

ArcSoft Gender Estimation

开发指导文档



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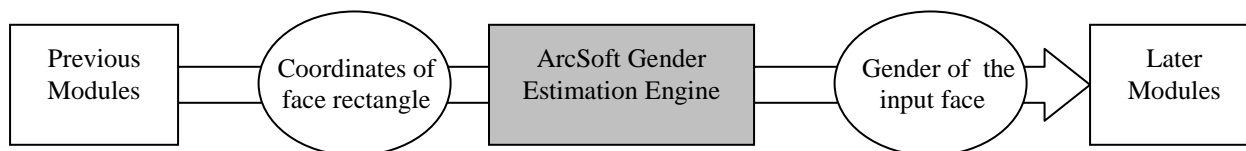
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Chapter 1: 概述

虹软性别检测引擎工作流程图。



1.1. 运行环境

- Windows

1.2. 系统要求

- 32 位系统，Windows7 以上

1.3. 依赖库

- None

Chapter 2: 结构与常量

2.1. 基本类型

所有基本类型在平台库中有定义。定义规则是在 ANSIC 中的基本类型前加上字母“M”同时将类型的第一个字母改成大写。例如“long”被定义成“MLong”

2.2. 数据结构

2.2.1. ASGE_FSDK_Version

描述

SDK 版本信息

定义

```
typedef struct{
    MInt32 lCodebase;
    MInt32 lMajor;
    MInt32 lMinor;
    MInt32 lBuild;
    MPChar Version;
    MPChar BuildDate;
    MPChar CopyRight;
} ASGE_FSDK_Version;
```

成员变量

lCodebase	代码库版本号
lMajor	主版本号
lMinor	次版本号
lBuild	编译版本号，递增
Version	字符串形式的版本号
BuildDate	编译时间
CopyRight	版权信息

2.2.2. ASGE_FSDK_GENDERRESULT

描述

定义性别检测结果信息

定义

```
typedef struct{
    MInt32      *pGenderResultArray;
    MInt32      lFaceNumber;
} ASGE_FSDK_GENDERRESULT, *LP ASGE_FSDK_GENDERRESULT;
```

成员变量

pGenderResultArray	检测出的性别结果数组
lFaceNumber	检测出的性别结果个数

2.2.3. ASGE_FSDK_GENDERFACEINPUT

描述

定义脸部信息

定义

```
Typedef struct{
    MRECT      *pFaceRectArray;
    MInt32      *pFaceOrientArray;
    MInt32      lFaceNumber;
} ASGE_FSDK_GENDERFACEINPUT, *LPASGE_FSDK_GENDERFACEINPUT;
```

成员变量

pFaceRectArray	人脸框信息数组
pFaceOrientArray	输入的人脸角度数组。
lFaceNumber	人脸个数

2.3. 枚举

2.3.1. ASGE_FSDK_GenderOrientCode

描述

定义基于逆时针方向的人脸角度

定义

```
enum ASGE_FSDK_GenderOrientCode {
    ASGE_FSDK_FOC_Gender_0      = 0x1,
    ASGE_FSDK_FOC_Gender_90     = 0x2,
```

```

        ASGE_FSDK_FOC_Gender_270    = 0x3,
        ASGE_FSDK_FOC_Gender_180    = 0x4,
        ASGE_FSDK_FOC_Gender_30     = 0x5,
        ASGE_FSDK_FOC_Gender_60     = 0x6,
        ASGE_FSDK_FOC_Gender_120    = 0x7,
        ASGE_FSDK_FOC_Gender_150    = 0x8,
        ASGE_FSDK_FOC_Gender_210    = 0x9,
        ASGE_FSDK_FOC_Gender_240    = 0xa,
        ASGE_FSDK_FOC_Gender_300    = 0xb,
        ASGE_FSDK_FOC_Gender_330    = 0xc
};

