

# ESP32 CAM SD

## Recuperer Fichiers sur esp32 cam programme 001

[esp32camSD.ino](#)

```
/*
*****

L'ESP32-CAM présente une page web qui permet de prendre des photos
et de les enregistrer sur une carte SD, de visionner les photos
déjà présentes sur la carte, et de supprimer les photos non-désirées.

Pour plus d'informations:

http://electroniqueamateur.blogspot.com/2020/07/esp32-cam-gestion-dista
nce-de-la-carte.html

*****
*/

#include <WiFi.h>
#include <WiFiClient.h>
#include <WebServer.h>
#include "FS.h" // manipulation de fichiers
#include "SD_MMC.h" // carte SD
#include "esp_camera.h" // caméra!

// écrivez le nom et le mot de passe de votre réseau WIFI
const char* ssid = "*****";
const char* password = "*****";

WebServer server(80);

static bool cartePresente = false;

int numero_fichier = 0; // numéro de la photo (nom du fichier)

// prise de la photo et création du fichier jpeg

void enregistrer_photo (void)
{
  char adresse[20] = ""; // chemin d'accès du fichier .jpeg
  camera_fb_t * fb = NULL; // frame buffer

  // prise de la photo
  fb = esp_camera_fb_get();
  if (!fb) {
    Serial.println("Echec de la prise de photo.");
  }
}
```

```
    return;
}

numero_fichier = numero_fichier + 1;

// enregistrement du fichier sur la carte SD

sprintf (adresse, "%d.jpg", numero_fichier);

fs::FS &fs = SD_MMC;
File file = fs.open(adresse, FILE_WRITE);

if (!file) {
    Serial.println("Echec lors de la creation du fichier.");
}
else {
    file.write(fb->buf, fb->len); // payload (image), payload length
    Serial.printf("Fichier enregistré: %s\n", adresse);
}
file.close();
esp_camera_fb_return(fb);

// on affiche un message de confirmation
server.setContentLength(CONTENT_LENGTH_UNKNOWN);

server.send(200, "text/html", "");

WiFiClient client = server.client();

server.sendContent("<h1>Une nouvelle photo a été prise.</h1>");
server.sendContent("<p><a href = / > Retour à la liste des fichiers </a></p>");
}

void returnOK() {
    server.send(200, "text/plain", "");
}

void returnFail(String msg) {
    server.send(500, "text/plain", msg + "\r\n");
}

// Affichage d'un fichier présent sur la carte
bool loadFromSdCard(String path) {
    String dataType = "text/plain";

    if (path == "/") {
        printDirectory();
    }
}
```

```
}
else {

    if (path.endsWith(".src")) {
        path = path.substring(0, path.lastIndexOf("."));
    } else if (path.endsWith(".htm")) {
        dataType = "text/html";
    } else if (path.endsWith(".css")) {
        dataType = "text/css";
    } else if (path.endsWith(".js")) {
        dataType = "application/javascript";
    } else if (path.endsWith(".png")) {
        dataType = "image/png";
    } else if (path.endsWith(".gif")) {
        dataType = "image/gif";
    } else if (path.endsWith(".jpg")) {
        dataType = "image/jpeg";
    } else if (path.endsWith(".ico")) {
        dataType = "image/x-icon";
    } else if (path.endsWith(".xml")) {
        dataType = "text/xml";
    } else if (path.endsWith(".pdf")) {
        dataType = "application/pdf";
    } else if (path.endsWith(".zip")) {
        dataType = "application/zip";
    }

    fs::FS &fs = SD_MMC;

    File dataFile = fs.open(path.c_str());

    if (!dataFile) {
        return false;
    }

    if (server.hasArg("download")) {
        dataType = "application/octet-stream";
    }

    if (server.streamFile(dataFile, dataType) != dataFile.size()) {
        Serial.println("Sent less data than expected!");
    }

    dataFile.close();

}
return true;
}

// utilisé lors de la suppression d'un fichier
```

```
void deleteRecursive(String path) {

  fs::FS &fs = SD_MMC;
  File file = fs.open((char *)path.c_str());
  if (!file.isDirectory()) {
    file.close();
    fs.remove((char *)path.c_str());
    return;
  }

  file.rewindDirectory();
  while (true) {
    File entry = file.openNextFile();
    if (!entry) {
      break;
    }
    String entryPath = path + "/" + entry.name();
    if (entry.isDirectory()) {
      entry.close();
      deleteRecursive(entryPath);
    } else {
      entry.close();
      fs.remove((char *)entryPath.c_str());
    }
    yield();
  }

  fs.rmdir((char *)path.c_str());
  file.close();
}

// suppression d'un fichier

void handleDelete() {

  fs::FS &fs = SD_MMC;

  if (server.args() == 0) {
    return returnFail("Mauvais arguments?");
  }
  String path = server.arg(0);
  if (path == "/" || !fs.exists((char *)path.c_str())) {
    returnFail("BAD PATH");
  }
  return;
