原 **最简单的基于FFmpeg的移动端例子：IOS 视频解码器**

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最简单的基于FFmpeg的移动端例子附件：IOS自带播放器
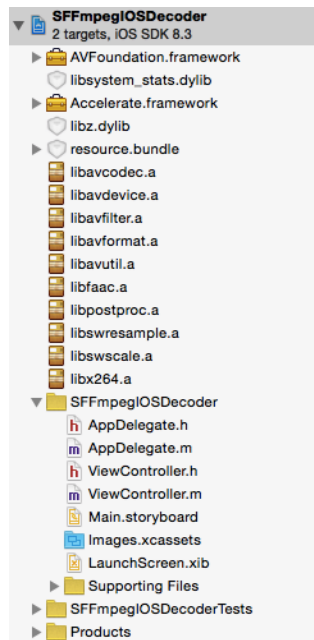
最简单的基于FFmpeg的移动端例子：Windows Phone HelloWorld

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本文记录IOS平台下基于FFmpeg的视频解码器。该示例C语言的源代码来自于《　最简单的基于FFMPEG+SDL的视频播放器 》。相关的概念就不再重复记录了。

源代码

项目的目录结构如图所示。

```
SFFmpegIOSDecoder
2 targets, iOS SDK 8.3
  ▶ 🧳 AVFoundation.framework
    ⬡ libsystem_stats.dylib
  ▶ 🧳 Accelerate.framework
    ⬡ libz.dylib
  ▶ 🛡 resource.bundle
    📦 libavcodec.a
    📦 libavdevice.a
    📦 libavfilter.a
    📦 libavformat.a
    📦 libavutil.a
    📦 libfaac.a
    📦 libpostproc.a
    📦 libswresample.a
    📦 libswscale.a
    📦 libx264.a
  ▼ 📁 SFFmpegIOSDecoder
    h AppDelegate.h
    m AppDelegate.m
    h ViewController.h
    m ViewController.m
    📄 Main.storyboard
    🖼 Images.xcassets
    📄 LaunchScreen.xib
  ▶ 📁 Supporting Files
  ▶ 📁 SFFmpegIOSDecoderTests
  ▶ 📁 Products
```

