



阿木实验室

Mavros进阶课程

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0、课程简介

- ◆ 本课程偏重于工程实践，通过一个个实践项目，帮助大家熟悉mavros的使用。所涉及的面比较广，基本上涵盖了mavros常用的应用场景。
- ◆ 本课程对控制理论的讲解较少，偏重于工程应用，重点讲解ROS系统的应用，对于提高编程水平，构建软件架构是用帮助的。
- ◆ 本课程适用于有一定无人机开发基础的初级开发者，可作为学习教程，也可作为开发过程中的参考资料。

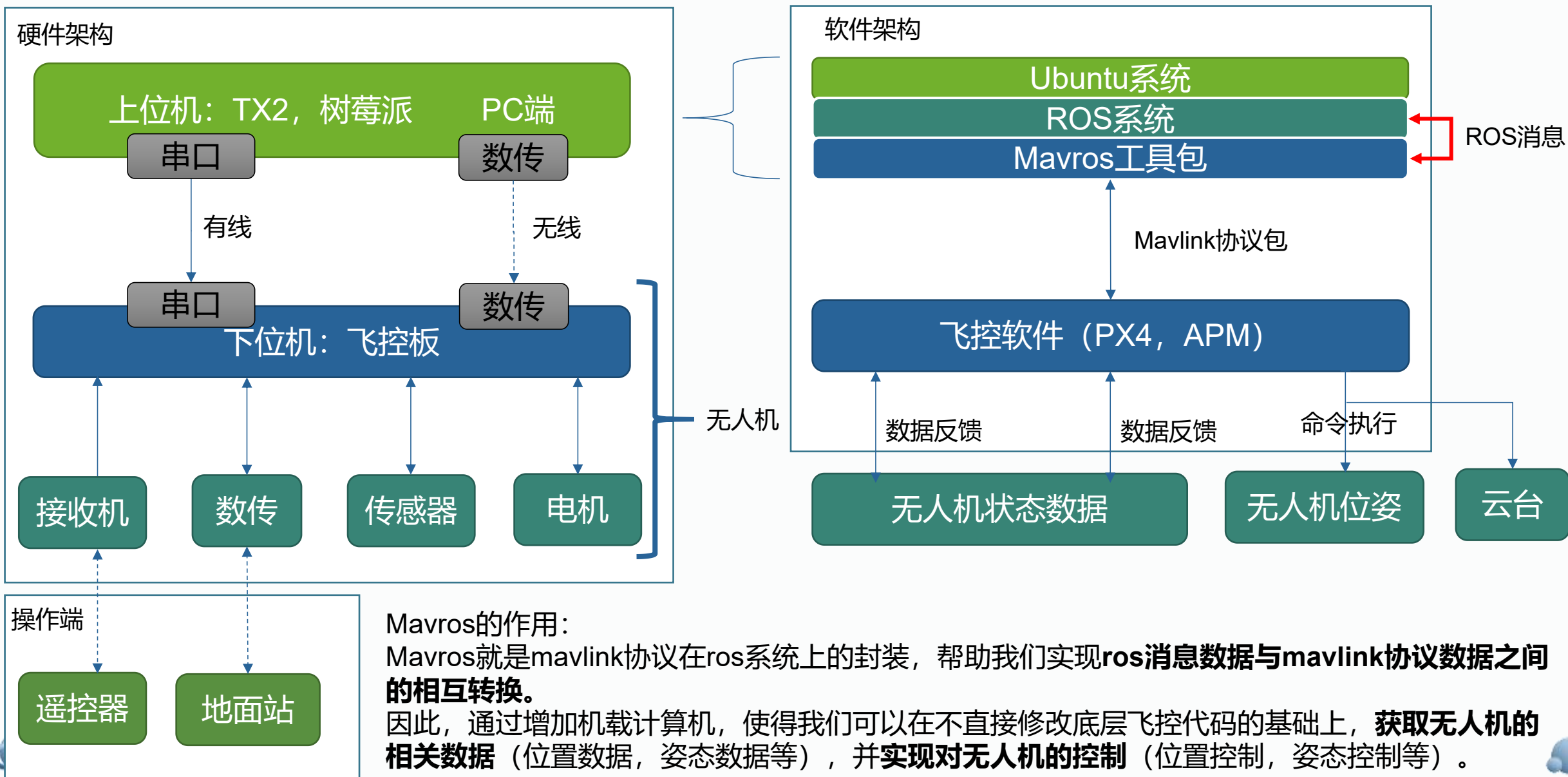


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基础知识

工欲善其事，必先利其器

应用mavros操作无人机的软硬件架构





410轴距开源无人机

1、工具链的安装

◆ 工具链：VMware虚拟机 + Ubuntu 18.04操作系统 + ROS Melodic + mavros包 + gazebo仿真工具

◆ [虚拟机的安装](#)