}
deleteRecursive(path);

// on affiche un message de confirmation
server.setContentLength(CONTENT_LENGTH_UNKNOWN);
```

```
server.send(200, "text/html", "");

WiFiClient client = server.client();

server.sendContent("<h1>Le fichier a &eacute;t&eacute; supprim&eacute;</h1>");
server.sendContent("<p><a href = / > Retour &agrave; la liste des fichiers </a></p>");
}

// Affichage du contenu de la carte
void printDirectory() {

    fs::FS &fs = SD_MMC;
    String path = "/";

    File dir = fs.open((char *)path.c_str());
    path = String();
    if (!dir.isDirectory()) {
        dir.close();
        return returnFail("PAS UN REPERTOIRE");
    }
    dir.rewindDirectory();
    server.setContentLength(CONTENT_LENGTH_UNKNOWN);

    server.send(200, "text/html", "");

    WiFiClient client = server.client();

    server.sendContent("<h1>Prise de photo</h1>");

    server.sendContent("<br> <form action='/ clic' method='GET'> <INPUT type='submit' value='Prendre une photo'></form><br> ");

    server.sendContent("<h1>Contenu de la carte SD</h1>");

    for (int cnt = 0; true; ++cnt) {
        File entry = dir.openNextFile();
        if (!entry) {
            break;
        }

        String output;

        output += "<a href = ";
        output += entry.name();
        output += "> ";
        output += entry.name();

        // on ajoute un bouton delete:
```

```
    output += "</a> &nbsp; &nbsp; &nbsp; &nbsp; <a href =  
/delete?url=";  
    output += entry.name();  
    output += "> [Supprimer] </a> <br>";  
  
    server.setContent(output);  
    entry.close();  
}  
dir.close();  
}  
  
// on tente d'afficher le fichier demandé. Sinon, message d'erreur  
void handleNotFound() {  
    if (cartePresente && loadFromSdCard(server.uri())) {  
        return;  
    }  
    String message = "Carte SD non detectee ou action imprevue\n\n";  
    message += "URI: ";  
    message += server.uri();  
    message += "\nMethod: ";  
    message += (server.method() == HTTP_GET) ? "GET" : "POST";  
    message += "\nArguments: ";  
    message += server.args();  
    message += "\n";  
    for (uint8_t i = 0; i < server.args(); i++) {  
        message += " NAME:" + server.argName(i) + "\n VALUE:" +  
server.arg(i) + "\n";  
    }  
    server.send(404, "text/plain", message);  
    Serial.print(message);  
}  
  
void setup(void) {  
  
    // définition des broches de la caméra pour le modèle AI Thinker -  
ESP32-CAM  
    camera_config_t config;  
    config.ledc_channel = LEDC_CHANNEL_0;  
    config.ledc_timer = LEDC_TIMER_0;  
    config.pin_d0 = 5;  
    config.pin_d1 = 18;  
    config.pin_d2 = 19;  
    config.pin_d3 = 21;  
    config.pin_d4 = 36;  
    config.pin_d5 = 39;  
    config.pin_d6 = 34;  
    config.pin_d7 = 35;  
    config.pin_xclk = 0;  
    config.pin_pclk = 22;  
    config.pin_vsync = 25;
```

```
config.pin_href = 23;
config.pin_sscb_sda = 26;
config.pin_sscb_scl = 27;
config.pin_pwdn = 32;
config.pin_reset = -1;

config.xclk_freq_hz = 20000000;
config.pixel_format = PIXFORMAT_JPEG; //YUV422|GRAYSCALE|RGB565|JPEG
config.frame_size = FRAMESIZE_VGA; //
QVGA|CIF|VGA|SVGA|XGA|SXGA|UXGA
config.jpeg_quality = 10; // 0-63 ; plus bas = meilleure qualité
config.fb_count = 2; // nombre de frame buffers

// initialisation de la caméra
esp_err_t err = esp_camera_init(&config);
if (err != ESP_OK) {
    Serial.printf("Echec de l'initialisation de la camera, erreur
0x%x", err);
    return;
}

sensor_t * s = esp_camera_sensor_get();

// connexion au WIFI

Serial.begin(115200);
WiFi.mode(WIFI_STA);
WiFi.begin(ssid, password);
Serial.print("Connexion au reseau Wifi ");
Serial.println(ssid);

uint8_t i = 0;
while (WiFi.status() != WL_CONNECTED && i++ < 20) { //wait 10 seconds
    delay(500);
}
if (i == 21) {
    Serial.print("Impossible de se connecter au reseau ");
    Serial.println(ssid);
    while (1) {
        delay(500);
    }
}
Serial.print("Connecte a l'adresse IP: ");
Serial.println(WiFi.localIP());

// initialisation du web server
server.on("/delete", HTTP_GET, handleDelete);
server.on("/clic", HTTP_GET, enregistrer_photo);
server.onNotFound(handleNotFound);
server.begin();
Serial.println("Serveur HTTP en fonction.");
```

```
// initialisation de la carte micro SD
if (SD_MMC.begin()) {
  uint8_t cardType = SD_MMC.cardType();
  if (cardType != CARD_NONE) {
    Serial.println("Carte SD Initialisee.");
    cartePresente = true;
  }
}

void loop(void) {
  server.handleClient();
}
```

