



WIZnet Academy 2017

아두이노 RC카



WIZnet page

<http://wiznetacademy.com/>

<http://wiznet.io/>

<http://wizwiki.net>

<http://wiznetian.com/>



통신이란?

통신이란?

≫ 통신을 영어로 하면?





통신이란?

>> 통신을 영어로 하면?

“Communication”
“커뮤니케이션”

영어사전

[communication](#) 미국·영국 [kəˌmjʊːnɪˈkeɪʃn]  영국식  ★★ [다른 뜻\(1건\)](#) | [예문보기](#)

1. 의사소통, 연락 2. 통신 (수단들) 3. (편지·전화 등의) 연락, 전언



통신이란?

>> HOW?



“Protocol”
“프로토콜”

컴퓨터간에 정보를 주고받을 때의
통신 방법에 대한 규칙과 약속

통신이란?

>> 통신의 종류



유선 통신



무선 통신

무선통신이란?

≫ 무선통신에는 어떠한 것들이 있을까?



무선통신이란?

≫ 무선통신에는 어떠한 것들이 있을까?



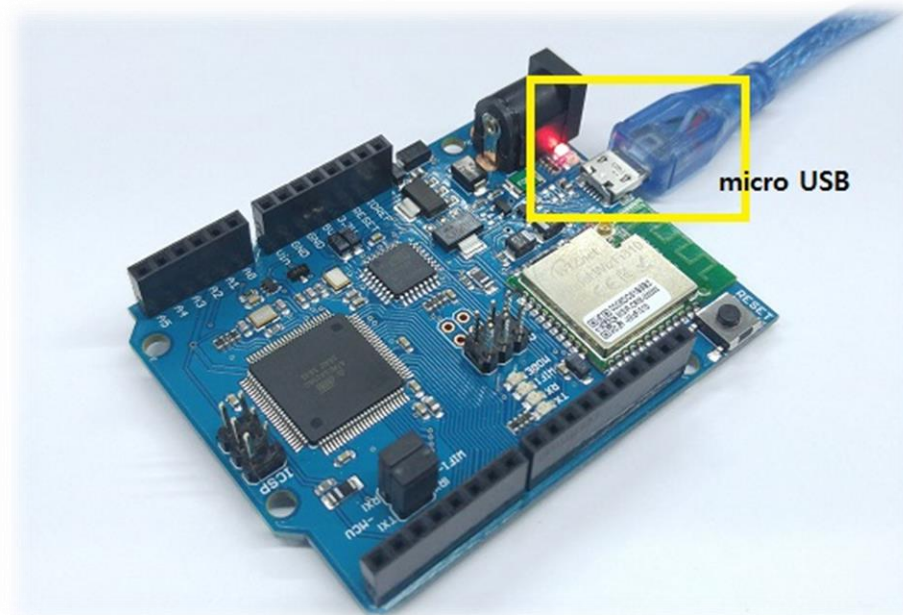


아두이노 WiFi

아두이노와 스마트폰 연결하기

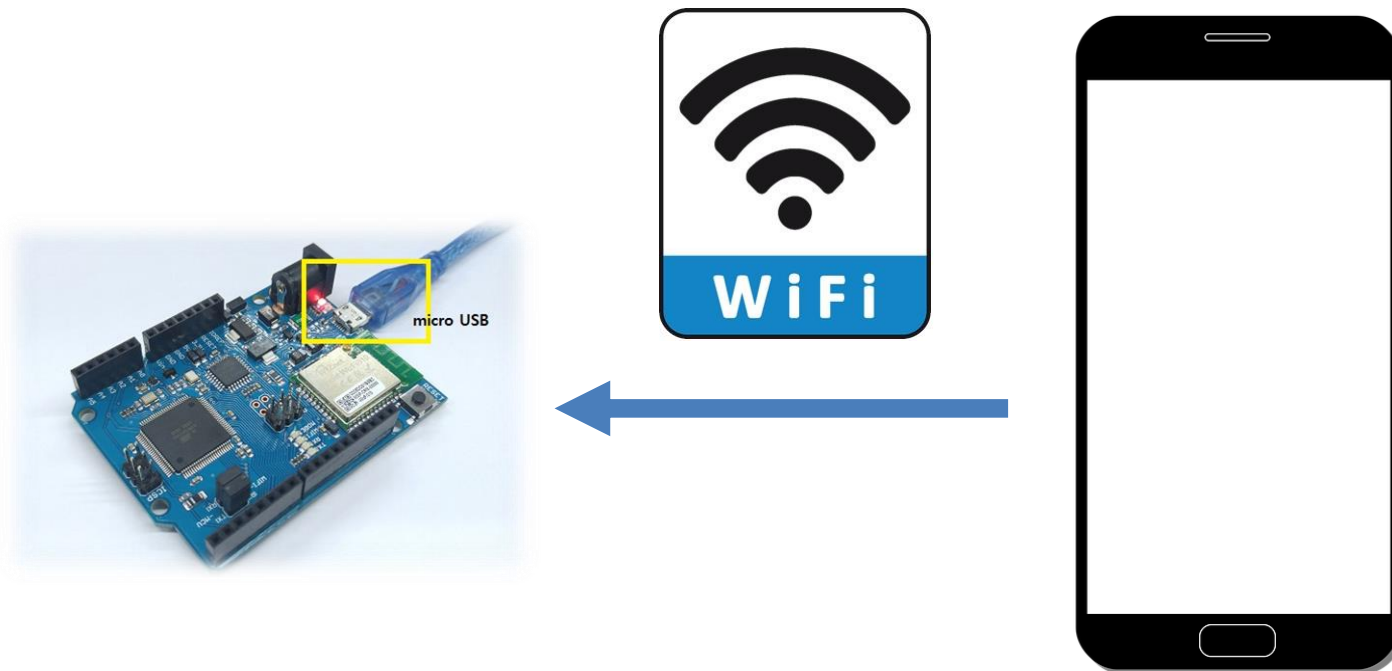
아두이노 WiFi

>> WizArduino MEGA WIFI



아두이노 WiFi

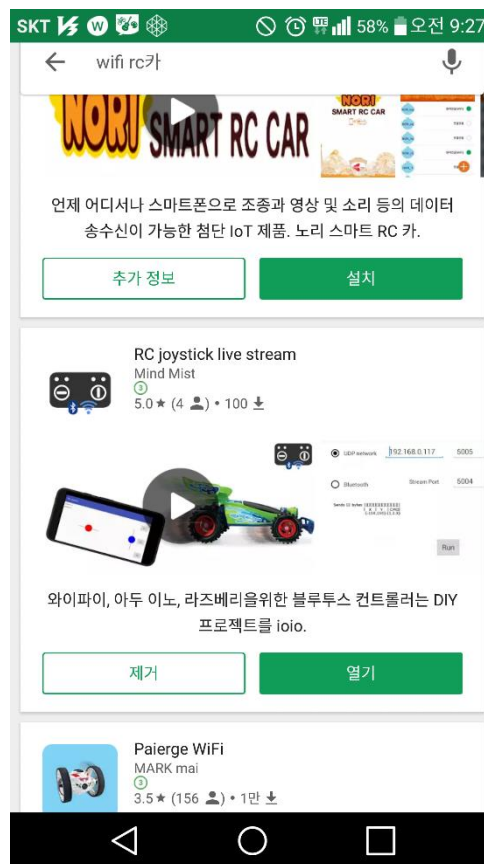
>> 실습 개요



- 안드로이드 앱을 이용하여 아두이노에 데이터를 전송
- 시리얼 모니터로 데이터를 확인

아두이노 WiFi

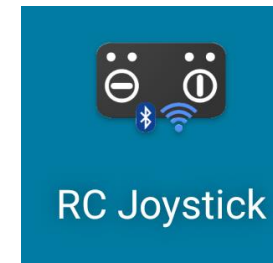
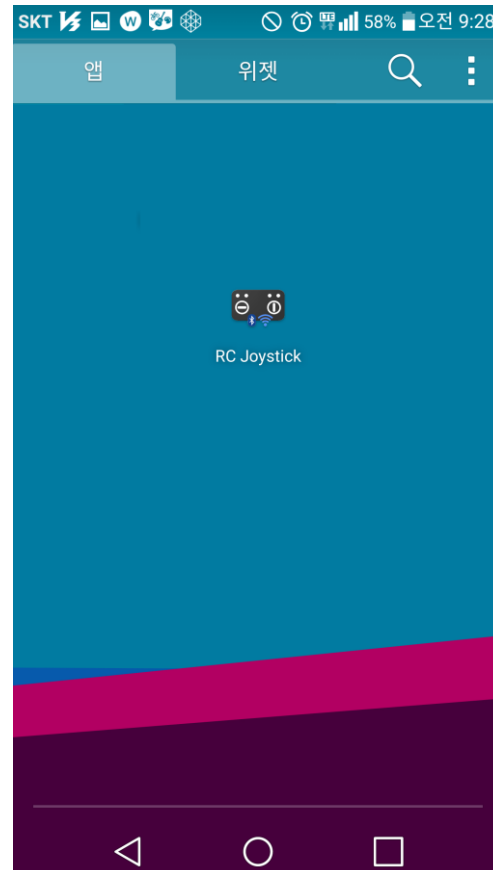
>> 안드로이드 앱 설치