```

成员变量

ASGE_FSDK_FOC_Gender_0	0 度
ASGE_FSDK_FOC_Gender_90	90 度
ASGE_FSDK_FOC_Gender_270	270 度
ASGE_FSDK_FOC_Gender_180	180 度
ASGE_FSDK_FOC_Gender_30	30 度
ASGE_FSDK_FOC_Gender_60	60 度
ASGE_FSDK_FOC_Gender_120	120 度
ASGE_FSDK_FOC_Gender_150	150 度
ASGE_FSDK_FOC_Gender_210	210 度
ASGE_FSDK_FOC_Gender_240	240 度
ASGE_FSDK_FOC_Gender_300	300 度
ASGE_FSDK_FOC_Gender_330	330 度

2.3.2. 支持的颜色格式

描述

颜色格式及其对齐规则

定义

ASVL_PAF_I420	8-bit Y 层，之后是 8-bit 的 2x2 采样的 U 层和 V 层
ASVL_PAF_YUYV	Y0, U0, Y1, V0
ASVL_PAF_RGB24_B8G8R8	BGR24, B8G8R8

Chapter 3: API 说明

3.1. ASGE_FSDK_InitGenderEngine

原型

```
MRESULT ASGE_FSDK_InitGenderEngine (  
    MPChar          AppId,  
    MPChar          SDKKey,  
    MByte           *pMem,  
    MInt32          lMemSize  
    MHandle         *phEngine  
);
```

描述

初始化性别检测引擎

参数

AppId	[in]	用户申请 SDK 时获取的 App Id
SDKKey	[in]	用户申请 SDK 时获取的 SDK Key
pMem	[in]	分配给引擎使用的内存地址
lMemSize	[in]	分配给引擎使用的内存大小
phEngine	[out]	引擎 handle

返回值

成功返回 MOK，否则返回失败 code。失败 codes 如下所列：

MERR_INVALID_PARAM	参数输入非法
MERR_NO_MEMORY	内存不足

3.2. ASGE_FSDK_GenderEstimation_StaticImage

原型

```
MRESULT ASGE_FSDK_GenderEstimation_StaticImage (  
    MHandle          hEngine,  
    LPASVLOFFSCREEN  pImginfo,  
    LPASGE_FSDK_GENDERFACEINPUT  pFaceRes,  
    LPASGE_FSDK_GENDERRESULT      pGenderRes,  
);
```


描述

检测静态图片中人物的性别

参数

hEngine	[in]	引擎 handle
pImginfo	[in]	输入的图像数据
pFaceRes	[in]	已检测到的脸部信息
pGenderRes	[out]	性别检测结果

返回值

成功返回 MOK，否则返回失败 code。失败 codes 如下所列:

MERR_INVALID_PARAM	参数输入非法
MERR_NO_MEMORY	内存不足

3.3. ASGE_FSDK_GenderEstimation_Preview

原型

```
MRESULT ASGE_FSDK_GenderEstimation_Preview (  
    MHandle                                hEngine,  
    LPASVLOFFSCREEN                        pImginfo,  
    LPASGE_FSDK_GENDERFACEINPUT           pFaceRes,  
    LPASGE_FSDK_GENDERRESULT              pGenderRes,  
);
```

描述

检测动态视频中人物的性别

参数

hEngine	[in]	引擎 handle
pImginfo	[in]	输入图像信息
pFaceRes	[in]	输入的图像中人脸信息， 需要事先用人脸引擎检测出
pGenderRes	[out]	性别检测结果

返回值

成功返回 MOK，否则返回失败 code。失败 codes 如下所列:

MERR_INVALID_PARAM	参数输入非法
MERR_NO_MEMORY	内存不足

3.4. ASGE_FSDK_UninitGenderEngine

原型

```
MRESULT ASGE_FSDK_UninitGenderEngine (  
    MHandle      hEngine  
);
```

描述

销毁引擎，释放相应资源

参数

hEngine [in] 引擎 handle

返回值

成功返回 MOK，否则返回失败 code。失败 codes 如下所列:

MERR_INVALID_PARAM 参数输入非法

3.5. ASGE_FSDK_GetVersion

原型

```
const ASGE_FSDK_Version* ASGE_FSDK_GetVersion(  
    MHandle      hEngine  
);
```