C代码位于ViewController.m文件中，内容如下所示。

```cpp
/**
 * 最简单的基于FFmpeg的视频解码器-IOS
 * Simplest FFmpeg IOS Decoder
 *
 * 雷霄骅 Lei Xiaohua
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 * 中国传媒大学/数字电视技术
 * Communication University of China / Digital TV Technology
 * http://blog.csdn.net/leixiaohua1020
 *
 * 本程序是IOS平台下最简单的基于FFmpeg的视频解码器。
 * 它可以将输入的视频数据解码成YUV像素数据。
 *
 * This software is the simplest decoder based on FFmpeg in IOS.
 * It can decode video stream to raw YUV data.
 *
 */

#import "ViewController.h"
#include <libavcodec/avcodec.h>
#include <libavformat/avformat.h>
#include <libavutil/imgutils.h>
#include <libswscale/swscale.h>

@interface ViewController ()

@end

@implementation ViewController

- (void)viewDidLoad {
    [super viewDidLoad];
    // Do any additional setup after loading the view, typically from a nib.
}

- (void)didReceiveMemoryWarning {
    [super didReceiveMemoryWarning];
    // Dispose of any resources that can be recreated.
}

- (IBAction)clickDecodeButton:(id)sender {
    AVFormatContext *pFormatCtx;
    int             i, videoindex;
    AVCodecContext  *pCodecCtx;
    AVCodec         *pCodec;
    AVFrame *pFrame,*pFrameYUV;
    uint8_t *out_buffer;
    AVPacket *packet;
    int y_size;
    int ret, got_picture;
    struct SwsContext *img_convert_ctx;
    FILE *fp_yuv;
    int frame_cnt;
    clock_t time_start, time_finish;
    double  time_duration = 0.0;

    char input_str_full[500]={0};
    char output_str_full[500]={0};
```

```objc
59.        char info[1000]={0};
60.
61.        NSString *input_str= [NSString stringWithFormat:@"resource.bundle/%@",self.inputurl.text];
62.        NSString *output_str= [NSString stringWithFormat:@"resource.bundle/%@",self.outputurl.text];
63.
64.        NSString *input_nsstr=[[[NSBundle mainBundle]resourcePath] stringByAppendingPathComponent:input_str];
65.        NSString *output_nsstr=[[[NSBundle mainBundle]resourcePath] stringByAppendingPathComponent:output_str];
66.
67.        sprintf(input_str_full,"%s",[input_nsstr UTF8String]);
68.        sprintf(output_str_full,"%s",[output_nsstr UTF8String]);
69.
70.        printf("Input Path:%s\n",input_str_full);
71.        printf("Output Path:%s\n",output_str_full);
72.
73.        av_register_all();
74.        avformat_network_init();
75.        pFormatCtx = avformat_alloc_context();
76.
77.        if(avformat_open_input(&pFormatCtx,input_str_full,NULL,NULL)!=0){
78.            printf("Couldn't open input stream.\n");
79.            return ;
80.        }
81.        if(avformat_find_stream_info(pFormatCtx,NULL)<0){
82.            printf("Couldn't find stream information.\n");
83.            return;
84.        }
85.        videoindex=-1;
86.        for(i=0; i<pFormatCtx->nb_streams; i++)
87.            if(pFormatCtx->streams[i]->codec->codec_type==AVMEDIA_TYPE_VIDEO){
88.                videoindex=i;
89.                break;
90.            }
91.        if(videoindex==-1){
92.            printf("Couldn't find a video stream.\n");
93.            return;
94.        }
95.        pCodecCtx=pFormatCtx->streams[videoindex]->codec;
96.        pCodec=avcodec_find_decoder(pCodecCtx->codec_id);
97.        if(pCodec==NULL){
98.            printf("Couldn't find Codec.\n");
99.            return;
100.        }
101.        if(avcodec_open2(pCodecCtx, pCodec,NULL)<0){
102.            printf("Couldn't open codec.\n");
103.            return;
104.        }
105.
106.        pFrame=av_frame_alloc();
107.        pFrameYUV=av_frame_alloc();
108.        out_buffer=(unsigned char *)av_malloc(av_image_get_buffer_size(AV_PIX_FMT_YUV420P,  pCodecCtx->width, pCodecCtx->height,1));
109.        av_image_fill_arrays(pFrameYUV->data, pFrameYUV->linesize,out_buffer,
110.                             AV_PIX_FMT_YUV420P,pCodecCtx->width, pCodecCtx->height,1);
111.        packet=(AVPacket *)av_malloc(sizeof(AVPacket));
112.
113.        img_convert_ctx = sws_getContext(pCodecCtx->width, pCodecCtx->height, pCodecCtx->pix_fmt,
114.                                         pCodecCtx->width, pCodecCtx->height, AV_PIX_FMT_YUV420P, SWS_BICUBIC, NULL, NULL, NULL);
