

Abstracts of Papers From Other Journals

Abstracts of papers appearing in other journals are, from time to time, published in the SMPTE Journal. The abstracts are chosen for their importance and possible value to researchers as well as for their timely interest.

Graphics Systems Attain a More Powerful Status, Len Yencharis, *Electronic Design*, 28: No. 17, 65-68, 16 Aug. 1980.

The state of computer graphics is being changed significantly by the standardization of software, improvements in raster scan performance, and interactive real-time processing via videodisk. In the future, software packages will be more user-oriented in order to accommodate nontechnical users and the rising demand for pictorial information. Applications of advanced technologies, such as videodisks, optical printing, and parallel processing, are helping graphics designers to solve more real-time problems,

including animation and signal processing. These advances were discussed at the SIGGRAPH '80 Conference (SIGGRAPH = Special Interest Group on Graphics), held in Seattle, Washington, 14-18 July 1980, and sponsored by the Association for Computing Machinery. Raster-scanned graphics terminals provide several features not found in standard line-drawing displays, but raster-graphics images are relatively difficult to rotate and zoom smoothly. An algorithm has now been proposed, however, for completely continuous rotation and zoom, with the operations that are used permitting real-time implementation with simple hardware. Other topics covered at the conference included a new sampling technique for filtering pixel data and a new low-cost frame-store display system that can generate real-time animation effects using colored polygonal shapes. The videodisk is gaining increased importance in the field of real-time graphics imaging. Its potential becomes appar-

ent when it is regarded, not as a consumer product for providing continuous video, but rather as a device capable of storing 54,000 unrelated images.

CCD Integration Techniques for Clutter Reduction in Radar Systems, C. P. Traynar and J. D. E. Beynon, *Radio and Electronic Eng.*, 50: 243-248, May 1980.

Substantial signal-to-clutter improvements are theoretically achievable using CCDs to integrate a large number of returns. In practice, however, the performance of simple CCD implementations is severely limited by charge transfer inefficiency, particularly if large range and high resolution are required. This paper describes several ways in which the effects of transfer inefficiency can be overcome or avoided.

Master Switching Control Panel for Broadcast Studios, Irfan Ullah, *EBU Technical Review*, 69: 3-8, July 1980.

This paper describes the design of a master switching control panel for use in the control room of a large broadcasting house. The switching console is capable of preselecting and thereafter switching, at the precise moment, a large number of input program sources to a large number of output program lines in a predetermined combination. To give flexibility to the capacity

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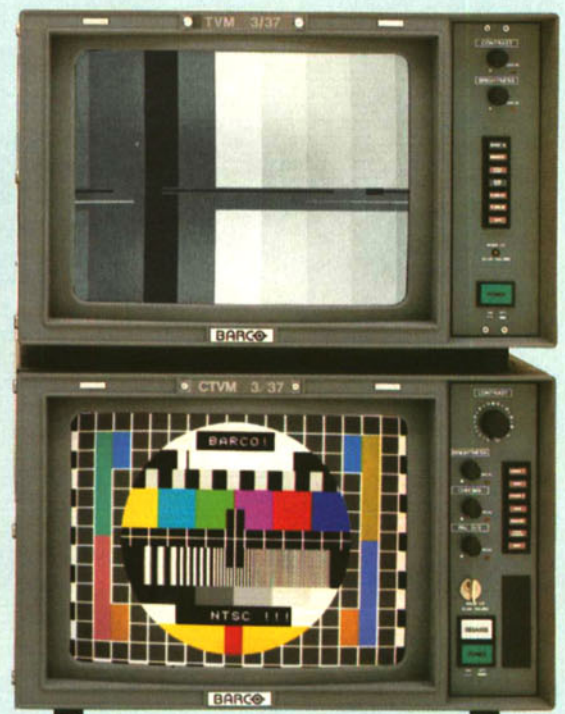
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of the console, modular construction is used so that any number of inputs may be switched to any number of outputs simply by increasing the number of modules. The console described in this paper is capable of switching 10 program sources to 10 outgoing lines. Electrical interlocking is provided so that it is not possible to switch more than one program source simultaneously to the same output line. The design is based totally on solid state electronics and does not use any electromechanical relays.

Laser Beam Scanners Constructed From Volume Holograms, Steven K. Case and Volker Gerbig, *Optical Eng.*, 19: 711-715, No. 5, Sept./Oct. 1980.