- Play 스토어에서 “Wifi rc카” 검색
- RC Joystick live stream 다운로드

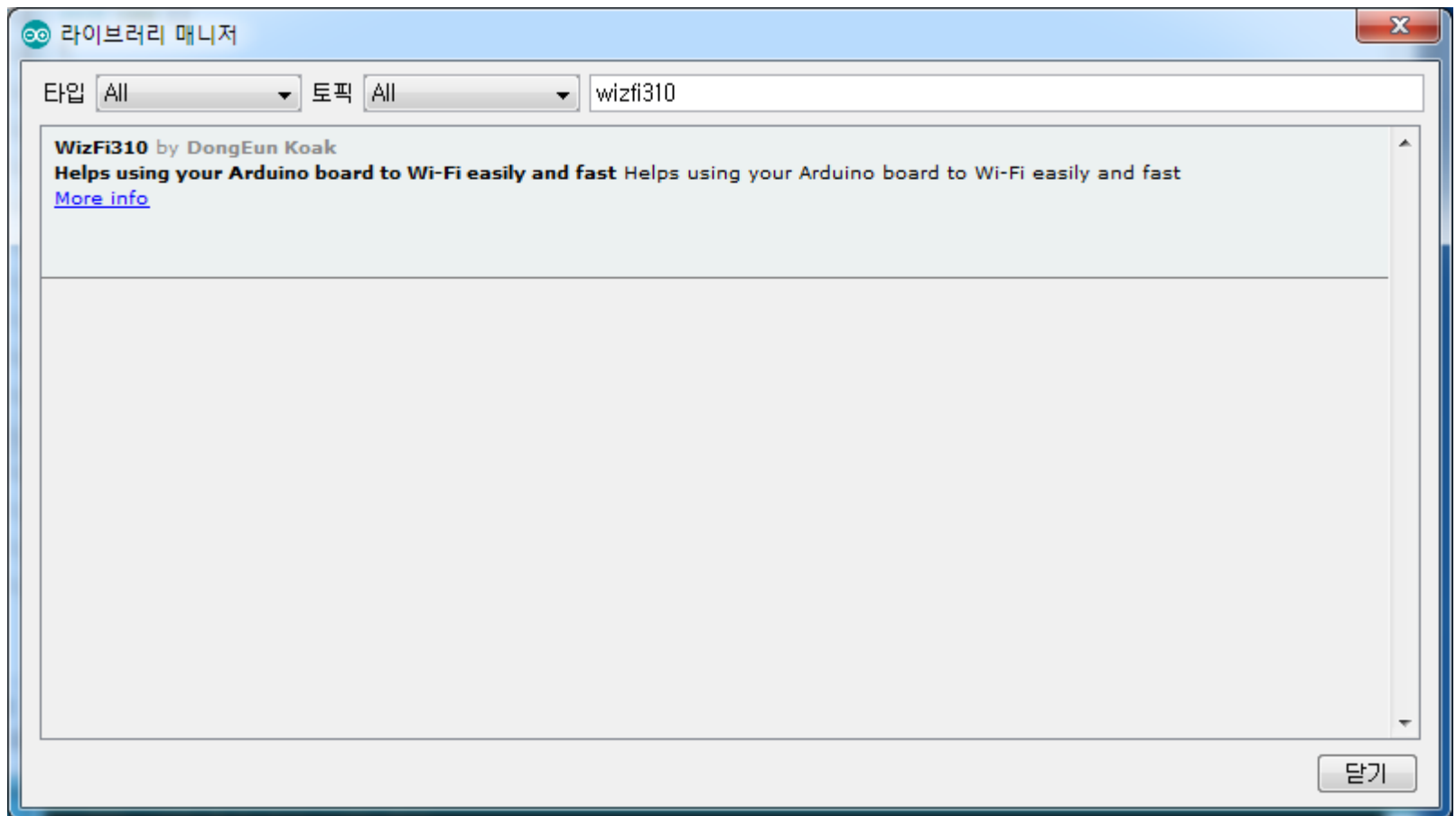
아두이노 WiFi

>> 안드로이드 앱 설치



아두이노 WiFi

» WizFi 310 라이브러리 다운로드



아두이노 WiFi

>> 조이스틱 코드

```
#include "WizFi310.h"
#include "WizFi310Udp.h"

#define SERIAL_DEBUG Serial
#define SERIAL_WIFI Serial3
#define LOCAL_PORT 5000

WiFiUDP Udp;

/* WiFi */
char ssid[] = "Your WiFi ID"; // your network SSID (name)
char pass[] = "Your WiFi Password"; // your network password
int status = WL_IDLE_STATUS; // the Wifi radio's status

uint8_t packet_buf[12];

typedef struct _JoyStick
{
    int x;
    int y;
} JoyStick;

JoyStick Joy;
```

```
uint8_t button;

void setup()
{
    SERIAL_DEBUG.begin(115200);
    initWizFi310();
}

void loop ()
{
    static uint32_t t_time;
    static int rcv_packet_size;
    rcv_packet_size |= Udp.parsePacket();

    if(rcv_packet_size >= 12)
    {
        rcv_packet_size -= 12;
        Udp.read(packet_buf, 12);
        parseRcvPacket(packet_buf);
        t_time = millis();
    }
}
```

아두이노 WiFi

>> 조이스틱 코드

```
void parseRecvPacket(uint8_t* packet_buf)
{
    button = packet_buf[11];
    SERIAL_DEBUG.println(button);
}

void initWizFi310()
{
    SERIAL_WIFI.begin(115200);
    WiFi.init(&SERIAL_WIFI);

    // check for the presence of the shield
    if (WiFi.status() == WL_NO_SHIELD)
    {
        SERIAL_DEBUG.println("[WiFi] WiFi shield not present");
        // don't continue
        while (true);
    }

    SERIAL_DEBUG.print("Attempting to start AP : ");
    SERIAL_DEBUG.println(ssid);

    IPAddress localIp(192, 168, 0, 2);
    WiFi.configAP(localIp);







    status = WiFi.beginAP(ssid, 10, pass, WIZ_TYPE_WPA2_MIXED);





    Udp.begin(LOCAL_PORT);
    SERIAL_DEBUG.println("Server started");
    Udp.beginPacket("0.0.0.0", LOCAL_PORT);
```


