**新增盲元标定说明**

**Dead pixel correction**

模组在使用过程中，受到比较严重的机械冲击或静电放电后，有极低的概率出现新增盲元，需要用户将新增盲元添加到模组固件的盲元表中。新增盲元的去盲元算法和以及保存功能已经在固件中实现，上位机只需调用相关命令接口按照标定流程操作即可完成新增盲元的添加过程。如果采用原始指令集的方式，可参考以下说明。

If a module is hit by a serious mechanical shock or electrostatic discharge (ESD), there is a very low probability that new dead pixels will appear. You can add new dead pixels to the dead pixel table. There are two methods: 1. Call the built-in automatic dead pixel correction function of firmware; 2. Enter the coordinates of the new dead pixel. If you use the raw instruction set, refer to the following instructions.

**一、输出新增盲元坐标Enter the coordinates**

用户确认新增盲元坐标后，可通过下列步骤添加到模组固件的盲元表中：

You can perform the following steps to add coordinates to the dead pixel table of the module firmware:

1. 调用指令VCMD\_DPC\_ADD\_DP，模组记录盲元位置IruvcPoint\_t。其中，坐标x和坐标y分别代表图像的第x行和第y列（从1开始计数）

The instruction VCMD\_DPC\_ADD\_DP is called, and the module records the dead pixel position IruvcPoint\_t. Where, coordinate x and coordinate y represent the x-th row and y-th column of the image respectively (counting from 1)

1. 调用函数VCMD\_SPI\_CFG\_SAVE ，参数为SPI\_MOD\_CFG\_DEAD\_PIX，新的盲元表将被保存到flash。

Call the function VCMD\_SPI\_CFG\_SAVE with parameter SPI\_MOD\_CFG\_DEAD\_PIX and the new dead pixel table will be saved to Flash.

注：如果出现误操作，可以调用VCMD\_DPC\_REMOVE\_DP指令将盲元从盲元表中移除，同理，也需要调用VCMD\_SPI\_CFG\_SAVE保存修改后的盲元表。

Note: If there is a misoperation, you can call VCMD\_DPC\_REMOVE\_DP to remove the coordinate from the table. Similarly, you need to call VCMD\_SPI\_CFG\_SAVE to save the modified blind element table.

**二、计算盲元坐标参考方法Reference method**

下文提供一种计算新增盲元的坐标的方法，仅供用户参考。

The following provides a method to calculate the coordinates of newly added dead pixel， for reference only.

1. 将均匀平板放置在模组前，遮挡住全部视场；

Place the uniform plate in front of the module to block all the field of view;

1. 切换到TNR出图，采集1~30帧图像至一个文件夹内；

Switch to TNR streaming and collect 1~30 frames of images into a folder;

1. 脚本对图像进行尺寸3×3的中值滤波,原始像素值与滤波后像素值相差大于阈值的点标记为盲元;

The script conducts median filtering with size of 3×3 for the image, and the points whose difference between the original pixel value and the filtered pixel value is greater than the threshold are marked as dead pixel.

注：若盲元数量与实际不符，可以更改盲元阈值。

Note: If the number of dead pixel does not match the actual number, the threshold can be changed.

matlab代码：

%%dead pixel calculate

clear coordinate

T=40;%盲元阈值

Size=3;%计算尺寸

row=192;

col=256;

data2=zeros(row,col);

data1=zeros(row,col);

root=uigetdir('Ñ¡ÔñÎÄ¼þ¼Ð');

x=[root,'/','\*.bin'];

getfilename=ls(x);

filename=cellstr(getfilename);

n=numel(filename);

if n>=60

n=60;

end

for i=1:n;

fileID=fopen([root,'/',filename{i}],'rb+');

while ~feof(fileID)

[data]=fread(fileID,'uint16');

end

fclose(fileID);

data=double(data);

for r=1:row

for c=1:col

data1(r,c)=data((r-1)\*col+c);

end

end

data2=data2+data1;

end

data2=floor(data2./n);

figure;imshow(data2);caxis([min(min(data2));max(max(data2))]);title('Image');

data2=padarray(data2,[1 1],'replicate');

DP=int8(abs(data2-medfilt2(data2,[3 3]))>T);

figure;imshow(DP(2:193,2:257));caxis([0 1]);title('DP');

n\_DP=0;

for i=1:row

for j=1:col

if DP(1+i,1+j)==1

n\_DP=n\_DP+1;

coordinate(n\_DP,1)=i;

coordinate(n\_DP,2)=j;

end

end

end

clearvars -except coordinate n\_DP