

# 如何在本地跑狗王的人形示例

## 本机部署和编译

### 0.狗王的知乎连接

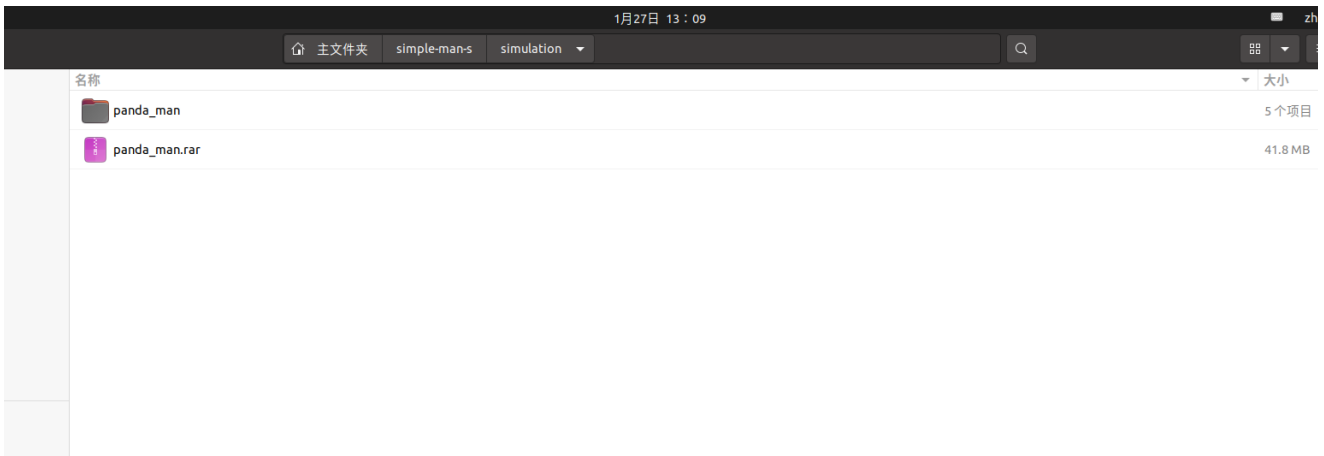
[https://zhuanlan.zhihu.com/p/679749385?utm\\_psn=1733860475643932672](https://zhuanlan.zhihu.com/p/679749385?utm_psn=1733860475643932672)