아두이노 WiFi

>> 안드로이드 앱 실행

SKT TALK





58%

오전 9:28

☒ UDP network

☐ Bluetooth

192.168.0.2

5000

Stream Port

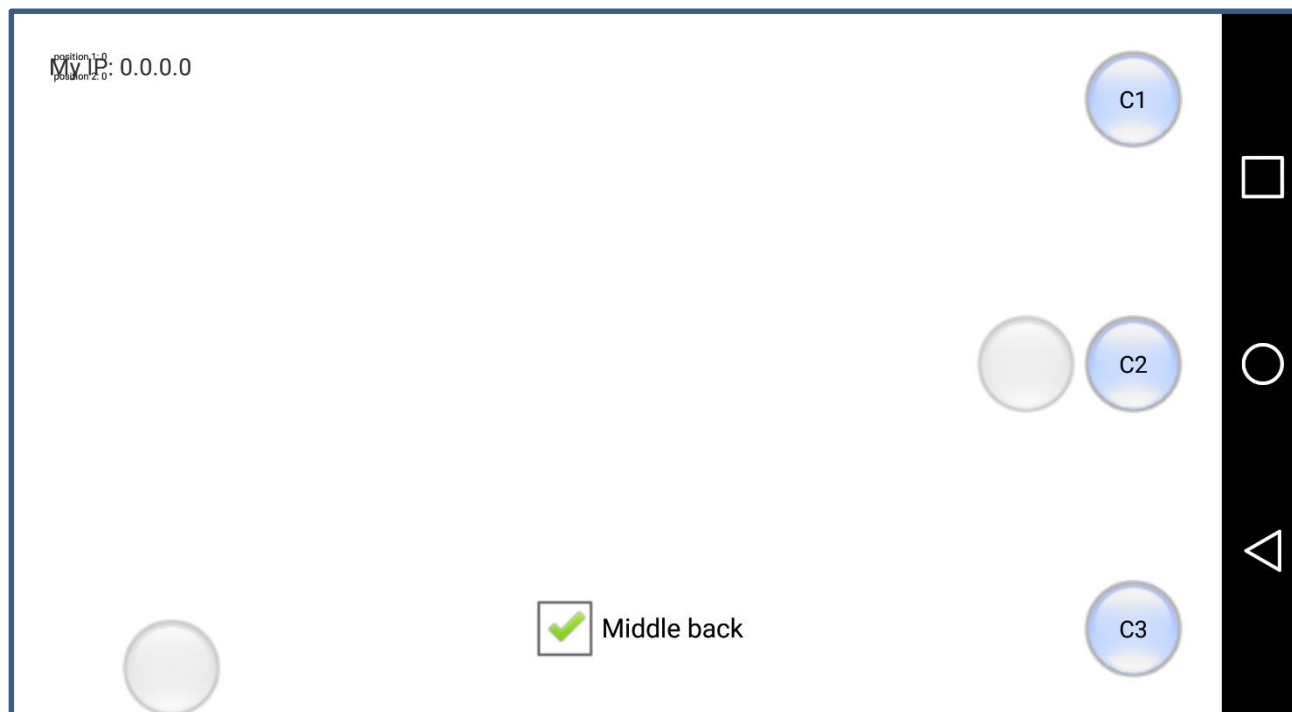
5000

Sends 12 bytes: {XXXXXXXXXX}
| X | Y | CMD |
{-150,150} {1,2,3}

RUN

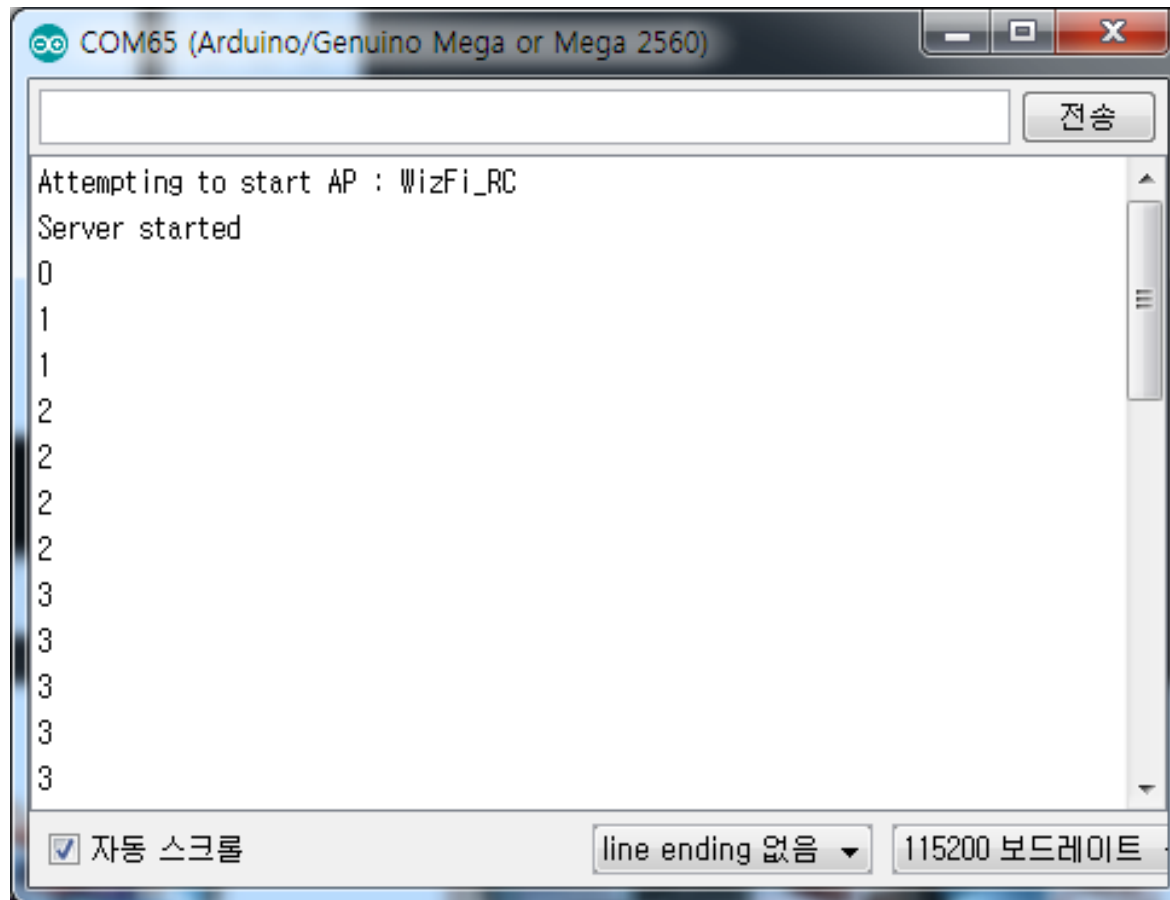
아두이노 WiFi

>> 안드로이드 앱 실행



아두이노 WiFi

>> 조이스틱 코드 동작 확인



The screenshot shows the Arduino IDE serial monitor window for COM65 (Arduino/Genuino Mega or Mega 2560). The window displays the following text:

```
Attempting to start AP : WizFi_RC  
Server started  
0  
1  
1  
2  
2  
2  
2  
3  
3  
3  
3  
3
```

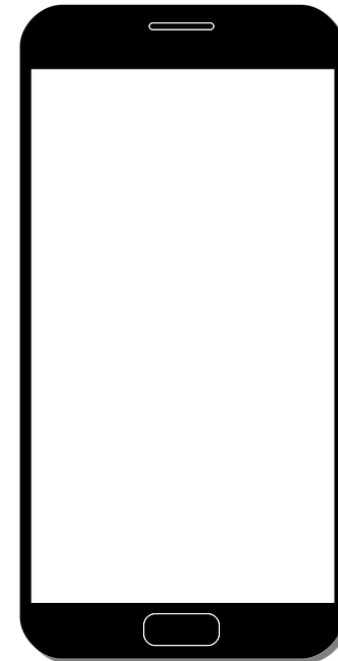
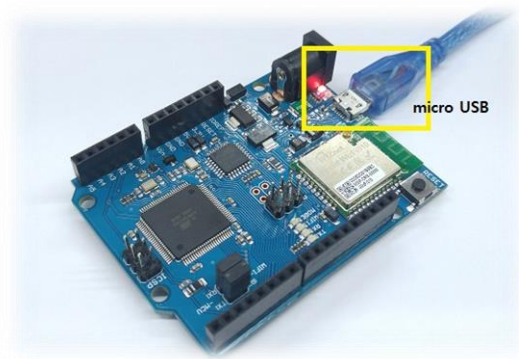
The status bar at the bottom indicates that the "자동 스크롤" (Auto Scroll) checkbox is checked, the "line ending 없음" (No line ending) dropdown is selected, and the baud rate is set to "115200 보드레이트".



RC카 조립하기

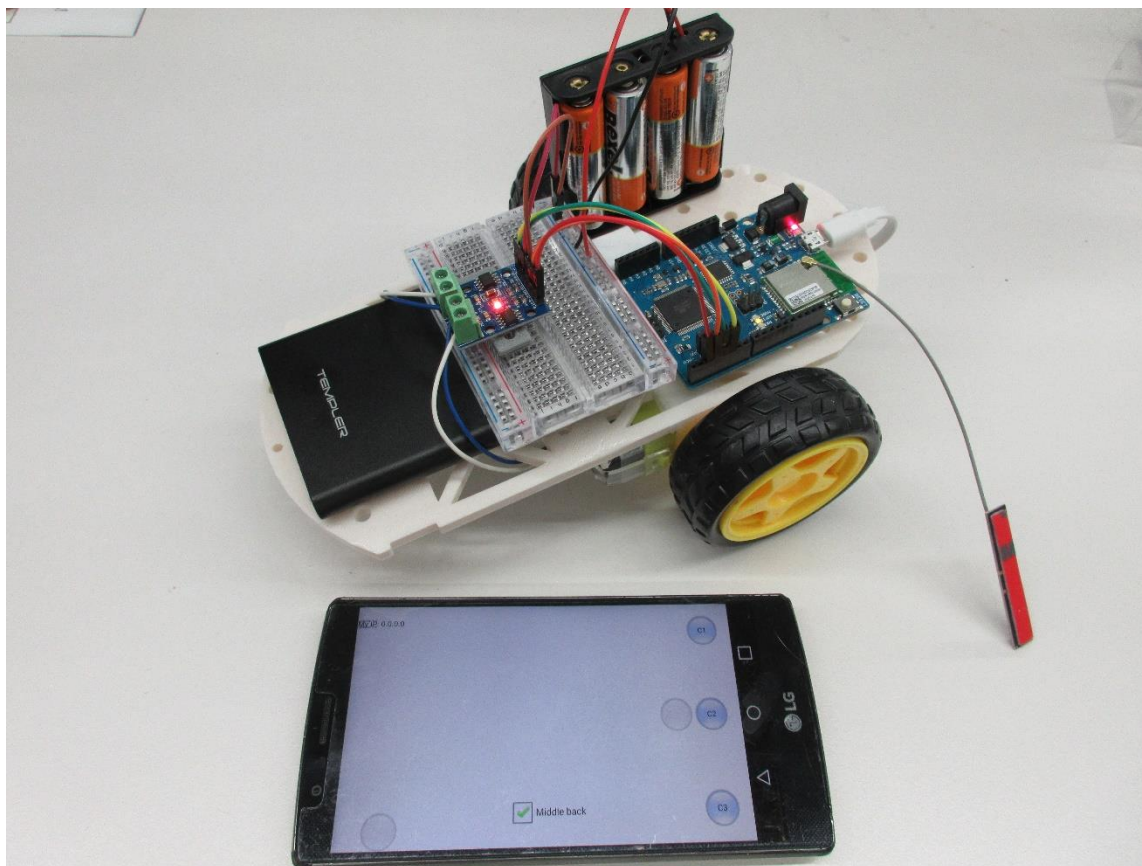
RC카 조립하기

>> 실습 개요



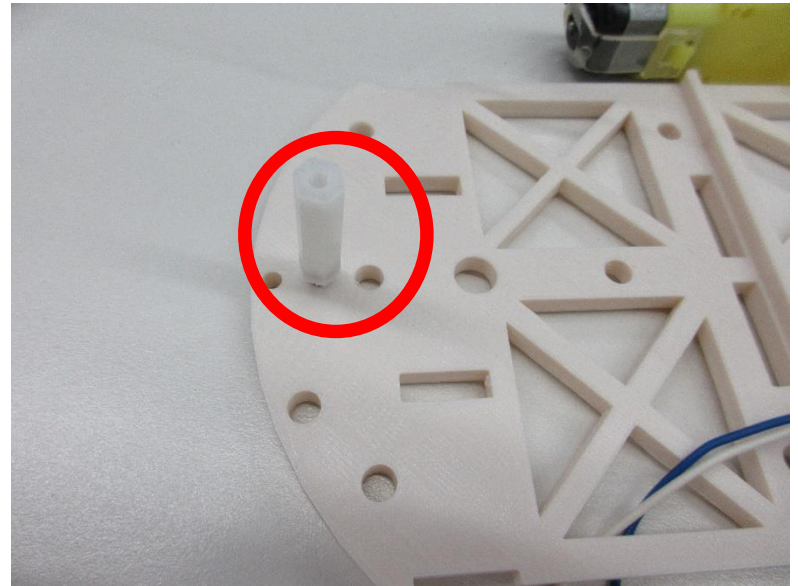
RC카 조립하기

>> 실습 개요



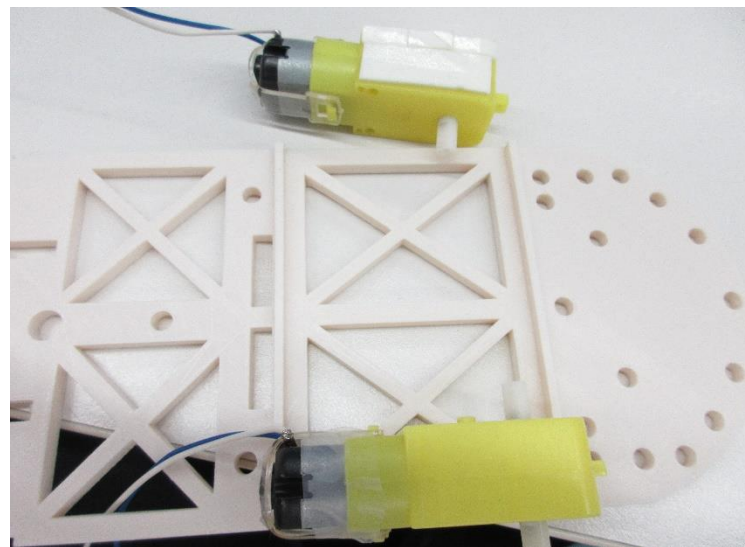
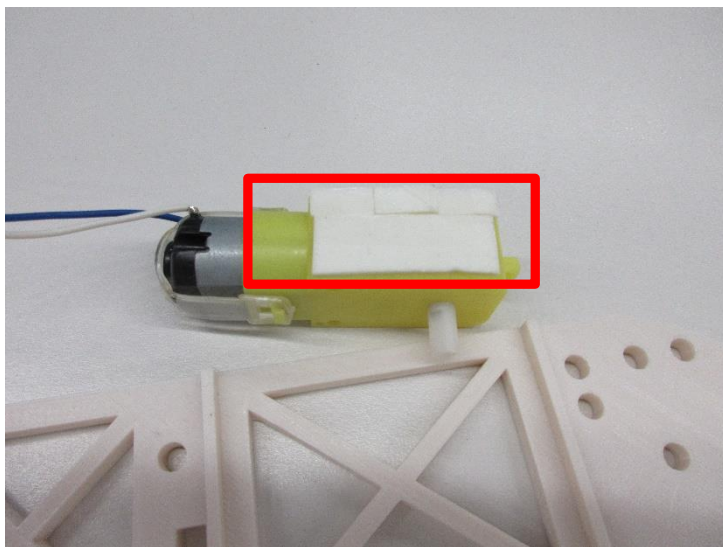
RC카 조립하기

