

Hardware Review Dithertizer II

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The Dithertizer II, a new video -digitizer interface for the Apple II computer, creates high -resolution digitized images that can be printed on any printer that has graphics capability. Most Apple users have probably seen graphics demonstrations with pictures of Winston Churchill, Albert Einstein, or soccer balls. These "pictures" were all created by a video digitizer.

Designed by David Hudson of Computer Stations Inc., the Dithertizer II uses a video camera with external synchronization to load any image that can be captured by the camera into the memory (high- resolution - graphics pages) of an Apple II. The Dithertizer II is a "frame - grabber," direct- memory- access -type (DMA) digitizer, requiring only one frame or 14,0 second to capture a binary image. The software lets you create pictures in either of two ways: (1) as a "dithered" gray scale built from multiple binary (black- and -white) images, or (2) as image - intensity contours, using image subtraction from two frames. The number of frames required to create a dithered image is dependent on the dither matrix size, which is selectable via the software. You must use game paddles to adjust the contrast and density of the image being created and view the results on the monitor.

Installation

I ran into a slight problem when I installed my Dithertizer II. The Dithertizer II interface card, which is inserted into slot 7 of the Apple, has two cables attached to it. The first cable has a 6 -pin DIN -type connector that attaches to a Sanyo video camera cable. The second cable is a two -conductor wire with a "piggy- back" IC (integrated circuit) socket at its end. The instructions told me to remove the 74LS34 IC at location C -14 on the Apple's motherboard and replace it with the adapter socket. The instructions placed great emphasis on the orientation of pin 1 when inserting the adapter socket. Next, I reinserted the 74LS34 IC into the adapter, which completed the installation. After checking the installation, I was ready to go. I mounted the camera on a tripod, aimed it at myself, and booted the software. According to the instructions, the display monitor should have displayed a dithered image. Unfortunately, Murphy's law prevailed -all I saw on the video display screen was diagonal scan lines. Turning the system off, I double- checked the installation. It seemed odd that when the adapter socket was inserted at location C -14, the two -wire cable should extend out the front of the socket rather than the back, especially since the inter- face card was located behind the socket. Even though pin 1 was properly oriented, I removed the 74LS34, reversed the socket, and replaced the IC. Holding my breath, I again turned the system on and behold, it worked. Obviously, the adapter had been mis-wired. Fortunately, no damage occurred.

The Dithertizer II software contains machine -language routines for frame -grabbing, dithering, and contouring. It includes a demonstration program, written in BASIC, that shows the use of all three routines. The software is supplied in DOS 3.2.1 format, and I had no problem in MUFFINing it to DOS 3.3 format. Implementation Using the Dithertizer II is very simple. Game paddles are used to adjust the displayed image. Paddle 0 sets the black level, while paddle 1 adjusts the contrast or gray tones. Other options, selectable via single- keystroke commands, allow dithering, contouring, freezing the image, saving image to disk, printing the image, and more. Pressing H (for HELP) will display a menu listing all commands and options. The documentation is short, but it is complete and easily understood. After reading it, I started experimenting, and it took me only a few minutes to become accustomed to image processing. The only part I had difficulty with was determining the amount of gray scale required to create a well-balanced or shaded image. With a little trial and error, I was soon printing good -quality images. Focusing the camera is important in order to create a sharp image. The Sanyo camera is not a conventional video camera as used on VCRs (video -cassette recorders), but a commercial camera like those used in closed- circuit systems. Unlike VCR -type cameras, the Sanyo does not have through-the -lens viewing to facilitate focusing. The focusing adjustment ring on the lens is calibrated reasonably well; however,

it is difficult to obtain accurate focusing at close range. To overcome this problem, I attached a cable to the RF (radio- frequency) output connector of the camera and then connected it temporarily to the input of my video monitor. This allowed me to focus the camera accurately. Then I disconnected the cable and plugged the monitor back into the Apple. Incidentally, you can make close -up shots (as close as two to three inches) by carefully unscrewing the camera lens to change its focal length. Also, use a white background if you plan to do portrait or high -contrast work (see figure 1). A white background allows better resolution and detail. Despite the fact that the Sanyo camera is designed for black- and -white images, I found that I was able to achieve better gray scale and shading by using a color video monitor. The color monitor displayed some gray shades as "blue over gray." This enabled me to determine differences in gray scale, which ultimately resulted in higher - resolution images. A black- and -white monitor made this slightly more difficult to accomplish. As supplied, the software does not have print routines installed. Assuming you have a printer with dot -graphics capability, you must either write your own print drivers or purchase Computer Stations' Enhanced Graphics Software. This software is available for Integral Data Systems Paper Tiger printers as well as for the NEC Spin - writer models 5510 and 5520 and Anadex models DP9500 and DP9501. The addendum I received with the documentation instructed me to make several changes in the demonstration program to call up the required print routine. Additional information concerning the various machine -language routines used is included to assist you in writing your own special -application programs.

Conclusions

The Dithertizer II is a well-constructed video digitizer that does all that its manufacturer claims. The interface card consists of seven ICs, plus a handful of other components, and is very clean in construction. At first glance, the Dithertizer II seems a little overpriced, considering the number of components on the circuit board. However, when you take the developmental costs into consideration, the price seems quite reasonable. Preliminary releases of the Dithertizer II had only a seven -page instruction manual; it was easily understood and quite complete. George Baltzell of Computer Stations has informed me that new, expanded documentation is now being shipped with the product. Practical applications? Aside from hobbyist uses, other applications might include motion detection for security systems, an attention -getter for trade shows, advertising, artwork layout (see figure 2), and photo- studio uses. My primary reason for getting the Dithertizer II was for promotional and publicity -type advertising. (I offer a free portrait to any of my customers.) All in all, I have been quite pleased with the product, and we plan to put it to use not only here, but in the grand openings in several of our new stores.



Figure 1: A "dithered" image of the author, as rendered by the Dithertizer II.