## Esp32 cam Serveur

### [Esp32CamServeur001.ino](#)

```
/*
*****
  Rui Santos
  Complete project details at
  https://RandomNerdTutorials.com/esp32-cam-video-streaming-web-server-camera-home-assistant/

  IMPORTANT!!!
  - Select Board "AI Thinker ESP32-CAM"
  - GPIO 0 must be connected to GND to upload a sketch
  - After connecting GPIO 0 to GND, press the ESP32-CAM on-board RESET button to put your board in flashing mode

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  of this software and associated documentation files.

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  copies or substantial portions of the Software.
*****/

#include "esp_camera.h"
#include <WiFi.h>
#include "esp_timer.h"
#include "img_converters.h"
#include "Arduino.h"
#include "fb_gfx.h"
#include "soc/soc.h" //disable brownout problems
#include "soc/rtc_cntl_reg.h" //disable brownout problems
```

```
#include "esp_http_server.h"

//Replace with your network credentials
const char* ssid = "REPLACE_WITH_YOUR_SSID";
const char* password = "REPLACE_WITH_YOUR_PASSWORD";

#define PART_BOUNDARY "123456789000000000000987654321"

// This project was tested with the AI Thinker Model, M5STACK PSRAM
Model and M5STACK WITHOUT PSRAM
#define CAMERA_MODEL_AI_THINKER
//#define CAMERA_MODEL_M5STACK_PSRAM
//#define CAMERA_MODEL_M5STACK_WITHOUT_PSRAM

// Not tested with this model
//#define CAMERA_MODEL_WROVER_KIT

#if defined(CAMERA_MODEL_WROVER_KIT)
    #define PWDN_GPIO_NUM    -1
    #define RESET_GPIO_NUM  -1
    #define XCLK_GPIO_NUM   21
    #define SIOD_GPIO_NUM   26
    #define SIOC_GPIO_NUM   27

    #define Y9_GPIO_NUM     35
    #define Y8_GPIO_NUM     34
    #define Y7_GPIO_NUM     39
    #define Y6_GPIO_NUM     36
    #define Y5_GPIO_NUM     19
    #define Y4_GPIO_NUM     18
    #define Y3_GPIO_NUM     5
    #define Y2_GPIO_NUM     4
    #define VSYNC_GPIO_NUM  25
    #define HREF_GPIO_NUM   23
    #define PCLK_GPIO_NUM   22

#elif defined(CAMERA_MODEL_M5STACK_PSRAM)
    #define PWDN_GPIO_NUM    -1
    #define RESET_GPIO_NUM   15
    #define XCLK_GPIO_NUM    27
    #define SIOD_GPIO_NUM    25
    #define SIOC_GPIO_NUM    23

    #define Y9_GPIO_NUM     19
    #define Y8_GPIO_NUM     36
    #define Y7_GPIO_NUM     18
    #define Y6_GPIO_NUM     39
    #define Y5_GPIO_NUM     5
    #define Y4_GPIO_NUM     34
    #define Y3_GPIO_NUM     35
    #define Y2_GPIO_NUM     32
```

```
#define VSYNC_GPIO_NUM    22
#define HREF_GPIO_NUM     26
#define PCLK_GPIO_NUM     21

#elif defined(CAMERA_MODEL_M5STACK_WITHOUT_PSRAM)
#define PWDN_GPIO_NUM     -1
#define RESET_GPIO_NUM   15
#define XCLK_GPIO_NUM     27
#define SIOD_GPIO_NUM     25
