

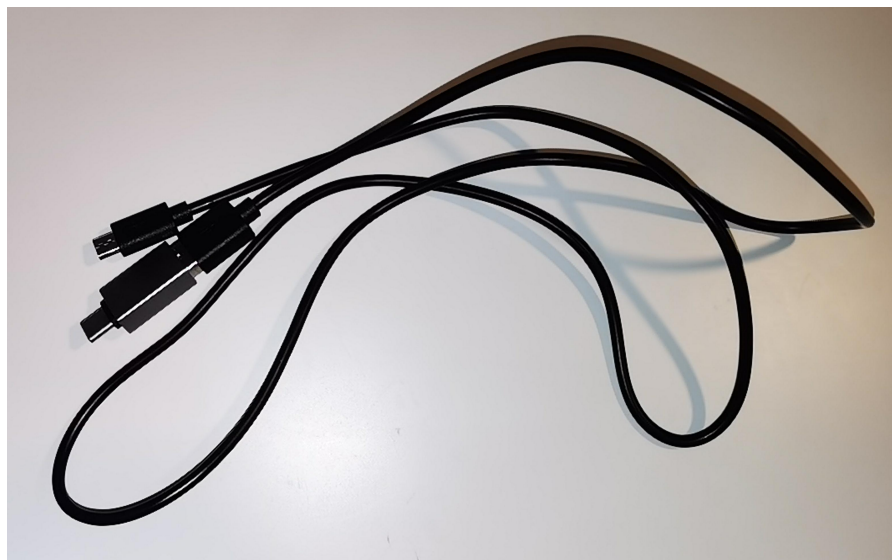
基于ESP32的wifi文件传输

项目介绍

- 此项目基于ESP32-S3-EYE开发板，通过wifi传输与mqtt服务的mosquitto broker，完成三种功能：
 - 显示SD卡目录
 - 下载SD卡文件内容并到本地
 - 从制定网站下载文件到SD卡
- 源码地址：<https://github.com/Haichao-Z/Wifi-ESP32>

硬件准备

- ESP32-S3-EYE dev board
- USB信号线
- 读卡器
- SD卡



软件编写-AP配网及页面设置

ESP32 SD卡管理器配置

```
1 // 进入配置模式
2 void enterConfigMode() {
3     configMode = true;
4
5     // 断开现有WiFi连接
6     WiFi.disconnect();
7
8     // 设置AP模式
9     WiFi.mode(WIFI_AP);
10    WiFi.softAP(ap_ssid, ap_password);
11
12    Serial.println("进入配置模式");
13    Serial.print("AP SSID: ");
14    Serial.println(ap_ssid);
15    Serial.print("AP 密码: ");
16    Serial.println(ap_password);
17    Serial.print("IP地址: ");
18    Serial.println(WiFi.softAPIP());
```

WiFi名称:

D Home

WiFi密码:

.....

高级选项

MQTT服务器:

135.119.219.218

MQTT端口:

1883

MQTT用户名:

rttyobej

MQTT密码:

.....

保存配置

软件编写-mqtt配置



```
1 // MQTT服务器默认设置 (如果用户未配置)
2 const char* default_mqtt_server = "135.119.219.218";
3 const int default_mqtt_port = 1883;
4 const char* default_mqtt_user = "rttyobej";
5 const char* default_mqtt_password = "BrsJBNV0QB17";
6 const char* client_id = "ESP32_SDCard_Manager";
```



```
1 // MQTT主题
2 String device_id = ""; // 设备唯一标识符, 将在setup中生成
3 const char* topic_command = "sdcard/command/";
4 const char* topic_response = "sdcard/response/";
5 const char* topic_data = "sdcard/data/";
```

软件编写-SD卡配置

```
1 // SD卡初始化函数
2 bool initSDCard() {
3     Serial.println("\n初始化SD卡...");
4
5     // 配置SD卡挂载选项
6     esp_vfs_fat_sdmmc_mount_config_t mount_config = {
7         .format_if_mount_failed = false,
8         .max_files = 5,
9         .allocation_unit_size = 16 * 1024
10    };
11
12    sdmmc_card_t *card;
13    const char mount_point[] = MOUNT_POINT;
14
15    // 配置SDMMC主机
16    sdmmc_host_t host = SDMMC_HOST_DEFAULT();
17
18    // 使用1位模式, 降低频率以提高兼容性
19    host.flags = SDMMC_HOST_FLAG_1BIT;
20    host.max_freq_khz = SDMMC_FREQ_PROBING;
21
22    // 配置SD卡槽
23    sdmmc_slot_config_t slot_config = SDMMC_SLOT_CONFIG_DEFAULT();
24    slot_config.width = 1; // 使用1位总线宽度
```


软件编写-SD卡配置

```
25
26 // 为ESP32-S3配置GPIO引脚
27 slot_config.clk = GPIO_NUM_39;
28 slot_config.cmd = GPIO_NUM_38;
29 slot_config.d0 = GPIO_NUM_40;
30
31 // 使能内部上拉电阻
32 slot_config.flags |= SDMMC_SLOT_FLAG_INTERNAL_PULLUP;
33
34 Serial.println("挂载文件系统");
35 esp_err_t ret = esp_vfs_fat_sdmmc_mount(mount_point, &host, &slot_config, &mount_config, &card);
36
37 if (ret != ESP_OK) {
38     if (ret == ESP_FAIL) {
39         Serial.println("挂载文件系统失败");
40     } else {
41         Serial.printf("SD卡初始化失败: %s\n", esp_err_to_name(ret));
42     }
43     return false;
44 }
45
46 Serial.println("文件系统挂载成功");
47
48 // 打印SD卡信息
49 Serial.printf("SD卡类型: %s\n", (card->ocr & SD_OCR_SDHC_CAP) ? "SDHC/SDXC" : "SDSC");
50 Serial.printf("SD卡容量: %lluMB\n", ((uint64_t)card->csd.capacity) * card->csd.sector_size / (1024 * 1024));
51 Serial.printf("SD卡名称: %s\n", card->cid.name);
52
53 return true;
54 }
```