≫ 조립하기 1



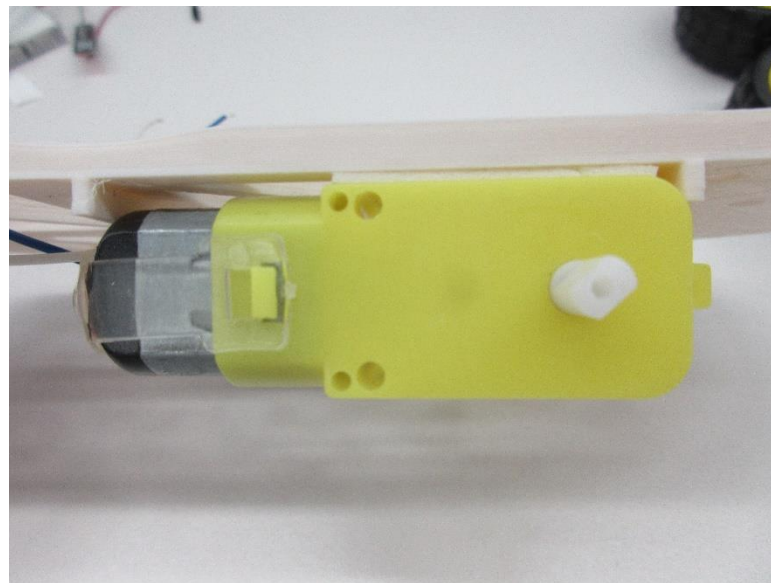
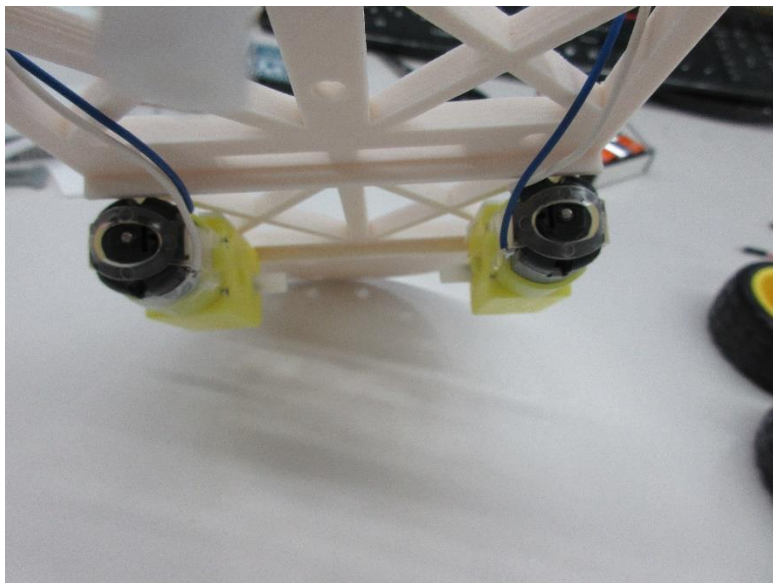
RC카 조립하기

≫ 조립하기 2



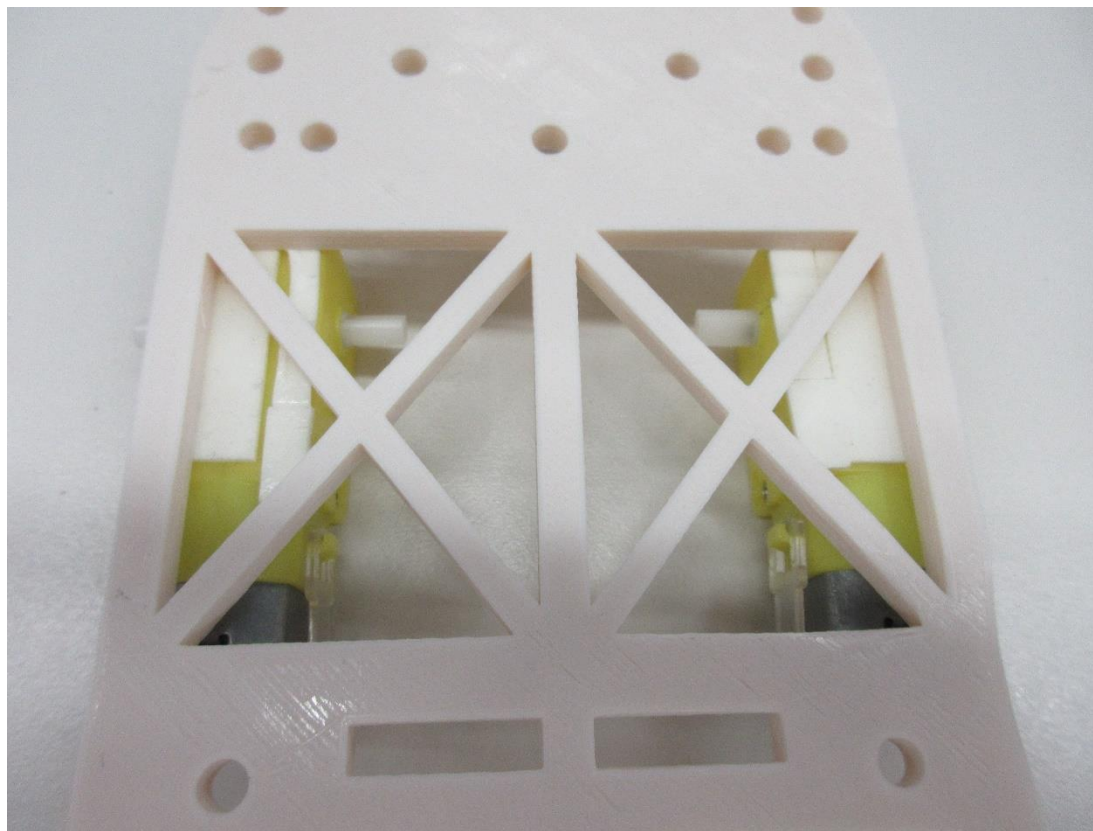
RC카 조립하기

≫ 조립하기 3



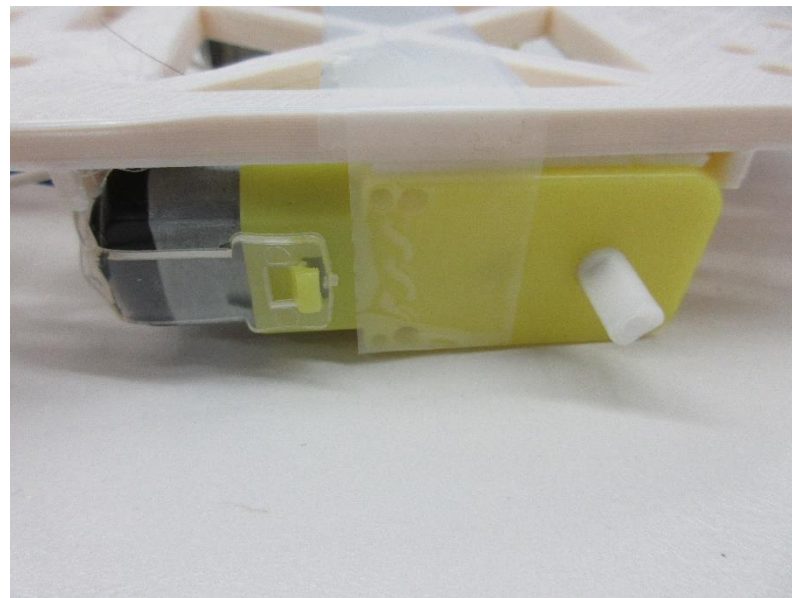
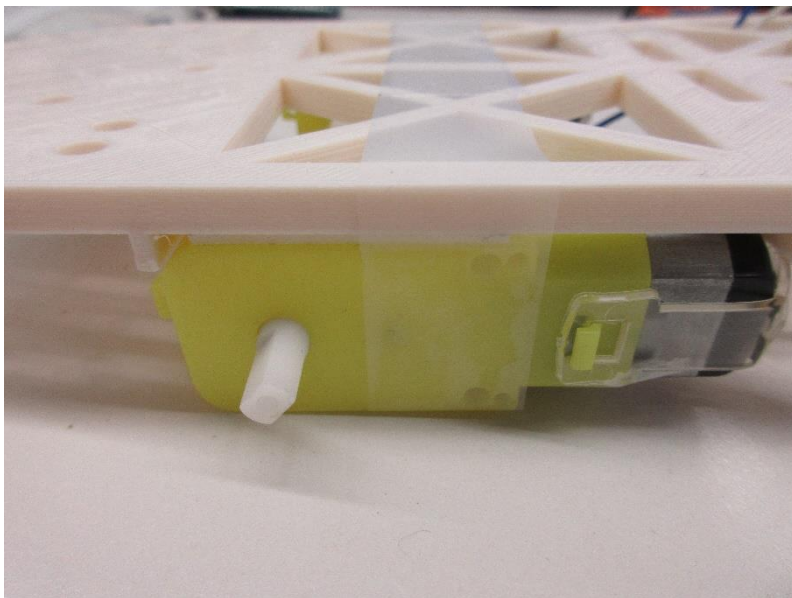
RC카 조립하기