#define SIOC_GPIO_NUM     23

#define Y9_GPIO_NUM       19
#define Y8_GPIO_NUM       36
#define Y7_GPIO_NUM       18
#define Y6_GPIO_NUM       39
#define Y5_GPIO_NUM        5
#define Y4_GPIO_NUM       34
#define Y3_GPIO_NUM       35
#define Y2_GPIO_NUM       17
#define VSYNC_GPIO_NUM    22
#define HREF_GPIO_NUM     26
#define PCLK_GPIO_NUM     21

#elif defined(CAMERA_MODEL_AI_THINKER)
#define PWDN_GPIO_NUM     32
#define RESET_GPIO_NUM   -1
#define XCLK_GPIO_NUM      0
#define SIOD_GPIO_NUM     26
#define SIOC_GPIO_NUM     27

#define Y9_GPIO_NUM       35
#define Y8_GPIO_NUM       34
#define Y7_GPIO_NUM       39
#define Y6_GPIO_NUM       36
#define Y5_GPIO_NUM       21
#define Y4_GPIO_NUM       19
#define Y3_GPIO_NUM       18
#define Y2_GPIO_NUM        5
#define VSYNC_GPIO_NUM    25
#define HREF_GPIO_NUM     23
#define PCLK_GPIO_NUM     22

#else
#error "Camera model not selected"
#endif

static const char* _STREAM_CONTENT_TYPE = "multipart/x-mixed-
replace;boundary=" PART_BOUNDARY;
static const char* _STREAM_BOUNDARY = "\r\n--" PART_BOUNDARY "\r\n";
static const char* _STREAM_PART = "Content-Type: image/jpeg\r\nContent-
Length: %u\r\n\r\n";
```

```
httpd_handle_t stream_httpd = NULL;

static esp_err_t stream_handler(httpd_req_t *req){
    camera_fb_t * fb = NULL;
    esp_err_t res = ESP_OK;
    size_t _jpg_buf_len = 0;
    uint8_t * _jpg_buf = NULL;
    char * part_buf[64];

    res = httpd_resp_set_type(req, _STREAM_CONTENT_TYPE);
    if(res != ESP_OK){
        return res;
    }

    while(true){
        fb = esp_camera_fb_get();
        if (!fb) {
            Serial.println("Camera capture failed");
            res = ESP_FAIL;
        } else {
            if(fb->width > 400){
                if(fb->format != PIXFORMAT_JPEG){
                    bool jpeg_converted = frame2jpg(fb, 80, &_jpg_buf,
                    &_jpg_buf_len);
                    esp_camera_fb_return(fb);
                    fb = NULL;
                    if(!jpeg_converted){
                        Serial.println("JPEG compression failed");
                        res = ESP_FAIL;
                    }
                } else {
                    _jpg_buf_len = fb->len;
                    _jpg_buf = fb->buf;
                }
            }
        }
        if(res == ESP_OK){
            size_t hlen = snprintf((char *)part_buf, 64, _STREAM_PART,
            _jpg_buf_len);
            res = httpd_resp_send_chunk(req, (const char *)part_buf, hlen);
        }
        if(res == ESP_OK){
            res = httpd_resp_send_chunk(req, (const char *)_jpg_buf,
            _jpg_buf_len);
        }
        if(res == ESP_OK){
            res = httpd_resp_send_chunk(req, _STREAM_BOUNDARY,
