Using the Quickcam camera with the IDP kit

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April 2000

1 Introduction

The Connectix Quickcam camera is a 324 by 243 pixel charge coupled device (CCD) connected to a parallel port dongle consisting of a microcontroller for inerfacing the CCD to the host computer. Pixels are either 4 bit or 6 bit deep, depending on the transfer mode chosen by the host computer.

Unfortunately, Connectix do not make the protocol for communicating with the Quickcam available in the public domain, so a library of routines has been written to allow frames to be grabbed from the camera.

Note that only the 4 bit pixel depth is supported.

2 Library routines

The Quickcam library consists of the following functions :-

`int QC_init(int mode)`

This initializes the camera and sets up some default values. It must be called before calling any of the other library routines. The `mode` parameter determines the resolution of the images returned; it should be set to `QC_HIGHRES` for 320 by 240 and to `QC_LOWRES` for 160 by 120.

`int QC_setexposure(unsigned char value)`

This is used to set the exposure time. It effectively controls the brightness of the returned images. The higher the value, the longer the exposure time and hence the brigher the images. The valid range of values is 1 to 254, with a default value of 148 set by `QC_init()`.

`int QC_setcontrast(unsigned char value)`

This is used to control the visual contrast of the returned images. The higher the value, the greater the contrast. The valid range of values is 1 to 254, with a default value of 32 set by `QC_init()`.

```
int QC_grabframe(unsigned char *buffer)
```

This routine grabs a frame from the camera into `buffer`, which must be at least 19200 bytes (for 160 x 120 resolution) or 76800 (for 320 x 240) in size. Note that each pixel, although only 4 bits, occupies 1 byte (the lower 4 bits of) in the buffer. A pixel value of 0 corresponds to black with 1 being white. The values 2 to 15 denote a smooth gradient from almost white to almost black respectively.

```
int QC_grabdata(unsigned char *buffer, int howmuch)
```

This routine can be used to grab parts of a frame so that grabbing the whole frame can be interleaved with other activities. `QC_grabdata()`will grab up to `howmuch` bytes of data into `buffer`, returning the number of bytes grabbed as its result. It is expected that the calling application will keep track of where the start and end of frames are.

3 Return codes

The above functions return one of the following results (as defined in the quickcam include file described later).

QC_SUCCESS	the function completed successfuly
QC_BAD_RESPONSE	the camera responded incorrectly to the command
QC_TIMEOUT	the camera didn’t respond in reasonable time

4 Using the Quickcam library

Definitions for the above functions and constants are defined in the quickcam include file which you can include in your C code with :-

```
#include <quickcam.h>
```

The library can be linked with your code as follows :-

```
gcc68 -o yourcode yourcode.c -lqcam
```

The quickcam include file lives in :-

```
/usr/lib/gcc-lib/m68k-68board-blob/include/quickcam.h
```