Arduino Cameras

8.4. Arduino Cameras

The two best cameras for the Arduino are the Omnivision OV7670 FIFO camera and the ArduCAM OV2640 minicamera. The OV7670 comes in two main versions, one with first in, first out (FIFO) frame buffer memory and one without any memory. If you are using the camera with the Arduino, then you will need the version with the FIFO memory. The OV7670 is complex to operate and requires an Arduino Mega to use in order to take a picture and save it on an SD card. The benefit over the ArduCAM mini is that it costs around $9 to $10 dollars, which is less than half the cost of the ArduCAM mini, which is around $25 as of this writing. You can learn more about how to use this camera in a book I wrote called *Beginning Arduino OV7670 Camera Development*, which covers the most popular version, the FIFO version, of the OV7670. The ArduCAM OV2640 costs more than the OV7670 but is much easier to use and only requires an Arduino Uno to take a picture and save it on a SD card. The maximum resolution of the ArduCAM mini is also higher than that of the OV7670. The projects in this book use the ArduCAM OV2640 minicamera.

8.4.1. ArduCAM OV2640 Minicamera

The ArduCAM OV2640 minicamera includes

- 2MP image sensor
- I2C interface for sensor configuration
- SPI interface for camera commands and data stream
- 5-V/3.3-V-tolerant input-output (I/O) ports
- Support for JPEG compression mode, single- and multiple-shoot mode, one-time capture multiple-read operation, burst read operation, low-power mode
- Good mating with standard Arduino boards
- An open source code library for Arduino, STM32, Chipkit, Raspberry Pi, and BeagleBone Black
- Small form factor
- Power supply at 5 V, 70 mA
- Low power mode at 5 V, 20 mA
- Frame buffer of 384 kB
- Resolution support for UXGA, SVGA, VGA, QVGA, CIF, and QCIF
- Image format support for RAW, YUV, RGB, and JPEG (Figure 8-17).

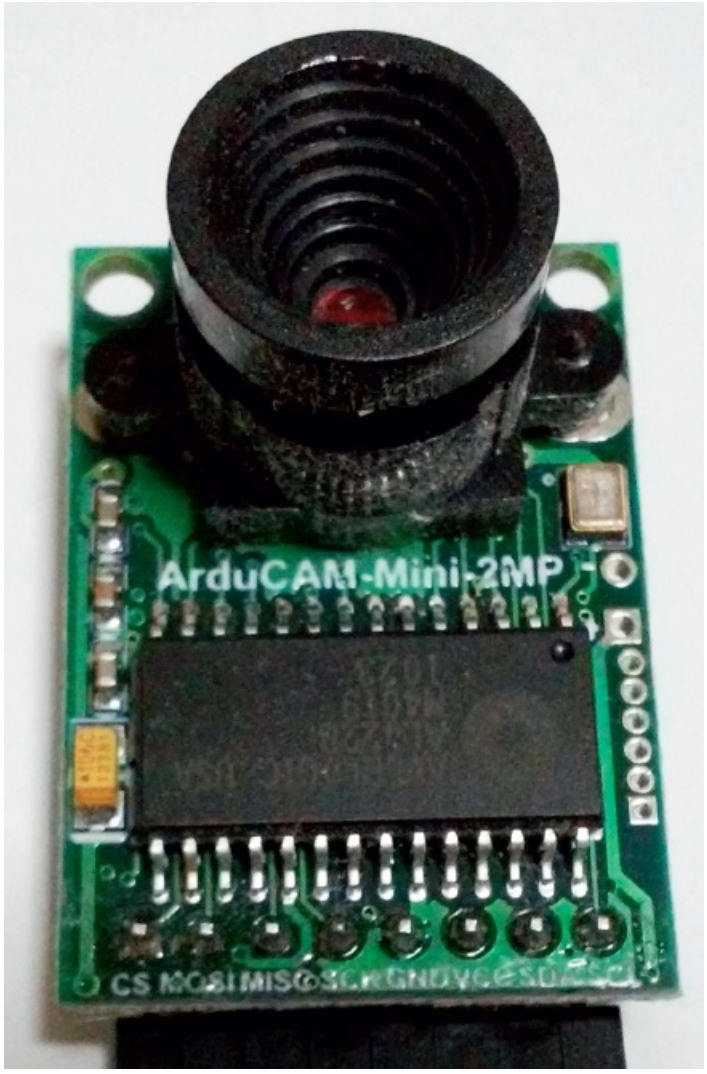

Figure 8.17. ArduCAM OV2640 minicamera.

8.4.2. ArduCAM Minicamera Library Software Installation

To use the ArduCAM minicamera with your Arduino, you will need to download and install the ArduCAM libraries from the ArduCAM website: www.arducam.com. Once you have downloaded the zip file, you will need to uncompress it using a program such as 7-Zip and install the two directories ArduCAM and UTFT4ArduCAM_SPI under the libraries directory for Arduino. For example, on my Windows XP system, I have installed the ArduCAM libraries in my Program Files/Arduino/libraries directory by copying the two directories to this libraries directory. After doing this, you should be able to compile source code that includes the ArduCAM library. For the example projects in this book, I used version 3.4.7 of the ArduCAM library, which was released on August 8, 2015.

8.4.3. The Memory Saver Include File

Change the memorysaver.h include file located in the ArduCAM library directory so that the following line is uncommented:

#define OV2640_CAM

This includes the camera register information needed for the ArduCAM OV2640 mini camera.