描述

获取 SDK 版本信息

参数

hEngine [in] 引擎 handle

Chapter 4: Sample Codes

注意,使用时请替换申请的 APPID SDKKEY

```
#include <stdio.h>
#include "arcsoft_fsdk_gender_estimation.h"
#include "merror.h"

#pragma comment(lib, "libarcsoft_fsdk_gender_estimation.lib")

#define MAXIMUM_FACE_NUMBER 10
#define WORKBUF_SIZE (30*1024*1024)
#define APPID "" //APPID
#define ASGE_SDKKey "" //SDKKey

#define GENDER_ESTIMATION_STATICIMAGE
// #define GENDER_ESTIMATION_PREVIEW

/* define global variables for gender estimation */
MHandle GenderEngine = nullptr;
ASVLOFFSCREEN GenderImageInfo = { 0 };
ASGE_FSDK_GENDERFACEINPUT GenderFaceInput;
ASGE_FSDK_GENDERRESULT GenderResult;
MByte * pWorkMem = nullptr;

/* initialize the engine and other variables */
MInt32 InitGenderEstimate()
{
    MInt32 res = MOK;
    GenderFaceInput.lFaceNumber = 0;
    GenderFaceInput.pFaceRectArray = new MRECT[MAXIMUM_FACE_NUMBER];
    if (0 == GenderFaceInput.pFaceRectArray)
        return MERR_NO_MEMORY;
    GenderFaceInput.pFaceOrientArray = new MInt32[MAXIMUM_FACE_NUMBER];
    if (0 == GenderFaceInput.pFaceOrientArray)
        return MERR_NO_MEMORY;

    pWorkMem = new MByte[WORKBUF_SIZE];
    res = ASGE_FSDK_InitGenderEngine(APPID, ASGE_SDKKey, pWorkMem, WORKBUF_SIZE,
    &GenderEngine);
    return res;
}

/* release the engine and other memory handles */
MInt32 UnInitGenderEstimate()
{
    MInt32 res = MOK;
    res = ASGE_FSDK_UninitGenderEngine(GenderEngine);
    if (GenderFaceInput.pFaceRectArray != nullptr)
    {
        delete[] GenderFaceInput.pFaceRectArray;
        GenderFaceInput.pFaceRectArray = nullptr;
    }
    if (GenderFaceInput.pFaceOrientArray != nullptr)
    {

```

```

        delete[] GenderFaceInput.pFaceOrientArray;
        GenderFaceInput.pFaceOrientArray = nullptr;
    }
    if (pWorkMem != nullptr)
    {
        delete[] pWorkMem;
        pWorkMem = nullptr;
    }
    return res;
}
/* print sdk version */
void PrintVersionInfo()
{
    const ASGE_FSDK_Version * pVersionInfo = nullptr;
    pVersionInfo = ASGE_FSDK_GetVersion(GenderEngine);
    printf("%d %d %d %d\n", pVersionInfo->lCodebase, pVersionInfo->lMajor,
pVersionInfo->lMinor, pVersionInfo->lBuild);
    printf("%s\n", pVersionInfo->Version);
    printf("%s\n", pVersionInfo->BuildDate);
    printf("%s\n", pVersionInfo->CopyRight);
}

#ifdef GENDER_ESTIMATION_STATICIMAGE
/* load static image and save it to "pImageInfo", which is a "ASVLOFFSCREEN"
struct. return "MOK" if succeed. */
MInt32 GetImageData(ASVLOFFSCREEN * pImageInfo)
{
    MInt32 res = MOK;

    /* load image. add your code here */
    /* ... */

    return res;
}

/* using ArcSoft face detection sdk to detect faces in the input image and save
the face results to "pFaceInput".
return "MOK" if succeed. */
MInt32 FaceDetect(ASVLOFFSCREEN * pImageInfo, ASGE_FSDK_GENDERFACEINPUT *
pFaceInput)
{
    MInt32 res = MOK;

    /* add your code here */
    /* ... */

    return res;
}
#endif

#ifdef GENDER_ESTIMATION_PREVIEW
/* get each preview frame and save it to "pImageInfo", which is a "ASVLOFFSCREEN"
struct. return "MOK" if succeed. */
MInt32 GetPreviewData(ASVLOFFSCREEN * pImageInfo)
{
    MInt32 res = MOK;