### 1.克隆代码

git clone <https://gitee.com/tinymal/simple-man-s.git>

### 2.用webots打开wbt文件

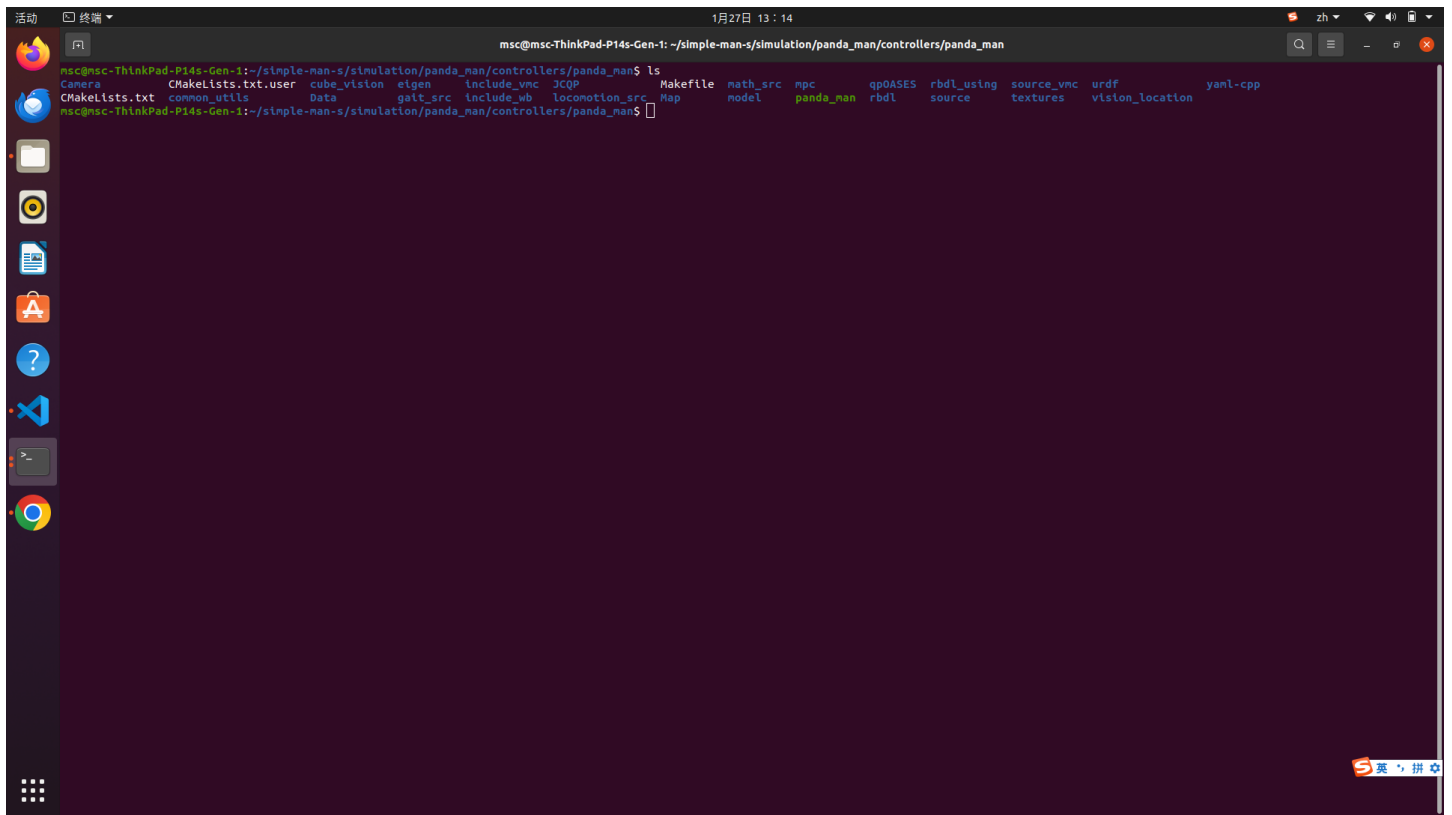
#### 2.1 在simple-man-s/simulation路径下，解压panda\_man.rar,不要解压到其他路径