115.
116.
117.        sprintf(info,   "[Input     ]%s\n", [input_str UTF8String]);
118.        sprintf(info, "%s[Output    ]%s\n",info,[output_str UTF8String]);
119.        sprintf(info, "%s[Format    ]%s\n",info, pFormatCtx->iformat->name);
120.        sprintf(info, "%s[Codec     ]%s\n",info, pCodecCtx->codec->name);
121.        sprintf(info, "%s[Resolution]%dx%d\n",info, pCodecCtx->width,pCodecCtx->height);
122.
123.
124.        fp_yuv=fopen(output_str_full,"wb+");
125.        if(fp_yuv==NULL){
126.            printf("Cannot open output file.\n");
127.            return;
128.        }
129.
130.        frame_cnt=0;
131.        time_start = clock();
132.
133.        while(av_read_frame(pFormatCtx, packet)>=0){
134.            if(packet->stream_index==videoindex){
135.                ret = avcodec_decode_video2(pCodecCtx, pFrame, &got_picture, packet);
136.                if(ret < 0){
137.                    printf("Decode Error.\n");
138.                    return;
139.                }
140.                if(got_picture){
141.                    sws_scale(img_convert_ctx, (const uint8_t* const*)pFrame->data, pFrame->linesize, 0, pCodecCtx->height,
142.                              pFrameYUV->data, pFrameYUV->linesize);
143.
144.                    y_size=pCodecCtx->width*pCodecCtx->height;
145.                    fwrite(pFrameYUV->data[0],1,y_size,fp_yuv);    //Y
146.                    fwrite(pFrameYUV->data[1],1,y_size/4,fp_yuv);  //U
147.                    fwrite(pFrameYUV->data[2],1,y_size/4,fp_yuv);  //V
148.                    //Output info
149.                    char pictype_str[10]={0};
```

```objc
150.                switch(pFrame->pict_type){
151.                    case AV_PICTURE_TYPE_I:sprintf(pictype_str,"I");break;
152.                    case AV_PICTURE_TYPE_P:sprintf(pictype_str,"P");break;
153.                    case AV_PICTURE_TYPE_B:sprintf(pictype_str,"B");break;
154.                    default:sprintf(pictype_str,"Other");break;
155.                }
156.                printf("Frame Index: %5d. Type:%s\n",frame_cnt,pictype_str);
157.                frame_cnt++;
158.            }
159.        }
160.        av_free_packet(packet);
161.    }
162.    //flush decoder
163.    //FIX: Flush Frames remained in Codec
164.    while (1) {
165.        ret = avcodec_decode_video2(pCodecCtx, pFrame, &got_picture, packet);
166.        if (ret < 0)
167.            break;
168.        if (!got_picture)
169.            break;
170.        sws_scale(img_convert_ctx, (const uint8_t* const*)pFrame->data, pFrame->linesize, 0, pCodecCtx->height,
171.                  pFrameYUV->data, pFrameYUV->linesize);
172.        int y_size=pCodecCtx->width*pCodecCtx->height;
173.        fwrite(pFrameYUV->data[0],1,y_size,fp_yuv);      //Y
174.        fwrite(pFrameYUV->data[1],1,y_size/4,fp_yuv);  //U
175.        fwrite(pFrameYUV->data[2],1,y_size/4,fp_yuv);  //V
176.        //Output info
177.        char pictype_str[10]={0};
178.        switch(pFrame->pict_type){
179.            case AV_PICTURE_TYPE_I:sprintf(pictype_str,"I");break;
180.            case AV_PICTURE_TYPE_P:sprintf(pictype_str,"P");break;
181.            case AV_PICTURE_TYPE_B:sprintf(pictype_str,"B");break;
182.            default:sprintf(pictype_str,"Other");break;
183.        }
184.        printf("Frame Index: %5d. Type:%s\n",frame_cnt,pictype_str);
185.        frame_cnt++;
186.    }
187.    time_finish = clock();
188.    time_duration=(double)(time_finish - time_start);
189.
190.    sprintf(info, "%s[Time      ]%fus\n",info,time_duration);
191.    sprintf(info, "%s[Count     ]%d\n",info,frame_cnt);
192.
193.    sws_freeContext(img_convert_ctx);
194.
195.    fclose(fp_yuv);
196.
197.    av_frame_free(&pFrameYUV);
198.    av_frame_free(&pFrame);
199.    avcodec_close(pCodecCtx);
200.    avformat_close_input(&pFormatCtx);
201.
202.    NSString * info_ns = [NSString stringWithFormat:@"%s", info];
203.    self.infomation.text=info_ns;
204.
205. }
206.
207.
208. @end
```
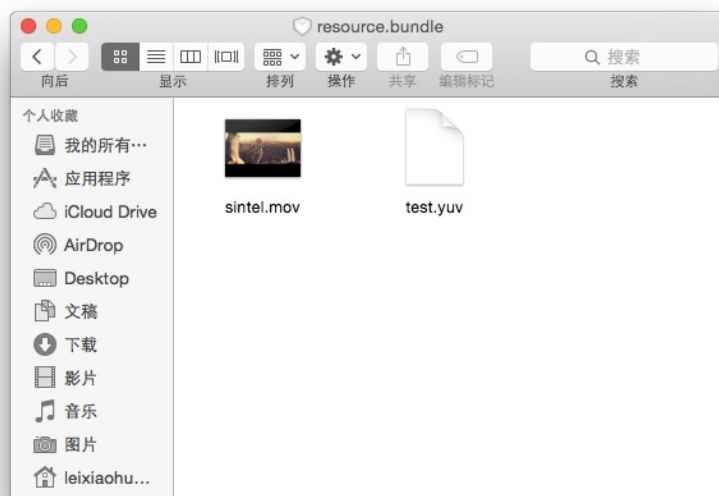
运行结果