Web页面显示

ESP32 SD卡远程文件管理器

配置状态

WiFi网络: D Home

MQTT服务器: 135.119.219.218:1883

修改配置

远程访问信息

本设备已配置为通过MQTT进行远程访问。请使用MQTT客户端连接以下信息：

- MQTT服务器: 135.119.219.218:1883
- 设备ID: 58BCE4AEC24
- 命令主题: sdcard/command/58BCE4AEC24
- 响应主题: sdcard/response/58BCE4AEC24
- 数据主题: sdcard/data/58BCE4AEC24/file

串口输出结果

```
=====
ESP32 SD卡远程文件管理器
=====

设备ID: 58BCE4AEC24

初始化SD卡...
挂载文件系统
文件系统挂载成功
SD卡类型: SDHC/SDXC
SD卡容量: 15193MB
SD卡名称: SC16G
```

```
从EEPROM加载配置:
SSID: D Home
MQTT服务器: 135.119.219.218
连接到WiFi网络...
SSID: D Home
..
WiFi已连接
IP地址: 192.168.2.142
尝试连接MQTT服务器...已连接
已订阅主题: sdcard/command/58BCE4AEC24
Web服务器已启动
系统已就绪
使用MQTT客户端连接以访问文件系统
```

mqtt显示SD卡目录

```
haichao@A10G:~$ mosquitto_pub -h 135.119.219.218 -p 1883 -u rttyobej -P BrsJBNVo  
QB17 -t "sdcard/command/58BCE4AEC24" -m '{"command": "lsdir", "path": "/test"}'
```

发布“lsdir”命令
到mqtt server,
显示SD卡中test
文件夹目录

```
^Chaichao@A10G:~$ mosquitto_sub -h 135.119.219.218 -p 1883 -u rttyobej -P BrsJBNVo  
QB17 -t "sdcard/response/58BCE4AEC24" -v  
4sdcard/response/58BCE4AEC24 {"status": "success", "path": "/test", "files": [{"name":  
:"downloaded_file.txt", "isDirectory": false, "size": 18, "sizeFormatted": "18 B"}, {"n  
ame": ".downloaded_file.txt", "isDirectory": false, "size": 4096, "sizeFormatted": "4.  
KB"}]}
```

订阅response主
题，查看命令执
行信息。

终端显示有2个
文件在test文件
夹中

mqtt下载SD卡文件到本地

```
haichao@A10G:~$ mosquitto_pub -h 135.119.219.218 -p 1883 -u rttyobej -P BrsJBNVo  
QBl7 -t "sdcard/command/58BCE4AEC24" -m '{"command": "getfile", "path": "/test.txt  
'
```

发布“getfile”命令到mqtt
server，读取test.txt文件

```
^Chaichao@A10G:~$ mosquitto_sub -h 135.119.219.218 -p 1883 -u rttyobej -P BrsJBNVo  
QBl7 -t "sdcard/response/58BCE4AEC24" -v  
sdcard/response/58BCE4AEC24 {"status": "success", "action": "fileinfo", "filename": "  
test.txt", "size": 28, "path": "/test.txt"}  
sdcard/response/58BCE4AEC24 {"status": "progress", "filename": "test.txt", "sent": 28  
, "total": 28, "percent": 100}  
sdcard/response/58BCE4AEC24 {"status": "complete", "filename": "test.txt", "size": 28
```

订阅response主题，查看命
令执行信息

```
haichao@A10G:~$ mosquitto_sub -h 135.119.219.218 -p 1883 -u rttyobej -P BrsJBNVo  
QBl7 -t "sdcard/data/58BCE4AEC24/file" -v file_data.txt  
haichao@A10G:~$ mosquitto_sub -h 135.119.219.218 -p 1883 -u rttyobej -P BrsJBNVo  
QBl7 -t "sdcard/data/58BCE4AEC24/file" -v > file_data.txt  
^Chaichao@A10G:~$ ls  
Application.bin  package-lock.json  '截屏2025-04-11 10.40.25.png'  
file_data.txt    test.txt
```

订阅data主题，将读取文件
内容下载到当前目录下的
file_data.txt文件中

mqtt下载文件到SD卡中

```
chaichao@A10G:~$ mosquitto_pub -h 135.119.219.218 -p 1883 -u rttyobej -P BrsJBNVo  
QBl7 -t "sdcard/command/58BCE4AEC24" -m '{"command": "downloadfile","url":"http:  
://135.119.219.218/test.txt","path":"/file.txt"}'
```

发布“download”命令到mqtt server，从指定url下载指定文件到SD卡指定目录下

```
^Chaichao@A10G:~$ mosquitto_sub -h 135.119.219.218 -p 1883 -u rttyobej -P BrsJBNVo  
QBl7 -t "sdcard/response/58BCE4AEC24" -v  
sdcard/response/58BCE4AEC24 {"status":"downloading","url":"http://135.119.219.21  
8/test.txt","path":"/file.txt"}  
sdcard/response/58BCE4AEC24 {"status":"progress","url":"http://135.119.219.218/t  
est.txt","path":"/file.txt","downloaded":18,"total":18,"percent":100}  
sdcard/response/58BCE4AEC24 {"status":"complete","url":"http://135.119.219.218/t  
est.txt","path":"/file.txt","size":18}
```

订阅response主题，显示下载信息