#### 2.2 进入 你的路径/simple-man-s/simulation/panda\_man/controllers/panda\_man，在终端打开

执行chmod +x panda\_man

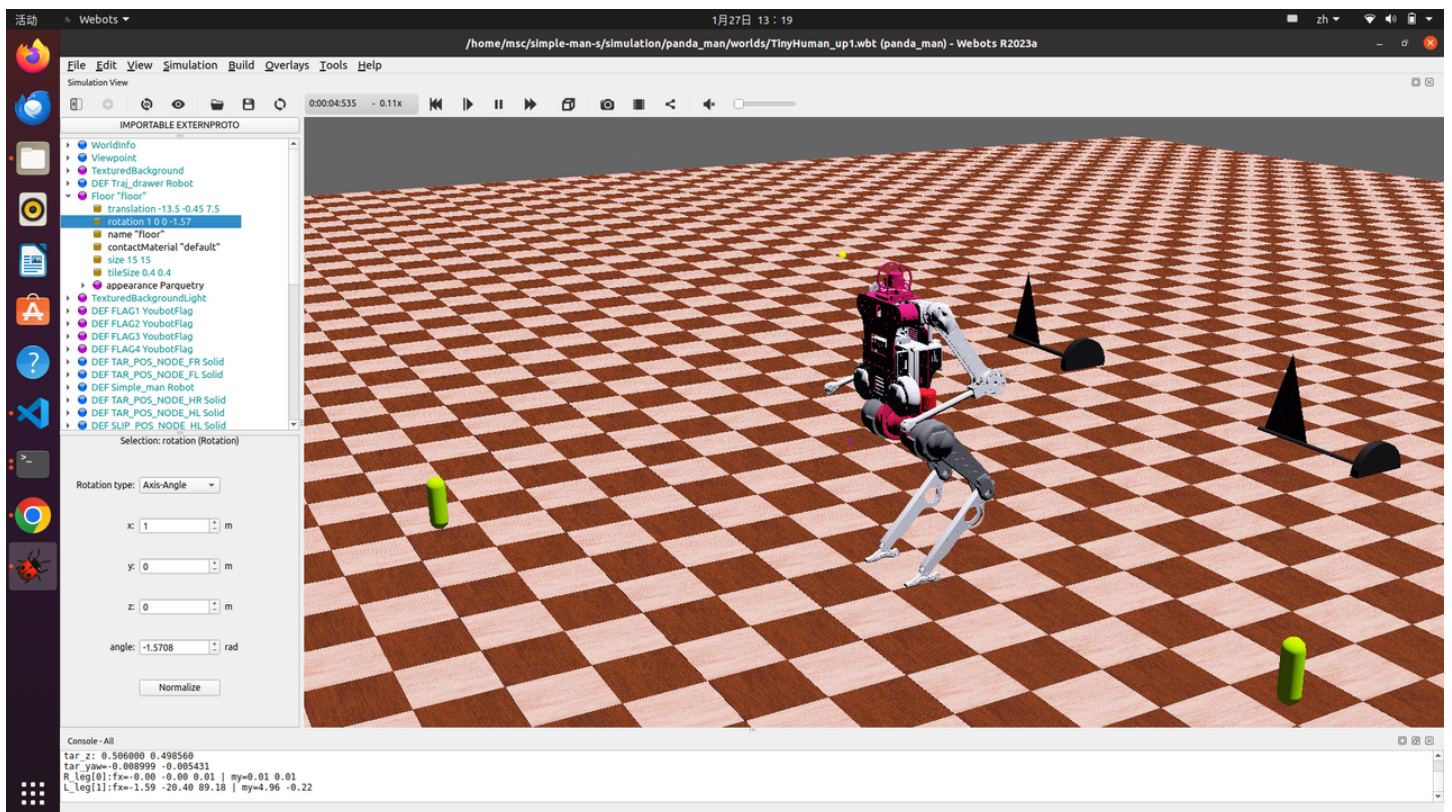
看到可执行文件panda\_man由白变绿



