdep-0.20.0-1.fc34.noarch.rpm
python3-empy-3.3.4-9.fc34.noarch.rpm	python3-colcon-ros-bundle-0.1.0-2.fc34.noarch.rpm	python3-rosdistro-0.8.3-2.fc34.noarch.rpm
python3-gnupg-0.4.6-3.fc34.noarch.rpm	python3-colcon-spawn-shell-0.2.0-9.fc34.noarch.rpm	python3-rosinstall_generator-0.1.22-3.fc34.noarch.rpm
python3-nose-1.3.7-33.fc34.noarch.rpm	python3-colcon-test-result-0.3.8-5.fc34.noarch.rpm	python3-rospkg-1.2.10-1.fc34.noarch.rpm
python3-notify2-0.3.1-10.fc34.noarch.rpm	python3-colcon-zsh-0.4.0-6.fc34.noarch.rpm	

2. 将镜像烧录到sd卡中，插入x3pi设备，启动openeuler22.03。

烧录工具可以选用balenaEtcher。

第一次连接x3pi时可使用串口连接，波特率为921600。获得ip地址之后可以通过ssh连接。

默认账户为：root

默认密码为：openeuler

3. 安装ROS2-humble

1. 创建ROS2工作空间

确保设备能够访问github，拉取源码下载地址。

```
mkdir -p ~/ros2_humble/src
cd ~/ros2_humble
export ROS_OS_OVERRIDE=fedora:34
vcs import --input https://raw.githubusercontent.com/ros2/ros2/humble/ros2.repos src
```

2. 下载ROS2源码

```
rosdep init
rosdep update
rosdep install --from-paths src --ignore-src -y --skip-keys "asio cyclonedds fastcdr fastrtps ignition-cmake2 ignition-math6 python3-babeltrace python3-mypy rti-connext-dds-6.0.1 urdfdom_headers"
```

3. 通过colcon工具编译ROS2

```
cd ~/ros2_humble/
colcon build --symlink-install --cmake-args -DTHIRDPARTY_Asio=ON --no-warn-unused-cli

colcon build可选参数:
--continue-on-error    不会被报错中断编译过程
--parallel-workers 4   指定最多同时执行的任务数，防止内存溢出
```

4. 可能遇到的问题

4.1 eigen3报错

报错关键词中与eigen3相关的报错时，请查看安装的eigen3是否是oe官方仓的软件包，该软件包存在问题导致编译无法进行。镜像初始安装了不会报错的eigen3版本，请勿安装oe官方仓的eigen3。

4.2 网络无法连接

查看/etc/resolv.conf，将DNS修改正确。

4.3 rosdep update失败

找不到对应系统版本的ros源码，执行以下指令覆盖环境变量即可。

```
export ROS_OS_OVERRIDE=fedora:34
```