≫ 조립하기 4



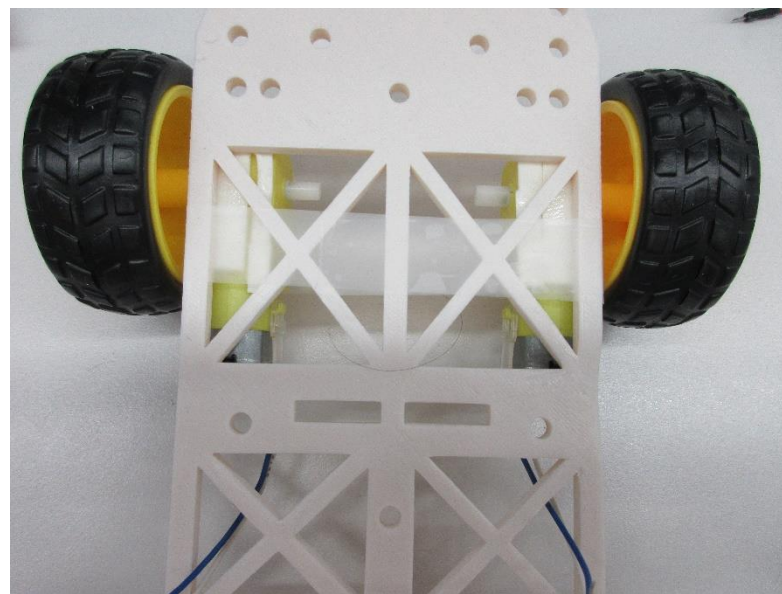
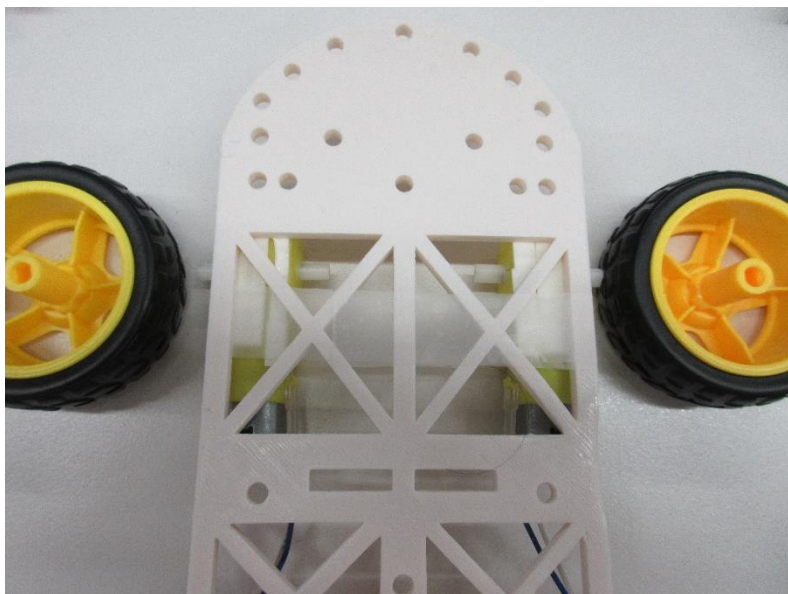
RC카 조립하기

≫ 조립하기 5



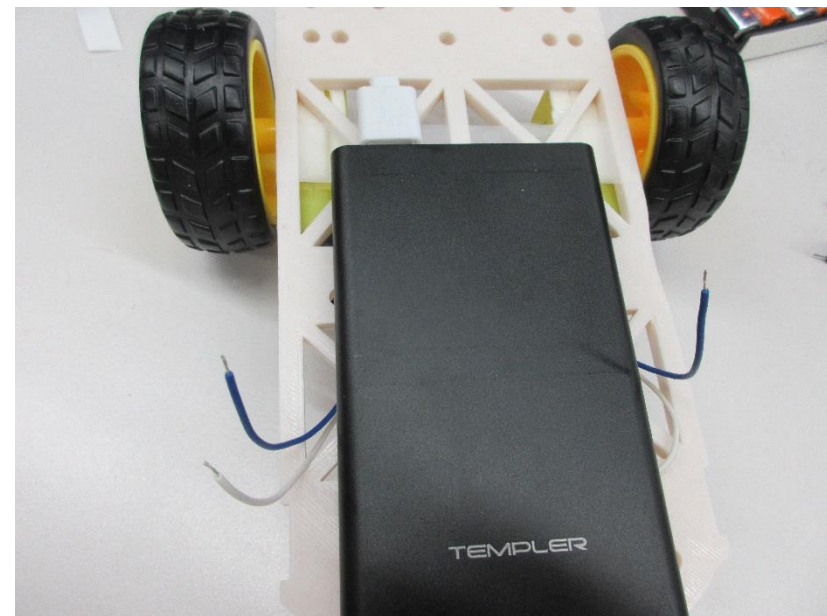
RC카 조립하기

» 조립하기 6



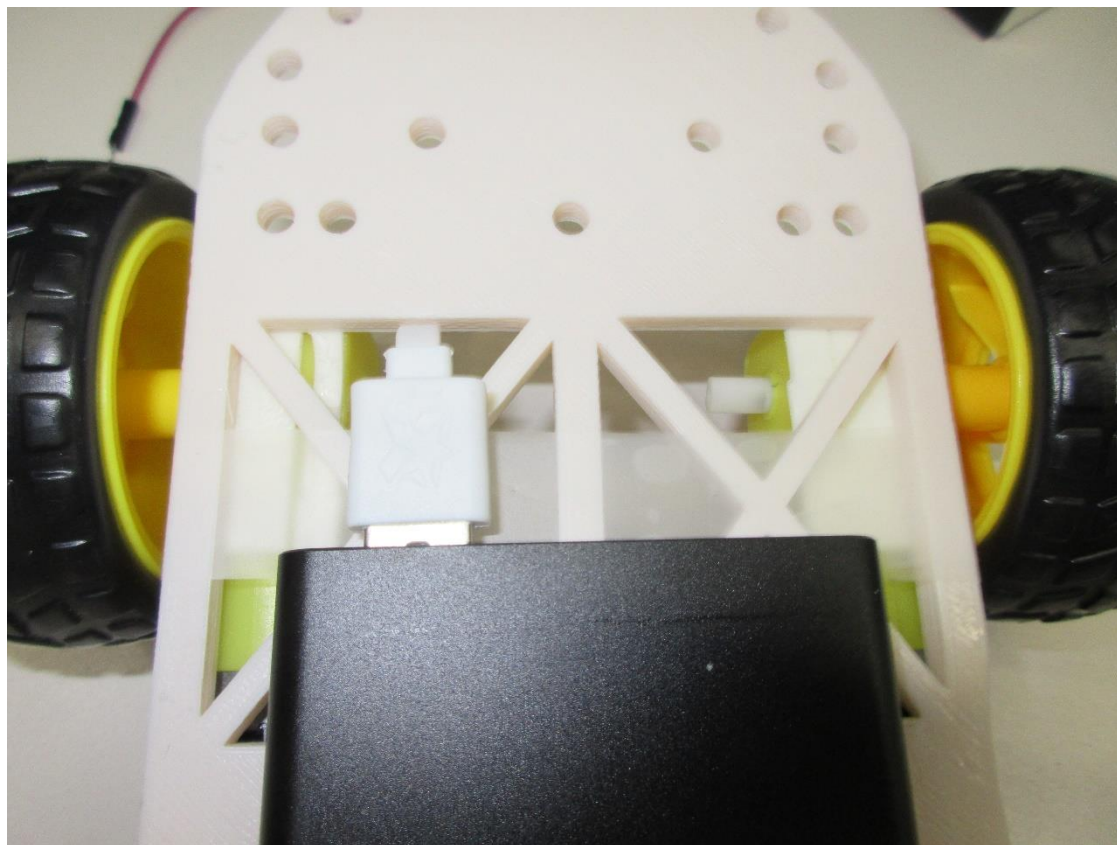
RC카 조립하기

» 조립하기 7



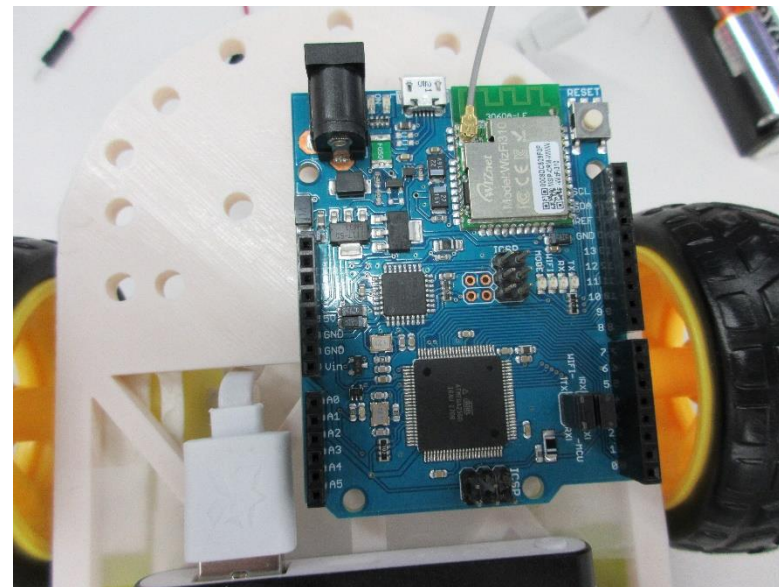
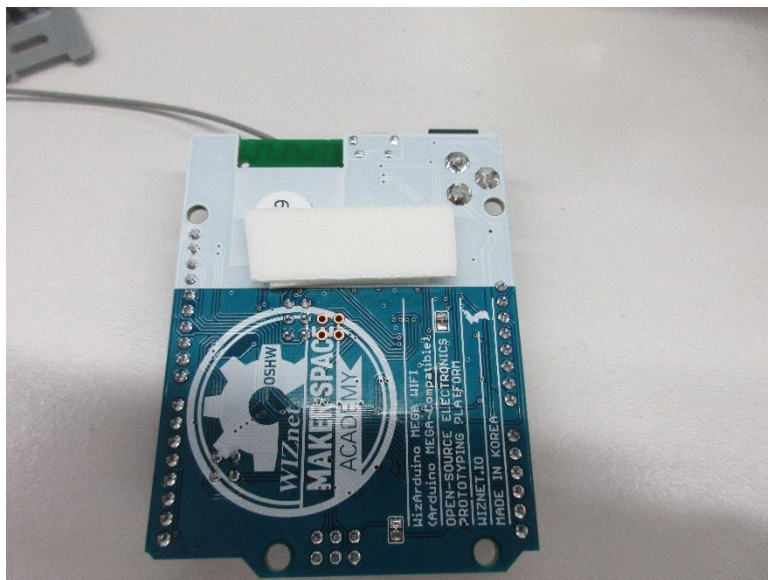
RC카 조립하기

