

ROBOMASTER



# Tello Talent 扩展模块开发指南

Programming Guide of Tello Talent

欢迎使用 **Tello Talent 扩展模块** 进行开发

本指南将带领您  
从上手实践中快速全面了解  
**TT 扩展模块的使用及注意事项。**

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for the first time

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color LED

module

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light red and

blue 8\*8 LED

matrix module composition module

interface dot matrix modulus and its usage control example - digital display

ToF ( Time of Flight ) ranging sensor module composition

control example

- displaying the distance on the dot matrix screen

Communicating with drones - TT\_Protocol module module

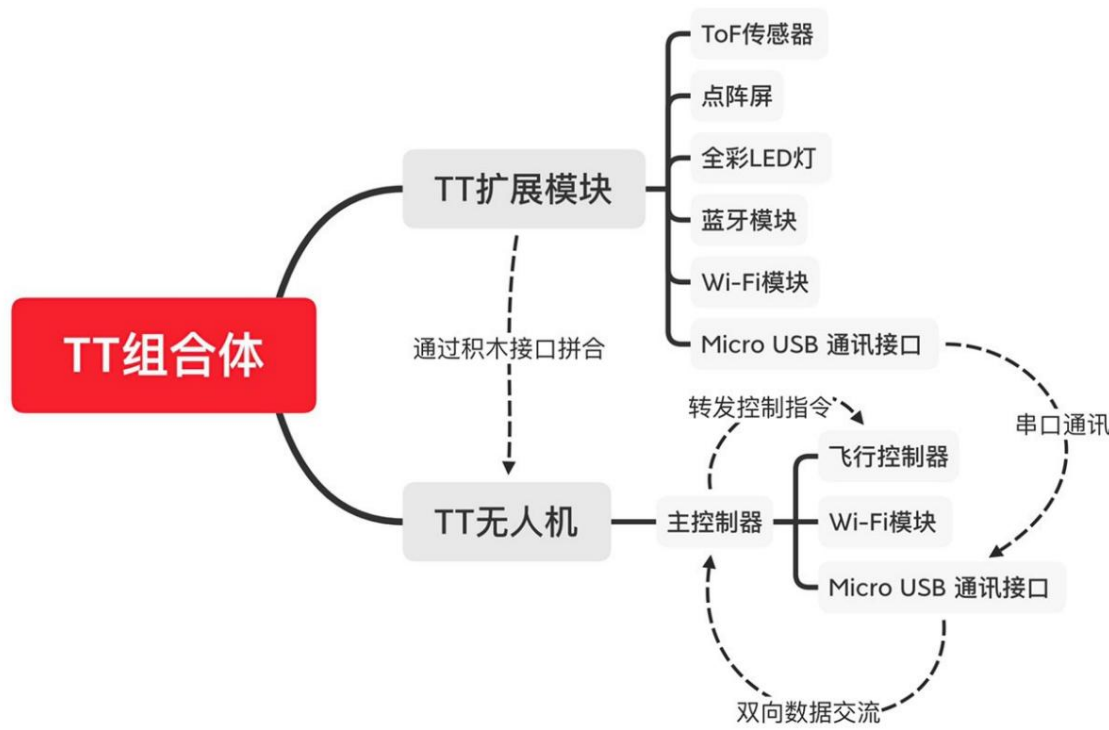
interface

advanced

development project template - GameSir Chick handle control

project template - interact with Tello EDU APP

## Necessary knowledge before starting development - combined control mode of TT expansion module and TT drone



If you need to achieve control of TT drones, you always need to look at TT drones separately from TT expansion modules.

We first look at the TT expansion module from the perspective of a TT drone.

The TT UAV has its own flight controller, which controls the four hollow cup motors of the aircraft by obtaining sensor information such as the gyroscope of the aircraft itself to control the physical movement of the aircraft. Control instructions from different sources (such as mobile phones, handles) are further sent to the flight controller through the main controller of the TT UAV to complete specific flight instructions, and the return of aircraft information (such as power, current altitude, etc.) It is also done by the main controller of the TT drone.

The control of the UAV by the TT expansion module is the same as that of a mobile phone and a handle, and it is realized by transmitting control instructions to the main controller of the TT UAV . And this specific communication process is realized through serial communication through the onboard Micro USB interface of the drone, and this interface will also supply power to the TT expansion module.

