
ABSTRACTS OF PAPERS FROM OTHER JOURNALS

Development of an Imaging System for Ophthalmic Photography, Joseph W. Warnicki and Paul Rehkopf, *Journal of Biological Photography*, 53:9, January 1985.

Ophthalmic photography, almost unknown 20 years ago, has developed rapidly as a specialty. The limitations of traditional photographic techniques and the development of new imaging technologies suggest that the barriers have yet to be reached. A team at Eye & Ear Hospital in Pittsburgh, and PAR Microsystems Corp. combined the advantages of emerging technologies in computers and video imaging with traditional ophthalmic equipment to design a system that electronically collects and manipulates images. This paper describes the major components and physical layout of this system as well as its method of operation, and sets forth some of the design considerations.

Planning Synthesis for VHF/FM Broadcasting, K. J. Hunt, *EBU Review*, p. 195, October 1984.

This article describes a computer planning process developed by the Independent Broadcasting Authority for the analysis and synthesis of frequency plans for VHF/FM broadcast transmitter networks. The synthesis process is based on a "worst transmitter, first choice" philosophy which ensures that all new stations to be incorporated in an existing plan will be found frequencies in the part of the spectrum under investigation. Constraints due to existing transmitters or to possible incompatibilities as regards frequencies of geographically adjacent transmitters are taken into account.

The Transmission of Music in Teletext, Y. Kimata, Y. Araki, and K. Sato, *EBU Review*, p. 246, December 1984.

After introducing the second-generation Japanese teletext system, the article describes a system that adds a musical dimension to teletext transmissions through the inclusion of data used to drive a low-cost synthesizer in the receiver. General descriptions are given of the principles of note encoding, methods of data generation, receiver configuration, and possible applications.

Digital Implementation of a Narrowband Satellite Receiver, C. P. Ash, *IEE Proceedings-F*, 131:570, October 1984.

This paper describes the use of a general-purpose digital signal processor in the narrowband sections of a satellite receiver.

The receiver is an experimental laboratory-based tool for investigating the suitability of various demodulation schemes for use with low-cost mobile terminals. To this end, six receiver types were implemented; details of three are presented. The architecture of the signal processor used is also described.

Parallel Computations of Optic Flow in Early Image Processing, B. F. Buxton, H. Buxton, and B. K. Stephenson, *IEE Proceedings-F*, 131:593, October 1984.

Current calculations of optic flow from the motion of edge features in an image sequence are used to illustrate the implementation of low-level image processing calculations on an SIMD (single instruction multiple data) machine. Most of the computational effort in the optic flow calculations is required for carrying out large, multi-dimensional, spatio-temporal convolutions over the image data, which may be carried out efficiently in parallel by mapping the image pixels into the processor array. Examples show that computation times consistent with video data input rates can easily be achieved. Later stages of the optic flow calculation, after moving edge features have been detected, are also carried out in parallel, although the computations are no longer completely uniform over the image data arrays. A VLSI processor array, embodying many of the features required for low-level image processing calculations, is described.

Fast Numerical Methods for Calculation of Electric and Magnetic Fields Based on Potential-Flux Duality, P. Hammond, M. C. Romero-Fuster, and S. A. Robertson, *IEE Proceedings-A*, 132:84, March 1985.

By discretizing the field into slices and tubes, upper and lower bounds to the energy of a system are obtained. Each slice carries the same flux and each tube has the same potential at its ends. This makes the best possible use of the input data and avoids the necessity for solving a set of simultaneous equations, which is a characteristic feature of the usual finite-element method. Savings in computer time of one order of magnitude can be achieved in small problems, and several orders of magnitude are likely in large problems.

The Effect of a Heater on the Initiation of Discharges in High Pressure Gases, Ryo Suzuki, Masato Saito, and Keiji Watanabe, *IES Journal*, 14:240, October 1984.

High-intensity discharge (HID) lamps are extensively used, mainly outdoors. Re-

cently, because of their high luminous efficacy and compact size, low-wattage HID lamps have been developed for indoor lighting. One of the problems associated with the indoor use of HID lamps is that they cannot be re-struck instantly once extinguished, because the breakdown voltage of the lamp is higher than the voltage provided from a lamp-operating circuit due to the high mercury vapor density in the arc tube. The effect of a heater on the breakdown voltage in high-pressure mercury vapor was examined. Mercury vapor density in the tube that had the heater was controlled in a furnace, and the breakdown voltage was measured, with encouraging results with respect to lowering the supply voltage for hot re-strike.

RMSP: A Modular System for Recycling and Treatment of Photographic Effluents, Klaus L. Wahl and Wolfgang Brauer, *Journal of Imaging Technology*, 10:217, December 1984.

The recycling module system photo (RMSP) is a versatile ion-exchange and adsorber system for color developer recycling, bleach fix purification, and water wash desilvering. Central to the system is an ion-exchange column divided into four cartridges that hold the resins or the adsorbents. Additional modules such as pump units, control units, or tubing and valves are added for various applications. By combination of various units, the system can be adapted to the size of the laboratory. The regenerator for color developer recycling is provided as a kit and only monitoring of pH and total alkalinity is necessary. In wash water, desilvering the reactivation of the resins is done with a desilvered fixing bath, and the silver is recovered by electrolysis.

An In-Flight Refocusing Method for the SPOT HRV Cameras, G. Begni, D. Leger, and M. Dinguirard, *Photogrammetric Engineering & Remote Sensing*, 50:1697, December 1984.

The focus of the two high-resolution visible (HRV) cameras on board the SPOT satellite can be adjusted in a step-by-step manner to correct for changes in focus that may be introduced during launch and orbit insertion. A method is proposed in which one camera is refocused by reference to the other, using a statistical criterion based upon the ratio of the mean image spectra. The choice of this criterion is discussed, and simulations are described that use digitized aerial photographs to verify the choice. These simulations show that at least three refocusing operations, using different image pairs, are needed if the camera is badly defocused, and that a small number of image pairs are necessary to perform each of these refocusing operations. Under operational conditions, a week is necessary to refocus the two cameras.

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