≫ 조립하기 8



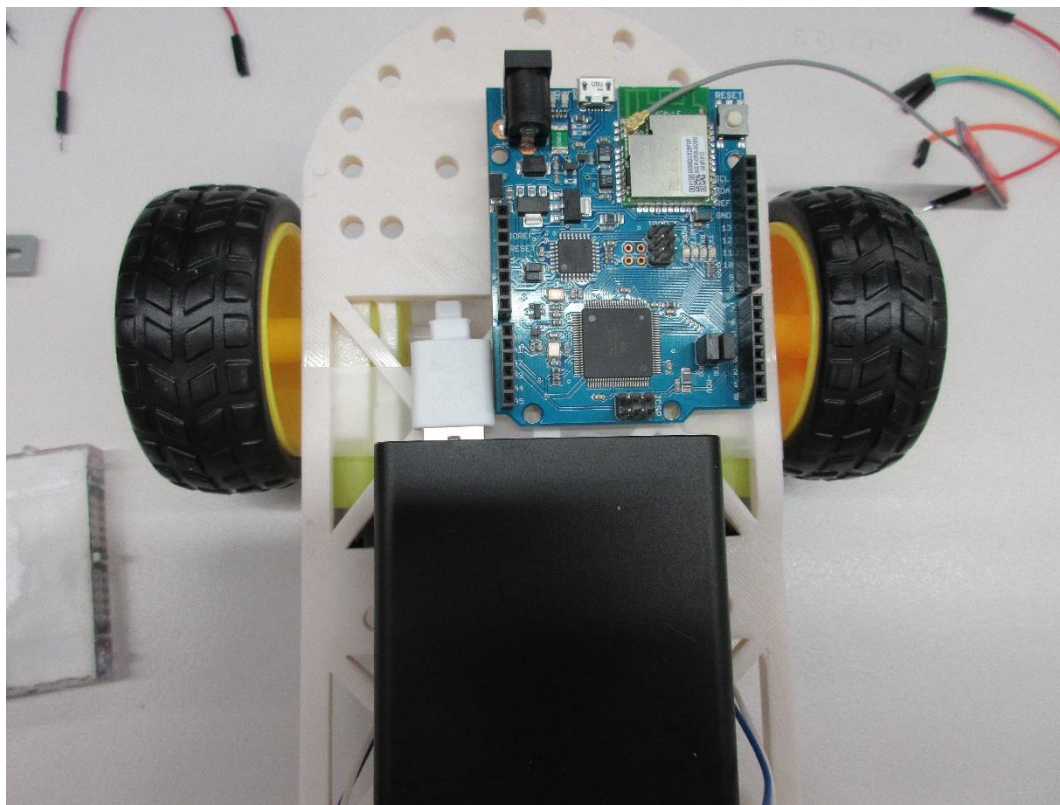
RC카 조립하기

» 조립하기 9



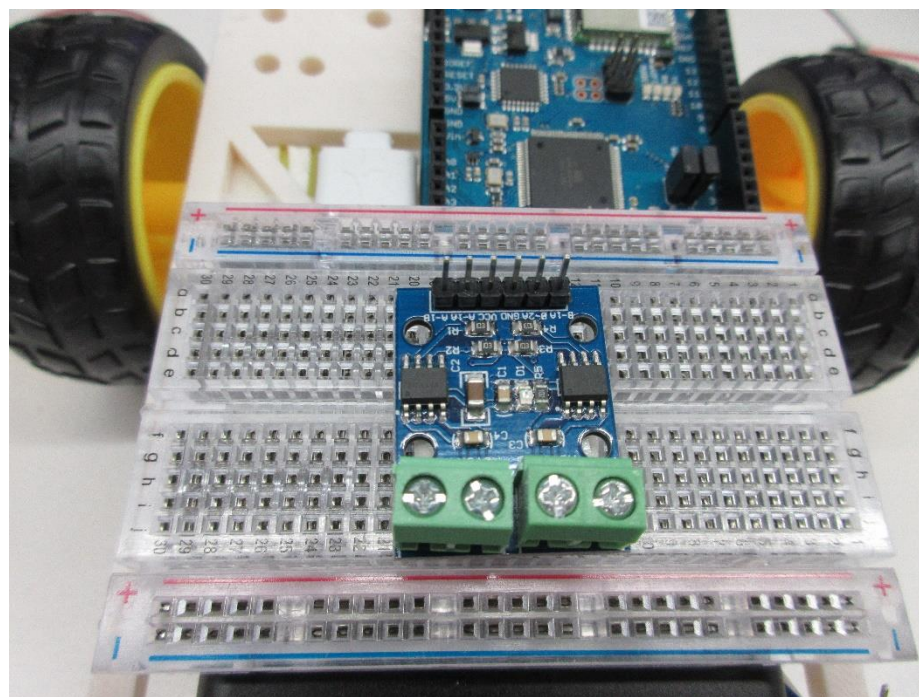
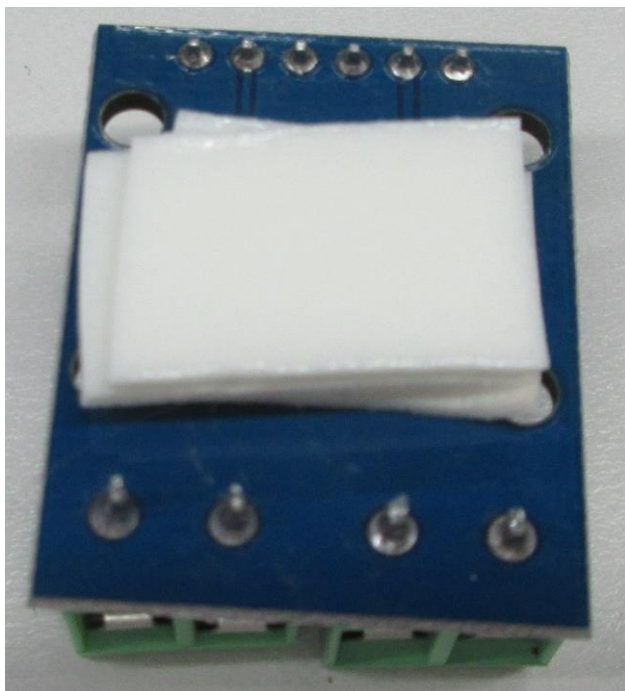
RC카 조립하기