2.3用webots打开 你的路径/simple-man-s/simulation/panda\_man/worlds/TinyHuman\_up1.wbt

如果你打开没有看到地面而且机器人直接掉下，如下图，点开floor下的rotation，绕x轴-1.5708rad即可，**保存**，

再打开即可，这样就能看到机器人开始踏步了

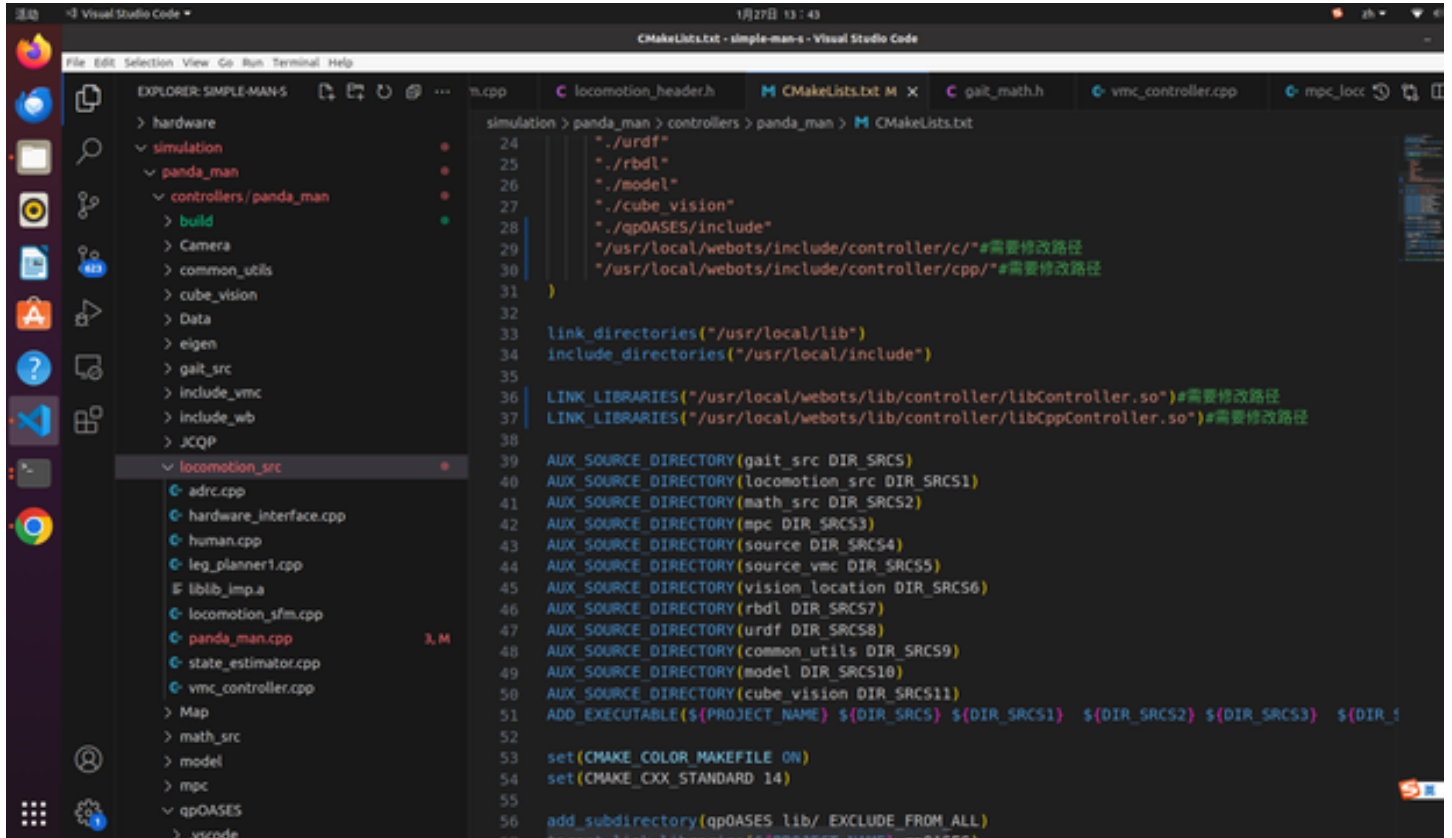


2.4修改可执行文件pnada\_man

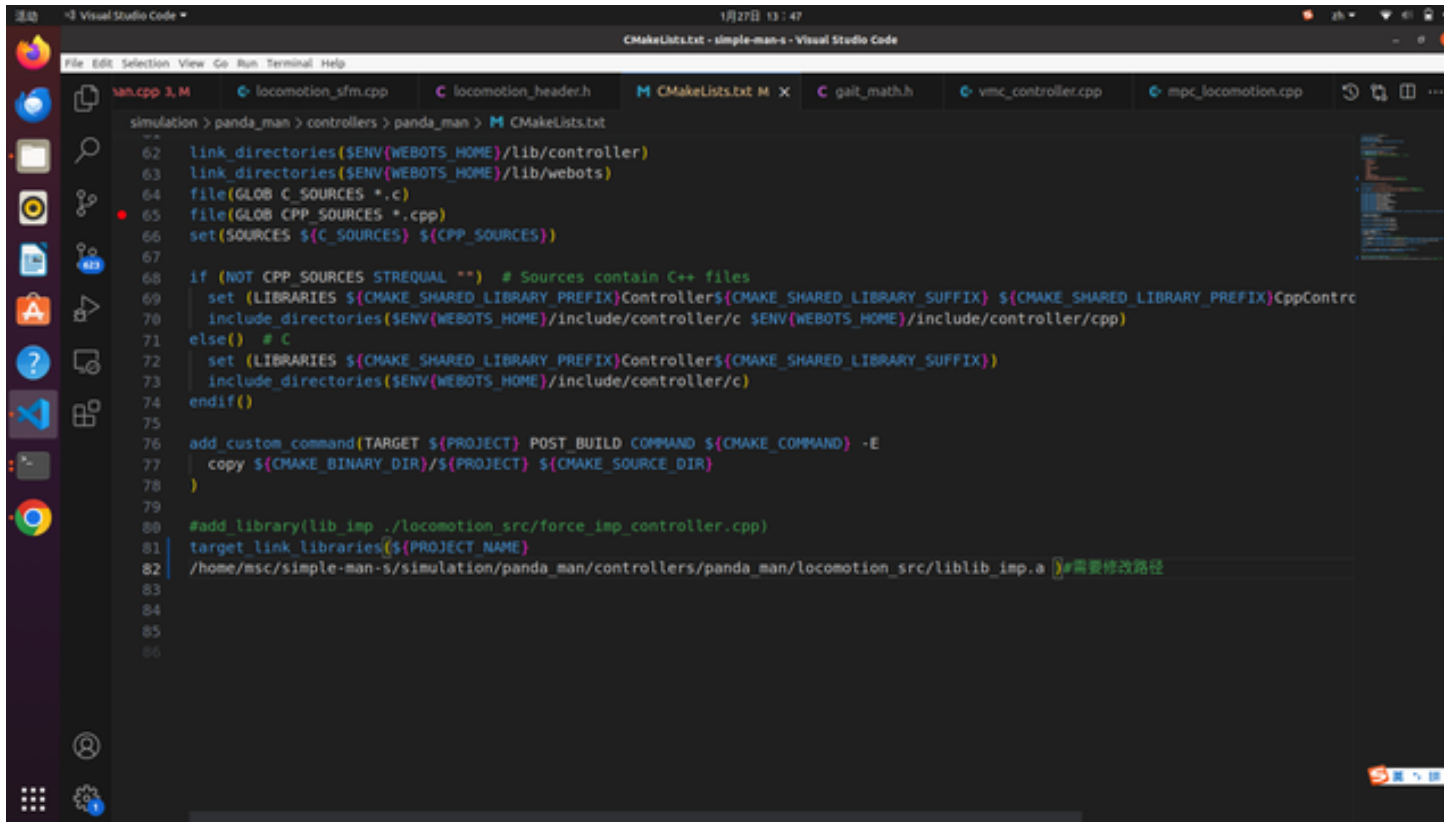
1. cd 你的路径/simple-man-s/simulation/panda\_man/controllers/panda\_man

