



## Editorial

Jack D. Gaskill, Editor

### Some *Optical Engineering* Publication Statistics

I haven't presented any publication statistics for the journal for quite some time, so I decided to bring you up to date just a bit. The figures shown below are actual figures for each of the categories listed for the three-year period 1986-1988.

	<u>1986</u>	<u>1987</u>	<u>1988</u>
No. of papers published on special-issue topics	95	119	74
No. of contributed papers published	100	60	100
Total No. of papers published	195	179	174
No. of technical pages published	1319	1242	1085
Average No. of pages per technical paper	6.8	7.0	6.2
Percentage of technical pages paid by authors	71%	81%	66%

I'm not certain that any conclusions can or should be drawn from these statistically insignificant data, but it is interesting nevertheless to note the fluctuations that have occurred. One ingredient that is not reflected in these numbers is quality, and it is my impression that the quality of the papers submitted for publication in *Optical Engineering* has generally improved with time. This impression is based on my own evaluation of the papers, as well as the comments passed on to me by many readers, and this pleases me very much. My congratulations to all of the authors and guest editors whose hard work and high standards have helped improve the journal.

## Future Special Issue Calls for Papers

January 1990

### Laser Radar

#### Guest Editor

Dr. Richard J. Becherer  
Science Applications International Corp.  
1040 Waltham Street  
Lexington, MA 02173-8027  
617/863-5173

The January 1990 special issue of *Optical Engineering* will be devoted to the subject of laser radar. Topics to be covered include the full range of systems applications, component technology, advanced system design, laser radar signal processing architectures and algorithms, phenomenology, and measurements. Within this range of topics the intent is to provide a broad overview of current state-of-the-art technology as well as technology trends that will determine the capabilities of future systems. Application areas to be addressed include research, defense, industrial, and environmental, among others. Authors are encouraged to submit manuscripts for consideration on any of the above or related topics to the Guest Editor by July 15, 1989.

March 1990

### Photonic Switching and Interconnects

#### Guest Editor

Dr. Abdellatif Marrakchi  
Bell Communications Research  
331 Newman Springs Road  
Room NVC 3X-115  
Red Bank, NJ 07701-7020  
201/758-3318

The March 1990 special issue of *Optical Engineering* will be devoted to the subject of photonic switching and interconnects. This field has grown to a point where one cannot think of a major optics conference without at least a session devoted to photonic switching. Even topical meetings are now held annually on this topic, and on optical interconnects as part of optical computing. Therefore, I believe that the publication of this special issue will be both timely and an important contribution. Papers in the issue will address topics related to switching architectures and systems that emphasize the role of photonic switching and interconnects, such as

- facility, protection, circuit, and packet switching systems and
- code-, time-, frequency-, space-, and wavelength-division-multiplexed architectures based on both passive and active components,

and issues related to device technologies, such as

*Continued on other side*

- integrated optics devices on dielectric and semiconductor substrates,
- liquid crystals, electro-optic materials, and multiple quantum wells for spatial light modulation, and
- photorefractive materials and devices for dynamic interconnects.

Authors wishing to have their papers considered for publication in this special issue should submit three copies of their complete manuscripts to the Guest Editor for review by Sept. 1, 1989.

May 1990

## Image Restoration and Reconstruction

### Guest Editors

Dr. M. Ibrahim Sezan  
Eastman Kodak Company  
Photographic Research Labs.  
Bldg. 65, First Floor  
Rochester, NY 14650-1816  
716/477-8356

Dr. A. Murat Tekalp  
University of Rochester  
Electrical Engineering Dept.  
Rochester, NY 14627  
716/275-3774

Image restoration refers to the problem of undoing the degradations introduced to a recorded image. Degradations may be caused by random noise (e.g., film or sensor noise) and by blur (random or deterministic), such as the blur due to relative motion between the subject and the imaging system and/or due to out-of-focus lenses. Image reconstruction is the problem of generating an image from data (possibly noisy and/or incomplete) that are not in image format to begin with, e.g., image reconstruction from projections.

In general, there is no hard boundary between these two problems. In fact, they share common mathematical grounds: both are inverse and usually ill-posed problems. Both restoration and reconstruction algorithms use a priori information about the degradations and the actual image to obtain a regularized solution to the problem. Therefore, estimation of unknown degradations and image parameters are of interest. The blur may be space invariant or space variant. On the other hand, noise may be signal dependent or signal independent. Adaptive image restoration algorithms take into account the space variability of the blur, image parameters, and the signal dependency of the noise. Adaptive, nonlinear algorithms may be motivated by the desire to suppress restoration artifacts caused by linear algorithms.

The field of image restoration and reconstruction is constantly growing. It is of great importance in applications ranging from space research, forensic science, and consumer/commercial photography to medicine. For this special issue, authors are encouraged to submit manuscripts on any of the following topics:

- theory of the regularization of inverse, ill-posed problems as applied to image restoration and reconstruction,
- linear and nonlinear image restoration algorithms,
- adaptive filtering for image restoration with suppression/removal of restoration artifacts,

- restoration of space-variant degradations,
- identification of unknown degradations and image parameters,
- restoration of multispectral images,
- tomographic image reconstruction (MR, x-ray, diffraction tomography, PET, SPECT, etc.),
- image reconstruction from incomplete data, and
- applications.

Prospective authors should submit four copies of the manuscript to one of the guest editors before Oct. 15, 1989.

July 1990

## Signal and Image Processing Systems Performance Evaluations

### Guest Editors

Firooz Sadjadi and Hatem Nasr  
Honeywell Systems and Research Center  
MN65-2300  
3660 Technology Drive  
Minneapolis, MN 55418  
612/782-7543

The July 1990 special issue of *Optical Engineering* will be devoted to the subject of signal and image processing systems performance evaluations. Topics to be covered include

- signal and image metrics,
- evaluation methods,
- experimental design,
- performance measures and system decomposition,
- phenomenological modeling of targets and background,
- data collection,
- data characterization,
- signal and image synthesis for evaluation,
- sensitivity analysis,
- comparative analysis of different systems,
- advanced concepts,
- artificial intelligence based techniques,
- automated diagnostics, and
- neural network based systems evaluations.

Within this range of topics the intent is to provide a broad overview of the current state of the art and the trends for future technology developments. Application areas include research, defense, and industry.

Authors are encouraged to submit manuscripts for consideration on any of the above or related topics to the Guest Editors by Nov. 15, 1989.

"Information for Contributors to *Optical Engineering*" on p. 572

Complete Editorial Schedule on p. 500