转 YUV转IPLImage（RGB）

一个小的程序，在网上找了很久没有发现

自己搞了一个大家看看

第一个是很笨的办法：

yuv三个分量分别写在3个矩阵下，然后合并之后转换为rgb分量的图片格式就可以了；

代码如下：

```cpp
1.  IplImage *image,*rgbimg,*yimg,*uimg,*vimg,*uuimg,*vvimg;
2.
3.      rgbimg = cvCreateImage(cvSize(nWidth, nHeight),IPL_DEPTH_8U,3);
4.      image = cvCreateImage(cvSize(nWidth, nHeight),IPL_DEPTH_8U,3);
5.
6.      yimg = cvCreateImageHeader(cvSize(nWidth, nHeight),IPL_DEPTH_8U,1);
7.      uimg = cvCreateImageHeader(cvSize(nWidth/2, nHeight/2),IPL_DEPTH_8U,1);
8.      vimg = cvCreateImageHeader(cvSize(nWidth/2, nHeight/2),IPL_DEPTH_8U,1);
9.
10.     uuimg = cvCreateImage(cvSize(nWidth, nHeight),IPL_DEPTH_8U,1);
11.     vvimg = cvCreateImage(cvSize(nWidth, nHeight),IPL_DEPTH_8U,1);
12.
13.     cvSetData(yimg,pBuf, nWidth);
14.     cvSetData(uimg,pBuf+nWidth*nHeight, nWidth/2);
15.     cvSetData(vimg,pBuf+long(nWidth*nHeight*1.25), nWidth/2);
16.     cvResize(uimg,uuimg,CV_INTER_LINEAR);
17.     cvResize(vimg,vvimg,CV_INTER_LINEAR);
18.
19.     cvMerge(yimg,uuimg,vvimg,NULL,image);
20.     cvCvtColor(image,rgbimg,CV_YCrCb2BGR);
```

还有一个方法就比较复杂

首先自己根据原理转换为rgb格式

然后利用cvSetData（）函数写入数据生成IplImage格式的图片

首先定义转换的公式：

```cpp
1.  #define MR(Y,U,V) (Y + (1.403)*(V-128))
2.  #define MG(Y,U,V) (Y - (0.344) * (U-128) - (0.714) * (V-128) )
3.  #define MB(Y,U,V) (Y + ((1.773) * (U-128)))
```

yuv转rgb的函数：

```cpp
void YUV420_C_RGB( char* pYUV, unsigned char* pRGB, int height, int width)
{
    char* pY = pYUV;
    char* pU = pYUV+height*width;
    char* pV = pU+(height*width/4);


    unsigned char* pBGR = NULL;
    unsigned char R = 0;
    unsigned char G = 0;
    unsigned char B = 0;
    char Y = 0;
    char U = 0;
    char V = 0;
    double tmp = 0;
    for ( int i = 0; i < height; ++i )
    {
        for ( int j = 0; j < width; ++j )
        {
            pBGR = pRGB+ i*width*3+j*3;

            Y = *(pY+i*width+j);
            U = *pU;
            V = *pV;

            //B
            tmp = MB(Y, U, V);
            //B = (tmp > 255) ? 255 : (char)tmp;
            //B = (B<0) ? 0 : B;
            B = (unsigned char)tmp;
            //G
            tmp = MG(Y, U, V);
            //G = (tmp > 255) ? 255 : (char)tmp;
        // G = (G<0) ? 0 : G;
            G = (unsigned char)tmp;
            //R
            tmp = MR(Y, U, V);
            //R = (tmp > 255) ? 255 : (char)tmp;
            //R = (R<0) ? 0 : R;
            R = (unsigned char)tmp;


            *pBGR     = R;
            *(pBGR+1) = G;
            *(pBGR+2) = B;


            if ( i%2 == 0 && j%2 == 0)
            {
                *pU++;
                //*pV++;
            }
            else
            {
                if ( j%2 == 0 )
                {
                    *pV++ ;
                }
            }
        }

    }
}
```

最后是写入IplImage的代码：

```cpp
unsigned char* pRGB = NULL;
pRGB = (unsigned char*)malloc(nSize*sizeof(unsigned char*)*2);
YUV420_C_RGB(pBuf,pRGB,nWidth,nHeight);
IplImage *image;
image = cvCreateImageHeader(cvSize(nWidth, nHeight),IPL_DEPTH_8U,3);
cvSetData(image,pRGB,nWidth*3);
```

程序都运行过

编译环境为vs2008

opencv2.0版本

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个人分类： OpenCV