2. mkdir build

3. 照图片修改 你的路径/simple-man-s/simulation/panda\_man/controllers/panda\_man/CMakeLists.txt



```
simulation > panda_man > controllers > panda_man > CMakeLists.txt
24   add_executable(${PROJECT_NAME}
25     "${urdf}"
26     "${rddl}"
27     "${model}"
28     "${cube_vision}"
29     "${qpOASES/include}"
30     "/usr/local/webots/include/controller/c/"#需要修改路径
31     "/usr/local/webots/include/controller/cpp/"#需要修改路径
32   )
33   link_directories("/usr/local/lib")
34   include_directories("/usr/local/include")
35
36   LINK_LIBRARIES("/usr/local/webots/lib/controller/libController.so")#需要修改路径
37   LINK_LIBRARIES("/usr/local/webots/lib/controller/libCppController.so")#需要修改路径
38
39   AUX_SOURCE_DIRECTORY(gait_src DIR_SRC1)
40   AUX_SOURCE_DIRECTORY(locomotion_src DIR_SRC2)
41   AUX_SOURCE_DIRECTORY(math_src DIR_SRC3)
42   AUX_SOURCE_DIRECTORY(mpc DIR_SRC4)
43   AUX_SOURCE_DIRECTORY(source DIR_SRC5)
44   AUX_SOURCE_DIRECTORY(source_vmc DIR_SRC6)
45   AUX_SOURCE_DIRECTORY(vision_location DIR_SRC7)
46   AUX_SOURCE_DIRECTORY(rddl DIR_SRC8)
47   AUX_SOURCE_DIRECTORY(urdf DIR_SRC9)
48   AUX_SOURCE_DIRECTORY(common_utils DIR_SRC10)
49   AUX_SOURCE_DIRECTORY(model DIR_SRC11)
50   AUX_SOURCE_DIRECTORY(cube_vision DIR_SRC12)
51   ADD_EXECUTABLE(${PROJECT_NAME} ${DIR_SRC1} ${DIR_SRC2} ${DIR_SRC3} ${DIR_SRC4}
52     ${DIR_SRC5} ${DIR_SRC6} ${DIR_SRC7} ${DIR_SRC8} ${DIR_SRC9} ${DIR_SRC10}
53     ${DIR_SRC11} ${DIR_SRC12})
54   set(CMAKE_COLOR_MAKEFILE ON)
55   set(CMAKE_CXX_STANDARD 14)
56   add_subdirectory(qpOASES lib/ EXCLUDE_FROM_ALL)
```



```
simulation > panda_man > controllers > panda_man > CMakeLists.txt
62   link_directories($ENV{WEBOTS_HOME}/lib/controller)
63   link_directories($ENV{WEBOTS_HOME}/lib/webots)
64   file(GLOB C_SOURCES *.c)
65   file(GLOB CPP_SOURCES *.cpp)
66   set(SOURCES ${C_SOURCES} ${CPP_SOURCES})
67
68   if (NOT CPP_SOURCES STREQUAL "") # Sources contain C++ files
69     set (LIBRARIES ${CMAKE_SHARED_LIBRARY_PREFIX}Controllers${CMAKE_SHARED_LIBRARY_SUFFIX} ${CMAKE_SHARED_LIBRARY_PREFIX}CppContrc
70     include_directories($ENV{WEBOTS_HOME}/include/controller/c $ENV{WEBOTS_HOME}/include/controller/cpp)
71   else() # C
72     set (LIBRARIES ${CMAKE_SHARED_LIBRARY_PREFIX}Controllers${CMAKE_SHARED_LIBRARY_SUFFIX})
73     include_directories($ENV{WEBOTS_HOME}/include/controller/c)
74   endif()
75
76   add_custom_command(TARGET ${PROJECT} POST_BUILD COMMAND ${CMAKE_COMMAND} -E
77     copy ${CMAKE_BINARY_DIR}/${PROJECT} ${CMAKE_SOURCE_DIR}
78   )
79
80   #add_library(lib_imp ../locomotion_src/force_imp_controller.cpp)
81   target_link_libraries(${PROJECT_NAME}
82     /home/msc/simple-man-s/simulation/panda_man/controllers/panda_man/locomotion_src/liblib_imp.a)#需要修改路径
83
84
85
```

4. cd build

5. cmake .. && make -j8

复制build下自己编译的panda\_man到上级目录，webots在上级目录找panda\_man

6. `cp panda_man ../`

## 在Docker下运行webots 2021a和 simple-man仿真

如果不想做额外的环境配置，可以用docker执行simple-man仿真，目前该docker已上传公司阿里云服务器。编译环境相关配置参考“本级部署与编译”章节。

从公司服务器拉取docker:

```
1 docker pull registry.cn-hangzhou.aliyuncs.com/ddt_robot/simple-man-2021a-docker:v1-1
```

所需的webots 2021a, qpoases, eigen3, boost, rbdl等环境均已配置完毕。运行docker时，执行以下指令：

```
1 docker run --gpus all -e DISPLAY=$DISPLAY --net=host -it simple-man:v1-1
```

