This seminar is devoted to the utilization of guided optical communications in the following areas: computer interconnections, process control, instrumentation, broadband networks (CATV, wired buildings, wired communities, etc.), armed services applications (field communications, submarine cables, avionics, shipboard systems, etc.), non-military governmental applications (municipal services, atomic energy, space program, etc.).

The seminar will provide an opportunity for participants from many disciplines to assess the state-of-the-art in this rapidly growing field, and in particular to become familiar with the devices and systems currently being planned and implemented.

The four sessions and the papers to be presented are:

**PERSPECTIVE ON TECHNOLOGY AND COMPONENTS:** Transmission Properties of Optical Fiber Waveguides • Current Practices in Glass Optical Waveguide Fabrication • Fiber Coupling Components • Opto-Electronics and Interface Electronics.

**SYSTEM DESIGN:** System Design Methodology for Guided Optical Communication Links • Wideband Signal Transmission over Optical Fiber Waveguides • Long-Distance Repeatered Fiber Optical Communication Systems • Optical Link Design • Designing of Optical Links Consisting of Converters, Cables, and Connectors for Different Digital Transmission Applications • Signal-to-Noise Ratio Improvement of Analog Pulse Position Modulation over Analog Intensity Modulation in Optical Communication Links.

**SOURCES AND INTERCONNECTIONS:** Light-Emitting Diodes and Injection Lasers for Fiber Optic Communication Systems • Surface-Emitting Sources for Optical Waveguides • A Half-Kilometer, 150 M bit/sec. Data Link Experiment Using a Striped-Geometry LED • Connectors for the Medium Loss Optical Waveguide System • Low-Loss Splicing and Connection of Optical Waveguide Cables • Access Couplers for Multiterminal Fiber Communication Systems • Components for Optical Communications.

**DEDICATED SYSTEMS:** Application of Fiber Optics to Computers • Application of Optical Waveguides to Army Communications • Navy Applications of Fiber Optics Communications • Fiber Optic Multiplexed Optical Transmission Systems for Space Vehicle Launch Facilities • Design of an Optical Fiber Cable Link for Lighting Instrumentation • Fiber Optic Delay Lines for Use in Time-Delay Multiplexing of Optical Images • Second-Generation Medical Argon Laser Photocoagulator Using Low-Loss Fiber Optic Delivery System.

**EFFECTIVE TRANSMISSION OF PICTORIAL INFORMATION**

This meeting addresses various problems associated with effective transfer of visual information through communication channels. What is meant by visual information may be anywhere from multi-spectral aerial scenes to newspaper print describable by two levels of gray. The following fields, as appropriate to image transmission, will be discussed: digital image representation; image coding; psychophysical considerations; channel effects; image quality and display technology.

Papers will also be presented on present and proposed advanced applications which involve novel implementation concepts or unusual requirements. Both commercial as well as government-sponsored applications will be considered.

The five sessions and the papers to be presented are:

**FUNDAMENTALS OF IMAGE DATA COMPRESSION:** Reasons for Data Compression—An Introduction • Overview of Human Observer Characteristics and Their Effect on Image Transmission & Display • Image Scanning & Signal Processing • Coding of Two-Tone Images • Source Coding of Television Signals Using Interframe Techniques • Bandwidth Compression of Multispectral Imagery • Application of Charge Coupled Devices for Bandwidth Reduction

**ADVANCED IMPLEMENTATIONS:** Image Processing with Haar & Block Transforms • Real-Time Video Compression Algorithms for Hadamard Transform Processing • Real-Time Television Image Bandwidth Reduction Using Charge Transfer Devices • Advanced Imaging Communication System for Planetary Exploration • Advanced Facsimile System & Network Applications • Operational Video Date Compression System for ATS & ITOS • CAQ Bandwidth Reduction System for RPV Video Transmission.

**POTENTIAL IMPLEMENTATIONS:** Joint Pattern Recognition/Data Compression Concept (HMI) for ERTS Multispectral Imaging • Dual-Mode Nonlinear Interpolative Compessor for SAR Images • Fast Optimum 2-Dimensional Transform • Singular Value Decomposition for Image Coding • TV Bandwidth Compression • DPCM Quantization Error Reduction for Image Coding • Combined Spatial & Temporal Coding of Digital Image Sequences.

**RELATED TOPICS:** Laser Scanner/Recorders for Image Transmission & Computer Processing • Real-Time Image Data Acquisition/Retrieval (Radar) System • Investigation of MSE Contributions in Transform Image Coding • Comparison of Hardware Implementations of Hadamard Transform for Real-Time Image Coding • A Teaching Stereo-Video Microscope • Tactical Terrain Computer Graphics • Development of CCD Diodes and Magnetic Focused Tubes Incorporating CCD Arrays for Operation in the EB Mode • Pictorial Information Transmission through Simulation • Three-Dimensional Perception Produced by Two-3-Dimensional Geometric Patterns Presented with Brief Exposure Time and Time Interval.

**19TH ANNUAL TECHNICAL SYMPOSIUM • EIGHT SEMINARS-IN-DEPTH INSTRUMENT & EQUIPMENT DISPLAY**

Town & Country Hotel • San Diego, California • August 18-22, 1975

In addition to the two seminars described above, six others will be held:

AUGUST 19-20: Modern Utilization of Infrared Technology • Ocean Optics • Design, Manufacture & Application of Metal Optics


Official Proceedings of all seminars will be available

PLUS...On Monday, August 18...An Interactive Special Working Session on THE BUSINESS SIDE OF OPTICAL ENGINEERING

For the complete program and registration forms, write or call

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