<https://www.vmware.com/cn/products/workstation-pro/workstation-pro-evaluation.html>

◆ 虚拟机安装Ubuntu 18.04操作系统

◆ [Ubuntu 18.04系统下载](#): <http://59.80.44.44/old-releases.ubuntu.com/202106232130/893764253980CECE9AF66AA844A72923/releases/18.04.4/ubuntu-18.04.4-desktop-amd64.iso>

◆ [参考教程](#): https://blog.csdn.net/qq_37618797/article/details/81192091

◆ 安装ROS系统

◆ 换源，国内源：[中科大源](#)，[阿里源](#)，[清华源](#)

编辑([vim](#) 或者 gedit) /etc/apt/sources.list，更换为国内源，然后保存文件
然后执行以下两行命令：
`sudo apt-get update`
`sudo apt-get upgrade`

◆ [安装ROS系统步骤](#): <http://wiki.ros.org/melodic/Installation/Ubuntu>

1、工具链的安装

◆ [安装mavros步骤](#)

https://docs.px4.io/master/en/ros/mavros_installation.html

◆ 二进制安装

二进制包里面包括了已经编译完成,可以直接运行的程序。你通过`sudo apt-get install`来进行下载和解包(安装),执行完该指令后就可以马上使用了。因此这种方式简单快捷,适合比较固定、无需改动的程序。

◆ 源码安装

源代码包里是程序的原始代码,在你的计算机上必须经过编译,生成了可执行的二进制文件,方可运行。一些个人开发的程序、第三方修改或者你希望修改的程序都应当通过源代码包的来编译安装。

◆ 推荐用源码安装的方式安装mavros

◆ [安装gazebo步骤](#)

https://docs.px4.io/master/en/dev_setup/dev_env_linux_ubuntu.html#rosgazebo



Ubuntu 18.04 国内替换源

中科大源

```
deb https://mirrors.ustc.edu.cn/ubuntu/ bionic main restricted universe multiverse
deb-src https://mirrors.ustc.edu.cn/ubuntu/ bionic main restricted universe multiverse
deb https://mirrors.ustc.edu.cn/ubuntu/ bionic-updates main restricted universe multiverse
deb-src https://mirrors.ustc.edu.cn/ubuntu/ bionic-updates main restricted universe multiverse
deb https://mirrors.ustc.edu.cn/ubuntu/ bionic-backports main restricted universe multiverse
deb-src https://mirrors.ustc.edu.cn/ubuntu/ bionic-backports main restricted universe multiverse
deb https://mirrors.ustc.edu.cn/ubuntu/ bionic-security main restricted universe multiverse
deb-src https://mirrors.ustc.edu.cn/ubuntu/ bionic-security main restricted universe multiverse
deb https://mirrors.ustc.edu.cn/ubuntu/ bionic-proposed main restricted universe multiverse
deb-src https://mirrors.ustc.edu.cn/ubuntu/ bionic-proposed main restricted universe multiverse
```

Ubuntu 18.04 国内替换源

阿里源

```
deb http://mirrors.aliyun.com/ubuntu/ bionic main restricted universe multiverse
```

```
deb http://mirrors.aliyun.com/ubuntu/ bionic-security main restricted universe multiverse
```

```
deb http://mirrors.aliyun.com/ubuntu/ bionic-updates main restricted universe multiverse
```

```
deb http://mirrors.aliyun.com/ubuntu/ bionic-proposed main restricted universe multiverse
```

```
deb http://mirrors.aliyun.com/ubuntu/ bionic-backports main restricted universe multiverse
```

```
deb-src http://mirrors.aliyun.com/ubuntu/ bionic main restricted universe multiverse
```

```
deb-src http://mirrors.aliyun.com/ubuntu/ bionic-security main restricted universe multiverse
```

```
deb-src http://mirrors.aliyun.com/ubuntu/ bionic-updates main restricted universe multiverse
```

```
deb-src http://mirrors.aliyun.com/ubuntu/ bionic-proposed main restricted universe multiverse
```

```
deb-src http://mirrors.aliyun.com/ubuntu/ bionic-backports main restricted universe multiverse
```

Ubuntu 18.04 国内替换源

清华源：

```
deb https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ bionic main restricted universe multiverse
deb-src https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ bionic main restricted universe multiverse
deb https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ bionic-updates main restricted universe multiverse
deb-src https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ bionic-updates main restricted universe multiverse
deb https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ bionic-backports main restricted universe multiverse
deb-src https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ bionic-backports main restricted universe multiverse
deb https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ bionic-security main restricted universe multiverse
deb-src https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ bionic-security main restricted universe multiverse
deb https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ bionic-proposed main restricted universe multiverse
deb-src https://mirrors.tuna.tsinghua.edu.cn/ubuntu/ bionic-proposed main restricted universe multiverse
```

02

编程实践

绝知此事要躬行

03

总结引申

君子博学而日参省乎己



THANKS