            strlen(_STREAM_BOUNDARY));
        }
        if(fb){
```

```
    esp_camera_fb_return(fb);
    fb = NULL;
    _jpg_buf = NULL;
} else if(_jpg_buf){
    free(_jpg_buf);
    _jpg_buf = NULL;
}
if(res != ESP_OK){
    break;
}
//Serial.printf("MJPG: %uB\n", (uint32_t)(_jpg_buf_len));
}
return res;
}

void startCameraServer(){
    httpd_config_t config = HTTPD_DEFAULT_CONFIG();
    config.server_port = 80;

    httpd_uri_t index_uri = {
        .uri          = "/",
        .method       = HTTP_GET,
        .handler       = stream_handler,
        .user_ctx     = NULL
    };

    //Serial.printf("Starting web server on port: '%d'\n",
config.server_port);
    if (httpd_start(&stream_httpd, &config) == ESP_OK) {
        httpd_register_uri_handler(stream_httpd, &index_uri);
    }
}

void setup() {
    WRITE_PERI_REG(RTC_CNTL_BROWN_OUT_REG, 0); //disable brownout
detector

    Serial.begin(115200);
    Serial.setDebugOutput(false);

    camera_config_t config;
    config.ledc_channel = LEDC_CHANNEL_0;
    config.ledc_timer = LEDC_TIMER_0;
    config.pin_d0 = Y2_GPIO_NUM;
    config.pin_d1 = Y3_GPIO_NUM;
    config.pin_d2 = Y4_GPIO_NUM;
    config.pin_d3 = Y5_GPIO_NUM;
    config.pin_d4 = Y6_GPIO_NUM;
    config.pin_d5 = Y7_GPIO_NUM;
    config.pin_d6 = Y8_GPIO_NUM;
```

```
config.pin_d7 = Y9_GPIO_NUM;
config.pin_xclk = XCLK_GPIO_NUM;
config.pin_pclk = PCLK_GPIO_NUM;
config.pin_vsync = VSYNC_GPIO_NUM;
config.pin_href = HREF_GPIO_NUM;
config.pin_sscb_sda = SIOD_GPIO_NUM;
config.pin_sscb_scl = SIOC_GPIO_NUM;
config.pin_pwdn = PWDN_GPIO_NUM;
config.pin_reset = RESET_GPIO_NUM;
config.xclk_freq_hz = 20000000;
config.pixel_format = PIXFORMAT_JPEG;

if(psramFound()){
  config.frame_size = FRAMESIZE_UXGA;
  config.jpeg_quality = 10;
  config.fb_count = 2;
} else {
  config.frame_size = FRAMESIZE_SVGA;
  config.jpeg_quality = 12;
  config.fb_count = 1;
}

// Camera init
esp_err_t err = esp_camera_init(&config);
if (err != ESP_OK) {
  Serial.printf("Camera init failed with error 0x%x", err);
  return;
}
// Wi-Fi connection
WiFi.begin(ssid, password);
while (WiFi.status() != WL_CONNECTED) {
  delay(500);
  Serial.print(".");
}
Serial.println("");
Serial.println("WiFi connected");

Serial.print("Camera Stream Ready! Go to: http://");
Serial.print(WiFi.localIP());

// Start streaming web server
startCameraServer();
}

void loop() {
  delay(1);
}
```

From:

<https://chanterie37.fr/fablab37110/> - **Castel'Lab le Fablab MJC de Château-Renault**

Permanent link:

<https://chanterie37.fr/fablab37110/doku.php?id=start:arduino:esp32:camsd&rev=1634292553>

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