

CMOS Color Camera

The “Raw” Image is 288 ROWS by 352 COLUMNS in the Bayer Pattern.

I compress that image for you into a 72 ROW by 88 COLUMN RGB Image

C Defines, Types and Functions:

1.

```
#define IMAGE_ROWS 72
#define IMAGE_COLUMNS 88
```
2.

```
typedef struct bgr {
    unsigned char blue;
    unsigned char green;
    unsigned char red;
} bgr;
```
3.

```
void userProcessColorImageFunc_laser(volatile bgr **ptrImage,volatile bgr **ptrLaser)
```

You will edit this function to create your vision processing algorithms. The function is passed a double pointer to a multi-dimensional array of type bgr “ptrImage”. ptrImage is the 72R X 88C compressed image. ptrLaser is also a double pointer to a multi-dimensional array of type bgr. You may not use this image because it is designed for helping you measure distance to an object when the robot has a laser diode it can point at the object. ptrLaser’s image size is 144R X 4C.

To access individual pixels of the image you would write for example:

```
unsigned char myred;
int i,j;
i = 71; j = 34;
myred = ptrImage[i][j].red;
```

4. Functions for displaying Image

```
SendImagetoColor_LCD(ptrImage);
```

This function displays the image to the robot’s color LCD at a maximum rate of 12.5 frames per second. Only the middle 64R X 64C of the image are displayed to the color LCD.

```
SendImagetoUART2every25calls(ptrImage);
```

This function sends the 72R X 88C color image to the PC over UART2 to be displayed. The picture can only be sent at a rate of 1/3 frames per second. (Very slow)

```
SendBWImagetoUART2every25calls(Thres_Image);
```

This function sends a binary or gray-scaled image (72R X 88C) to the PC over UART2. The display rate for this image is 1 frame per second.