≫ 조립하기 10



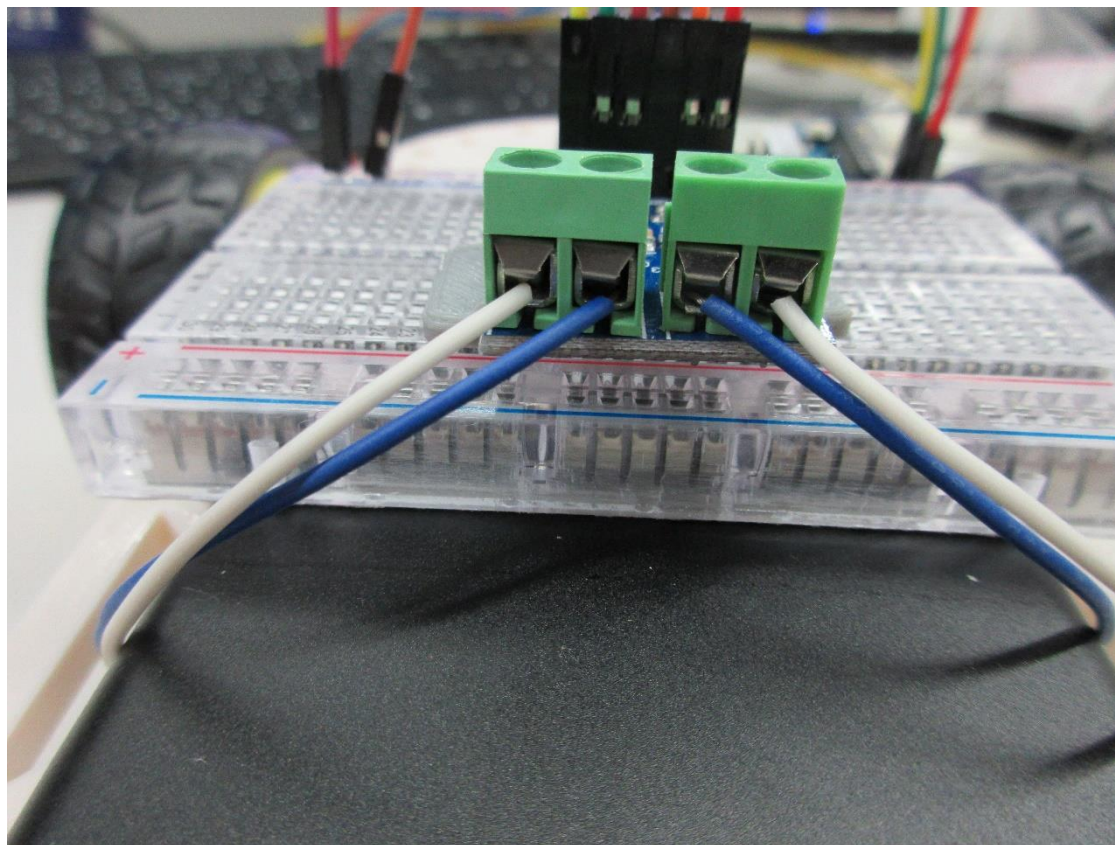
RC카 조립하기

≫ 조립하기 11



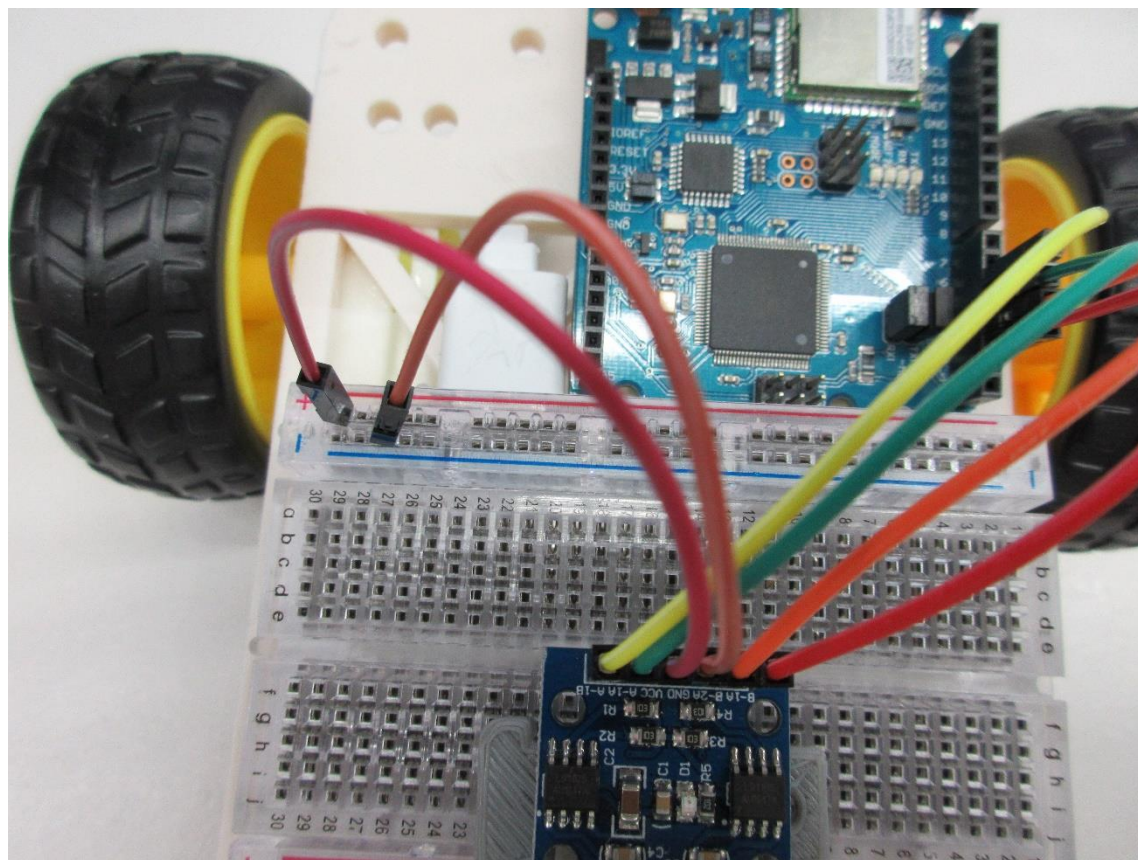
RC카 조립하기

≫ 조립하기 12



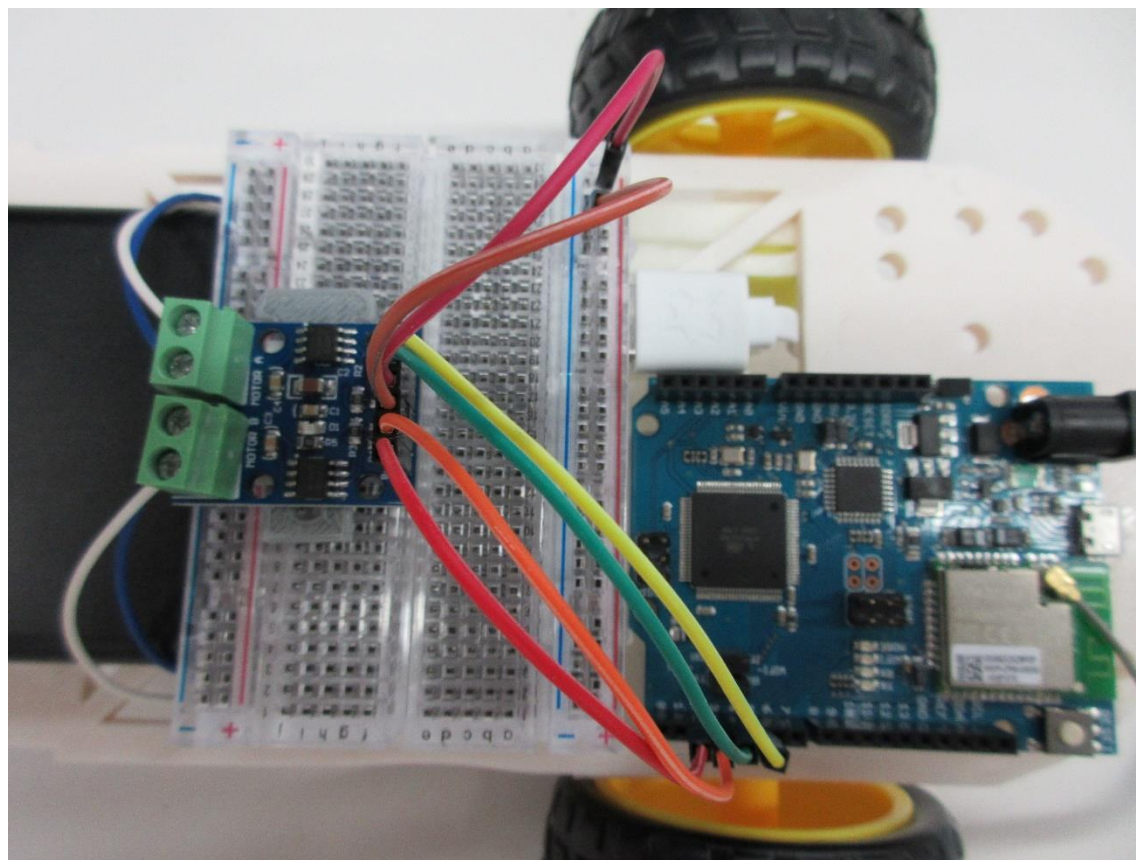
RC카 조립하기

» 조립하기 13



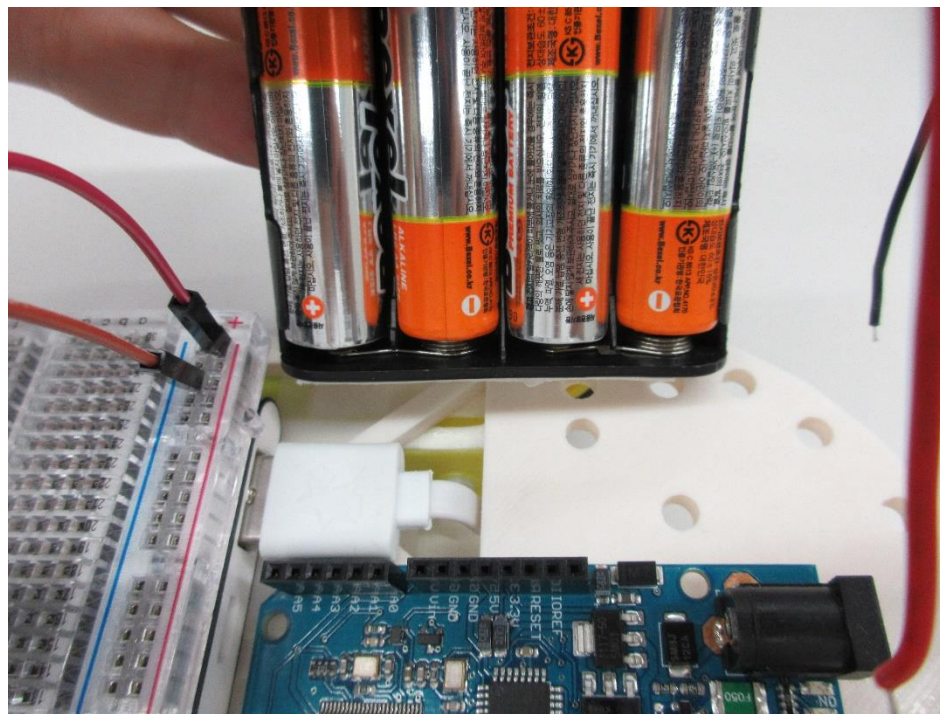
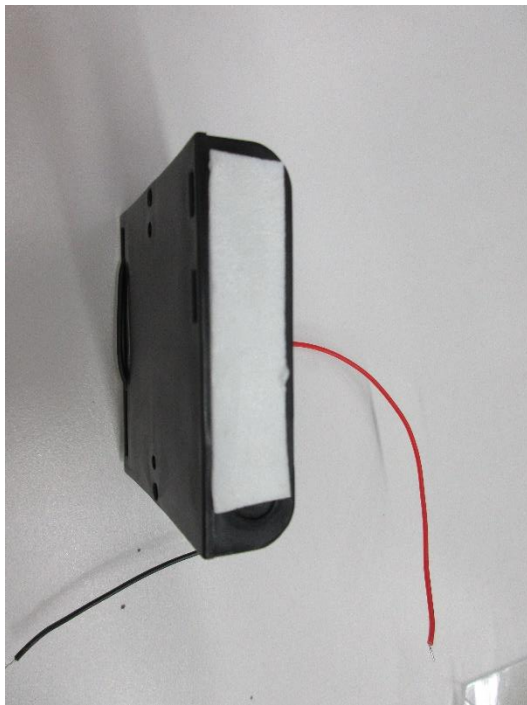
RC카 조립하기