App在手机上运行后的结果如下图所示。单击"Decode",将会把位于resource.bundle中的"sintel.mov"文件解码为"sintel.yuv"文件并存储于相同的目录下。
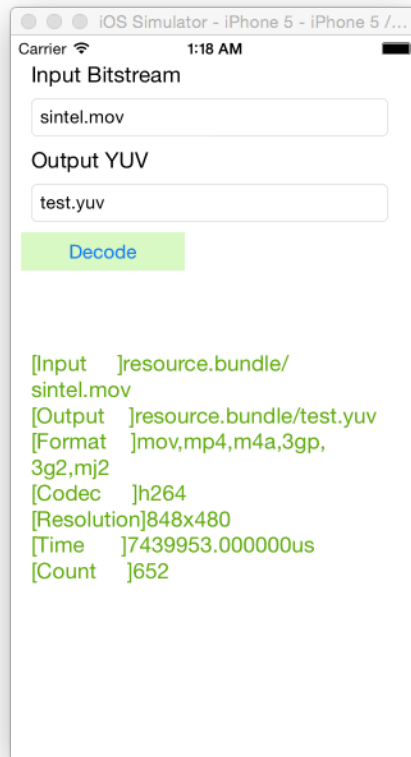
生成的文件如下图所示。

下载

simplest ffmpeg mobile

项目主页

Github： https://github.com/leixiaohua1020/simplest_ffmpeg_mobile

开源中国： https://git.oschina.net/leixiaohua1020/simplest_ffmpeg_mobile

SourceForge： https://sourceforge.net/projects/simplestffmpegmobile/

CSDN工程下载地址： http://download.csdn.net/detail/leixiaohua1020/8924391

本解决方案包含了使用FFmpeg在移动端处理多媒体的各种例子：

   [Android]

simplest_android_player: 基于安卓接口的视频播放器

simplest_ffmpeg_android_helloworld: 安卓平台下基于FFmpeg的HelloWorld程序

simplest_ffmpeg_android_decoder: 安卓平台下最简单的基于FFmpeg的视频解码器

simplest_ffmpeg_android_decoder_onelib: 安卓平台下最简单的基于FFmpeg的视频解码器-单库版

simplest_ffmpeg_android_streamer: 安卓平台下最简单的基于FFmpeg的推流器

simplest_ffmpeg_android_transcoder: 安卓平台下移植的FFmpeg命令行工具

simplest_sdl_android_helloworld: 移植SDL到安卓平台的最简单程序

[IOS]

simplest_ios_player: 基于IOS接口的视频播放器

simplest_ffmpeg_ios_helloworld: IOS平台下基于FFmpeg的HelloWorld程序

simplest_ffmpeg_ios_decoder: IOS平台下最简单的基于FFmpeg的视频解码器

simplest_ffmpeg_ios_streamer: IOS平台下最简单的基于FFmpeg的推流器

simplest_ffmpeg_ios_transcoder: IOS平台下移植的ffmpeg.c命令行工具

simplest_sdl_ios_helloworld: 移植SDL到IOS平台的最简单程序

文章标签：   (FFmpeg)   (IOS)   (视频)   (YUV)

个人分类：   FFMPEG   IOS多媒体

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