The scan flexibility of computer-generated holographic laser beam scanners has been combined with the high diffraction efficiency of volume phase holograms to produce a new type of "holo-scanner." The scanner hologram consists of numerous, small, volume hologram facets recorded in dichromated gelatin films and produces an arbitrary output pattern with greater than 90% light efficiency. Experimental results for discrete point, continuous line, and 3-D scanners are shown. Multiwavelength and materials processing scanners are also considered.

Some Experiments in Digital Holographic Recording, K. Hacking, *The Radio and Electronic Eng.*, 50: 367-373, July 1980.

A holographic recording system based on the use of low-power laser sources and high-resolution photographic film is briefly outlined. It was devised principally for the archival storage of high quality digital television signals and these requirements are reviewed. The development of suitable electro-optic transducers is difficult, largely because of the high data transfer rates involved, but some progress has been made. Experimental versions of the transducers have been assembled to form a recording apparatus for writing and reading investigations at real time rates. The results of some initial experiments are given which illustrate various problems that have been encountered, particularly with regard to the recording medium.

Holographic Displays: 1975-1980, Stephen A. Benton, *Optical Eng.*, 19: 686-690, No. 5, Sept./Oct. 1980.

Three-dimensional holographic images are becoming more widely used as more practical white light illumination techniques are developed, more varied types of images are represented, and lower production costs are attained.

Inter-Field Interpolated Sub-Nyquist Sampling of NTSC Signals Obtained From Still Pictures, Masahiko Achiha and Kazuo Ishakura, *J. Institute Television Engineers of Japan*, 34: 498-503, June 1980.

For still picture filing and refreshing equip-

ment, interfield interpolated sub-Nyquist sampling at $2f_{sc}$ of NTSC signals has been proposed. Several sampling frequencies with 180° phase offset between 262 horizontal scanning intervals and characteristics of the interfield comb filter are described. Aliasing components caused from the interfield sub-Nyquist sampling are efficiently rejected by the interfield comb filter. Reconstructed picture quality obtained by the interfield sub-Nyquist sampling is very good and much better than that obtained by the usual intrafield sub-Nyquist sampling methods.

A compact frame memory adopting the interfield sub-Nyquist sampling has been developed. The 262H delay memory of the inter-field comb filter utilizes a part of the frame memory. Because high quality (and low cost) still picture equipment has been developed, still picture service systems can be economically realized.

Predictors for Intraframe Encoding of PAL Picture Signals, H. Gharavi, and R. Steele, *IEE Proc. Part F*, 127: , 205-211.

A predictor based on three previous pels (picture elements) is examined for DPCM encoding of composite PAL signals. The predictor coefficients are described in terms of the ratio of sampling frequency to color subcarrier f_{sc} . Predictions based on pels on the second previous and previous lines are derived for the case of $f_s/f_{sc} = 2.5$. Simple two-dimensional predictors are then formed and used in the DPCM encoding of a PAL color-bar signal.

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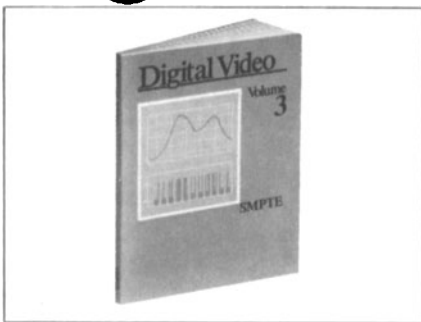
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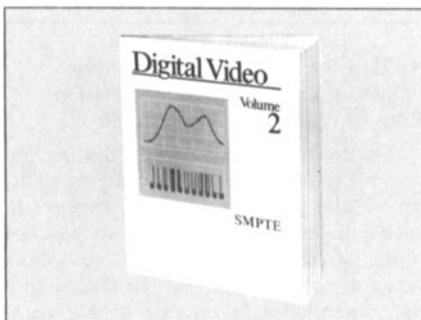
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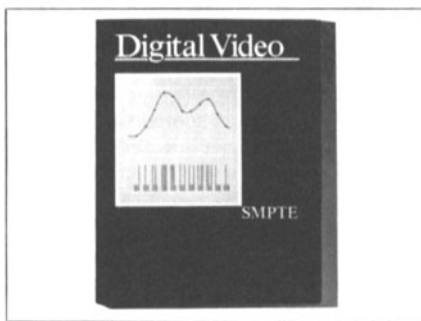
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