≫≫ 조립하기 14



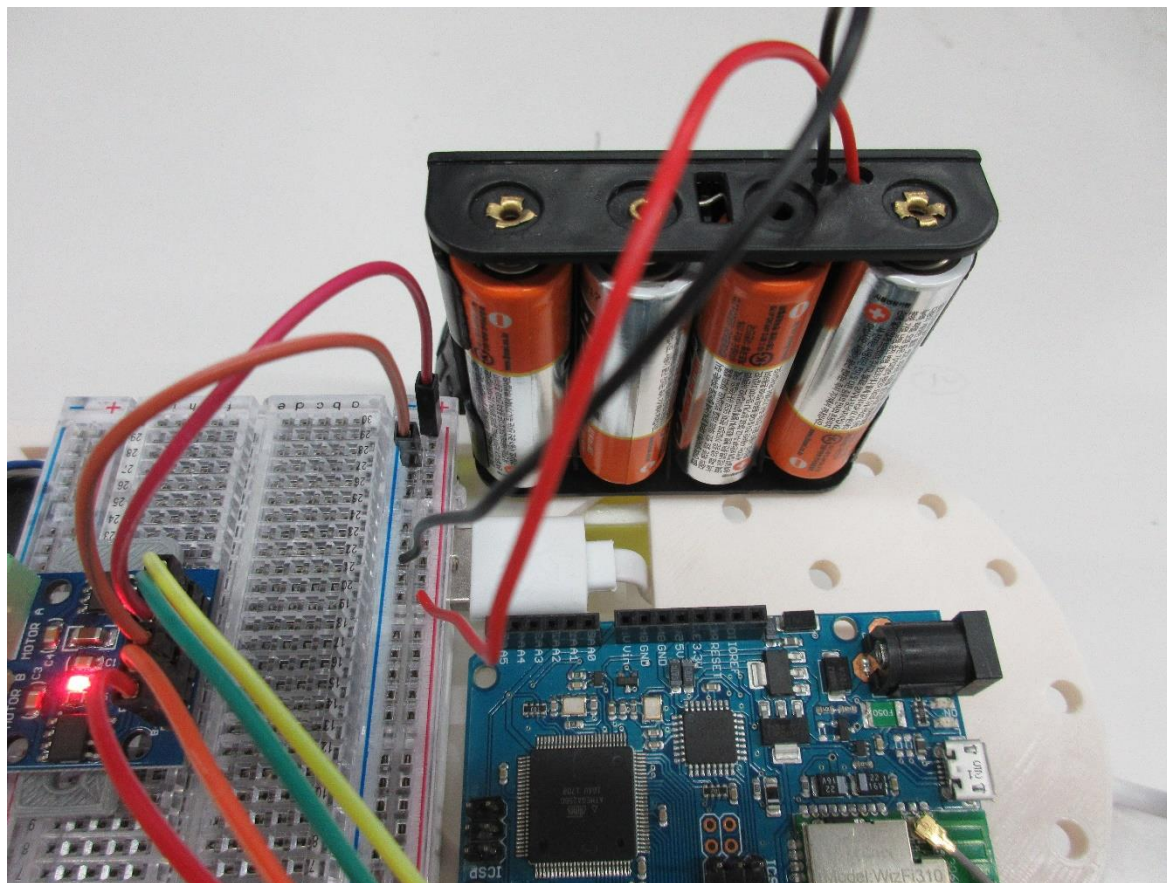
RC카 조립하기

≫ 조립하기 15



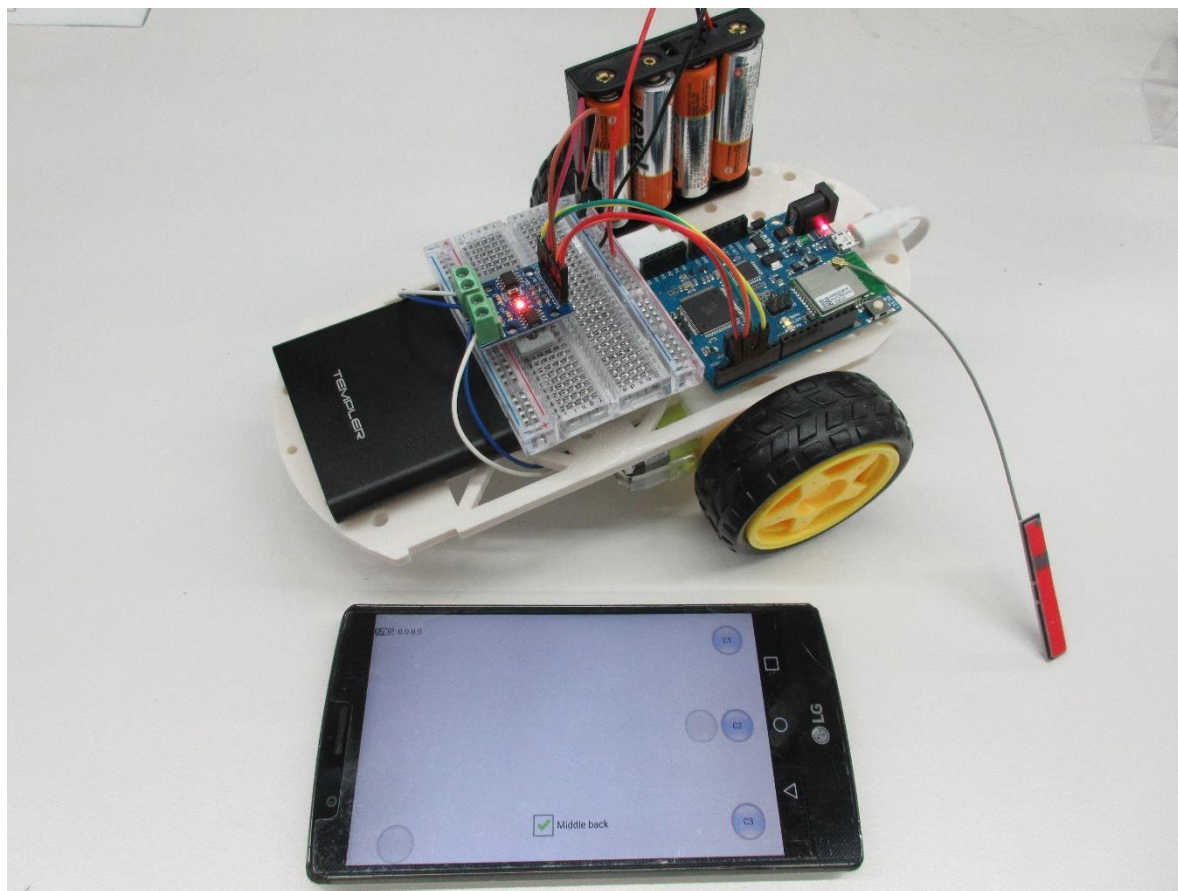
RC카 조립하기

≫ 조립하기 16



RC카 조립하기

»» 조립하기 17



RC카 조립하기

>> 코드 1

```
#include "Motor.h"
#include "WizFi310.h"
#include "WizFi310Udp.h"

#define SERIAL_DEBUG Serial
#define SERIAL_WIFI Serial3
#define LOCAL_PORT 5000

WiFiUDP Udp;

/* WiFi */
char ssid[] = "WiFi ID"; // your network SSID (name)
char pass[] = "WiFi Password"; // your network password
int status = WL_IDLE_STATUS; // the Wifi radio's status

uint8_t packet_buf[12];
JoyStick Joy;
MotorSpeed Mspeed;
uint8_t button;
```

```
void setup()
{
    SERIAL_DEBUG.begin(115200);
    initWizFi310();
}

void loop ()
{
    static uint32_t t_time;
    static int rcv_packet_size;

    rcv_packet_size |= Udp.parsePacket();

    if(rcv_packet_size >= 12)
    {
        rcv_packet_size -= 12;
        Udp.read(packet_buf, 12);
        parseRcvPacket(packet_buf);
        calculateSpeed(&Joy, &Mspeed);
        t_time = millis();
    }
```


RC카 조립하기

» 코드 2

```
if ((millis() - t_time) >= NO_INPUT_TIME)
{
    Mspeed.left = 0;
    Mspeed.right = 0;
}

controlMotor(&Mspeed);
//Serial.print(recv_packet_size);
}
```

```
void parseRecvPacket(uint8_t* packet_buf){
    Joy.x = (packet_buf[0] << 24);
    Joy.x |= (packet_buf[1] << 16);
    Joy.x |= (packet_buf[2] << 8);
    Joy.x |= (packet_buf[3] << 0);

    Joy.y = (packet_buf[4] << 24);
    Joy.y |= (packet_buf[5] << 16);
    Joy.y |= (packet_buf[6] << 8);
    Joy.y |= (packet_buf[7] << 0);

    button = packet_buf[11];

    if(Joy.x > 127) Joy.x = 127;
    if(Joy.x < -127) Joy.x = -127;
    if(Joy.y > 127) Joy.y = 127;
    if(Joy.y < -127) Joy.y = -127;
```

RC카 조립하기

>> 코드 3

```

SERIAL_DEBUG.print(Joy.x);
SERIAL_DEBUG.print(", ");
SERIAL_DEBUG.print(Joy.y);
SERIAL_DEBUG.print(", ");
SERIAL_DEBUG.println(button);
}
void initWizFi310() {
    SERIAL_WIFI.begin(115200);

    WiFi.init(&SERIAL_WIFI);

    // check for the presence of the shield
    if (WiFi.status() == WL_NO_SHIELD) {
        SERIAL_DEBUG.println("[WiFi] WiFi shield not present");
        // don't continue
        while (true);
    }

    SERIAL_DEBUG.print("Attempting to start AP : ");
    SERIAL_DEBUG.println(ssid);

    IPAddress localIp(192, 168, 0, 2);
    WiFi.configAP(localIp);

    status = WiFi.beginAP(ssid, 10, pass, WIZ_TYPE_WPA2_MIXED);

    Udp.begin(LOCAL_PORT);
    SERIAL_DEBUG.println("Server started");
    Udp.beginPacket("0.0.0.0", LOCAL_PORT);
}

```

RC카 조립하기

» 코드

선물

<http://blog.naver.com/yusanghyun26/221119158837>



Thank you

✉ matthew@wiznet.io