这里的作用是调用gpu运行docker，并开启X11转发显示桌面。

工程在以下路径：

```
1 /opt/simple-man/simple-man-s-master/
```

要在webots中打卡，进入以下目录：

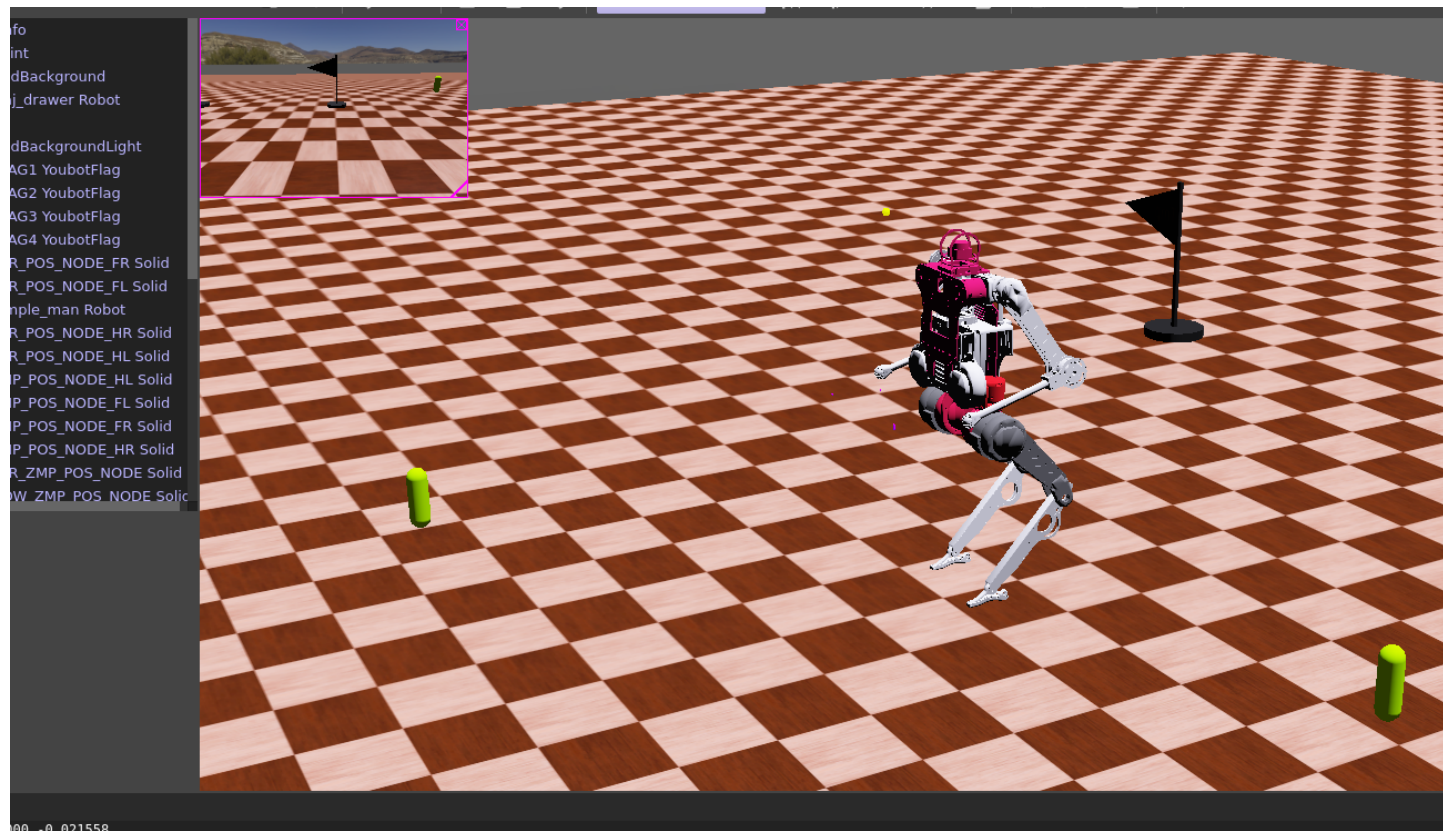
```
1 /opt/simple-man/simple-man-s-master/simulation/panda_man/worlds
```

并执行以下指令

```
1 webots TinyHuman_up1.wbt
```

理论上可以打开webots并执行





.wbt默认选择控制器为<panda\_man>，目前直接编译后<extern>模式下初始化会有问题，还没查明原因，后续继续补充。