```

```

        /* get frame data. add your code here */
        /* ... .. */

        return res;
    }

    /* using ArcSoft face tracking library to detect faces in the input image and save
    the face results to "pFaceInput".
    return "MOK" if succeed. */
    MInt32 FaceTrack(ASVLOFFSCREEN * pImageInfo, ASGE_FSDK_GENDERFACEINPUT *
    pFaceInput)
    {
        MInt32 res = MOK;

        /* add your code here */
        /* ... .. */

        return res;
    }
#endif

    /* estimate gender */
    MInt32 GenderEstimate()
    {
        MInt32 res = MOK;
#ifdef GENDER_ESTIMATION_STATICIMAGE
        res = ASGE_FSDK_GenderEstimation_StaticImage(GenderEngine, &GenderImageInfo,
        &GenderFaceInput, &GenderResult);
#endif

#ifdef GENDER_ESTIMATION_PREVIEW
        res = ASGE_FSDK_GenderEstimation_Preview(GenderEngine, &GenderImageInfo,
        &GenderFaceInput, &GenderResult);
#endif

        return res;
    }

    int main()
    {
        /* initialize the engine and other variables */
        MRESULT nRet = MERR_UNKNOWN;
        nRet = InitGenderEstimate();
        if (nRet != MOK)
        {
            printf("InitGenderEngine failed , errorcode is %d \n", nRet);
            return -1;
        }

        /* print version info */
        PrintVersionInfo();

#ifdef GENDER_ESTIMATION_STATICIMAGE
        /* image data acquisition */
        nRet = GetImageData(&GenderImageInfo);
        if (nRet != MOK)

```

```

{
    printf("GetImageData: nRet=%d\n", nRet);
    return nRet;
}

/* face detection */
nRet = FaceDetect(&GenderImageInfo, &GenderFaceInput);
if (nRet != MOK)
{
    printf("FaceDetect: nRet=%d\n", nRet);
    return nRet;
}

/* do gender estimation when the face number is bigger than 0. */
if (GenderFaceInput.lFaceNumber > 0)
{
    /* gender estimation */
    nRet = GenderEstimate();
    if (nRet != MOK)
    {
        printf("GenderEstimate: nRet=%d\n", nRet);
        return nRet;
    }

    /* print gender estimation result */
    for (int i = 0; i < GenderFaceInput.lFaceNumber; i++)
    {
        printf("Gender: %d\n", GenderResult.pGenderResultArray[i]);
    }
}
#endif

#ifdef GENDER_ESTIMATION_PREVIEW
/* preview data acquisition */
while (MOK == GetPreviewData(&GenderImageInfo))
{
    /* face tracking */
    nRet = FaceTrack(&GenderImageInfo, &GenderFaceInput);
    if (nRet != MOK)
    {
        printf("FaceDetect: nRet=%d\n", nRet);
        return nRet;
    }

    /* gender estimation */
    /* no matter "GenderFaceInput->lFaceNumber" is greater than or equal
to 0, next sentence must be excuted. */
    nRet = GenderEstimate();
    if (nRet != MOK)
    {
        printf("GenderEstimate: nRet=%d\n", nRet);
        return nRet;
    }

    /* print gender estimation result */
    if (GenderFaceInput.lFaceNumber > 0)
    {

```

```
        for (int i = 0; i < GenderFaceInput.lFaceNumber; i++)
        {
            printf("Gender: %d\n",
GenderResult.pGenderResultArray[i]);
        }
    }
#endif

    /* release the engine and other memory handles */
    nRet = UnInitGenderEstimate();
    return nRet;
}
```