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# ABSTRACTS OF PAPERS FROM OTHER JOURNALS

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**The Business of VLSI**, C. A. P. Foxell, *IEE Proceedings-A*, 131:17, January 1984.

Very large scale integration (VLSI) represents not only the threshold of a capability for combining over 100,000 electronic components on a die of silicon, but also another stage in the growth of a volatile industry. The feat of harnessing a wide range of technologies to achieve this degree of integration, and even to hold out the prospect for evolution to  $10^6$  elements and beyond, tends to obscure the fact that this is also being implemented in high manufacturing volumes, and at ever decreasing costs.

It is expected that the rapid growth of integrated-circuit production will continue through the next decade. However, the industry has now reached a point where fundamental changes are likely, and the pressures resulting from the manufacturing commitments and the market reactions will come to dominate the technical influences. VLSI, especially via the leverage of electronic systems, now represents a major influence on world economies, and the commitment to cost-effectively produce such devices in volume stretches the resources of even the largest companies.

The objective of this address is to outline, against the background of the evolution of the IC industry, the wide consequences of VLSI technology, which, by the contribution it makes, and the magnitude of the resources needed to even participate, raises issues at national and strategic levels that are likely to be determining factors in the future direction of the industry.

**Photogrammetric Data Acquisition Using an Interactive Computer Graphics System**, M. T. Erez and E. Dorrer, *Photogrammetric Engineering & Remote Sensing*, 50:183, February 1984.

Acquisition of digital photogrammetric data is discussed. The system used entails interactive digitizing, verified on-line either by a digital plotting table or by a direct view storage tube. The performance of both of these devices is evaluated. The hardware and software of an experimental setup based on a Tektronix 4054 graphics system is described in detail, with special emphasis on the user's software developed at Bundeswehr University in Munich. The application of visual signals, prompts, texts, and audio signals to maintain interactivity with the operator are explained. Finally, taking into account

technological advancement, the trend for future developments is indicated.

**Applications of Single Electron Transfer Theory to the Study of Problems in Photographic Technology**, M. R. V. Sahyun, *Journal of Photographic Science*, 31:243, November/December 1983.

Most imaging technologies involve electron transfer in some form or other. An understanding of the dynamics of these processes is thus fundamental to the analysis of the existing technologies and design of new ones. Single electron transfer theory (SET), especially as embodied in the Marcus equation, provides a useful conceptual framework. Its application to the problems of photoconduction, photographic development, and spectral sensitization of electrophotographic and photochemical imaging systems is illustrated in this review.

**Acousto-Optic Channelized Receivers**, Peter Kellman and Todd R. Bader, *Optical Engineering*, 23:2, January/February 1984.

Acousto-optic channelized receivers are modeled in terms of key performance criteria and critical component and system design parameters. Examples of current state-of-the-art receivers are presented that include an integrating channelized radiometer and a miniature parallel output channelized receiver.

**Restoration of Nonlinearly Distorted Magnetic Recordings**, D. Preis and H. Polchlopek, *Journal of the Audio Engineering Society*, 32:26, January/February 1984.

An efficient method of restoring nonlinearly distorted magnetic recordings is presented. Given the distorted recording and the actual recording device or a model of the record-reproduce process, the original input signal can be computed iteratively. Results from several computer simulations using a variety of nonlinear and linear distortions with different test signals are included. The algorithm converged with fewer than 40 iterations in all simulated restorations.

**Constructing an Imaging Operator to Enhance Resolution**, Hua Lee and Glen Wade, *Journal of the Acoustical Society of America*, 75:499, February 1984.

Constructing a real-time, high-resolution imaging operator is an important objective in image reconstruction. It is especially desirable for holographic,

tomographic, and synthetic aperture radar systems with limited detection apertures. This paper introduces a method of constructing such an operator by using the step size generated from the steepest descent algorithm to improve the resolution of backward-projected images. With this operator, we can overcome resolution limitations due to small-sized apertures, and it is not necessary to go through tedious computations as with iterative algorithms.

**A Tunable Laser Diode**, *Photonics Spectra*, 17:22, May 1983.

Bell Laboratories has announced a new class of semiconductor lasers with revolutionary potential in fiber optic communications. Called the cleaved coupled-cavity or  $C^3$  laser, this device is reported to be the first practical communications laser tunable from one ultrapure frequency to another. The new laser is expected to improve transmission length and capacity for optical fibers and thereby reduce the volume of components needed for an optical communications system.

**Television Broadcasting in Italy**, Dario Calebrese, *International Broadcast Engineer*, 15:45, January 1984.

At the beginning of 1972, the average Italian television viewer could receive on his home screen only two programs, broadcast by RAI, a state-controlled company. These two channels were monochrome, and broadcasting time was restricted to evening hours. Today there are 10 to 20 channels, all in color (PAL). Most of them broadcast 12 to 18 hours a day, and a few broadcast 24 hours a day. This paper explains how and why these extraordinary changes have occurred in such a relatively short time.

**Understanding Television: An Exploratory Inquiry into the Reconstruction of Narrative Content**, Kathy A. Krendl and Bruce Watkins, *Educational Communication and Technology Journal*, 31:201, Winter 1983.

This paper examines the claim that television is a "passive" medium, one that does not actively involve the viewer cognitively in ways usually associated with mature information processing. Evidence is reported that suggests active and differential processing of television information by viewers and an increase in the level of sophistication in understanding the medium.

**Image Resolution in Motion Pictures and Television**, (in Russian), L. G. Tarasenko, *Tekhnika Kino i Televidenya*, 61, February 1984.

The author analyzes the potential of high-definition television systems in comparison with the image quality obtained in cinematography.