When we change the perspective, from the perspective of the TT expansion module, it is equivalent to the external brain attached to the TT drone. It not only expands the perception capability of TT drone itself (forward ToF sensor), but also enriches the functionality of TT drone. At the same time, you can also write your own program to the expansion module to make the TT combination complete complex flight tasks that are difficult to complete only by the TT drone itself. By communicating with the TT drone to obtain the sensor information of the drone itself, combined with the sensor information of the expansion module itself, you can realize a wealth of flight control functions, such as realizing forward obstacle avoidance for the TT combination. More exciting ways to play are waiting for your exploration!

## Building a Development Environment (Windows)



The screenshot shows the Arduino IDE interface. The title bar reads "Arduino IDE". The menu bar includes "文件", "编辑", "项目", "工具", and "帮助". The toolbar contains icons for opening, saving, and running. The editor window title is "sketch\_jul21a". The code in the editor is as follows:

```

}

void control_task(void *pvParameters) {
    bool telloReady = false;
    while (1) {
        //Serial.println(CompStr("ETT ok", "ETT ok",

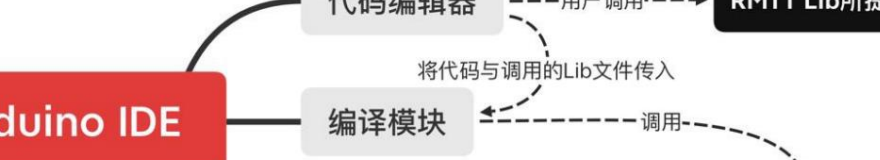
    if (telloReady) {
        Serial.println("Ready? -> True");

    } else {
        Serial.println("Ready? -> False");
    }
}

```

Before using the Arduino IDE to start the **development of the Tello Talent expansion module**, we need to make some necessary configurations on the **development environment** to ensure that the Arduino IDE can load the necessary hardware toolkit and the corresponding underlying library for compiling the Tello Talent expansion module document.

1. If you have never installed Arduino IDE, please use the Arduino integrated version we provide for direct development. 2. If you have already installed Arduino IDE, please make sure the version is not lower than 1.8.12, and follow the steps below to add RTMT expansion module support



```
graph LR; IDE[Arduino IDE] --- CE[代码编辑器]; IDE --- CM[编译模块]; IDE --- BM[烧写模块]; CE -.->|用户调用| RM[RMTT Lib所提供的接口]; CE -.->|将代码与调用的Lib文件传入| CM; CM -.->|调用| HLib[所选开发板的Hardware Library]; HLib -.->|编译生成| B[编译完成的二进制固件]; BM -->|将| B; B -.->|上传到| TM[TT扩展模块];
```

该流程图详细描述了Arduino IDE的工作流程。它从Arduino IDE开始，分为三个主要模块：代码编辑器、编译模块和烧写模块。代码编辑器通过用户调用与RMTT Lib所提供的接口交互，并将代码与调用的Lib文件传入编译模块。编译模块调用所选开发板的Hardware Library进行编译生成，生成编译完成的二进制固件。最后，烧写模块将该固件上传到TT扩展模块。

## Installation of the Arduino Hardware library

Please find and enter the following directory in your system disk (C drive):

C:\Users\your username\Documents\Arduino

Please note that in some versions of Windows, the first five characters of your actual user name will be truncated at "your user name", such as

If your actual user name is Username, then the directory is C:\Users\Usern\Documents\Arduino

You can avoid file path problems caused by naming by entering the "User" folder from the C drive and finding the folder corresponding to your account name question.

In the package we provide, you can see the "hardware" folder. Copy it to the Arduino directory you entered, and merge (Merge) it into a folder with the same name under this directory. At this point, the installation of the Hardware library is complete, and then please complete the installation in the next section.

## Installation of Arduino RMTT Library



### 添加 RMTT Library。



Open the Arduino IDE at this point, and find the "RMTT\_Libs.7z" file in the file package we provided in the project-load library-add .ZIP library on the top menu bar . Click OK and wait for a while, after which the RMTT Library should have been correctly imported into the Arduino IDE.

## Build your project in the Arduino IDE





### 对开发板进行选择 同时选择对应端口。



Before starting your first project, remember to select "RMTT Module" in the menu bar of Arduino IDE - Tools - Development Board, and then select the port corresponding to your TT expansion module in the "Port" below.

If you don't know which port your TT module corresponds to, please open Windows Device Manager, in

Find a device similar to the one pictured below: