



The IEEE

# Newsletter

PUBLICATION OF THE NORTH JERSEY SECTION OF THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

*NJ Communications & Signal Processing Societies:*

## Extraction of Information from Compressed Digital Video

On November 25, 1997, the IEEE North Jersey Signal Processing Chapter, Communications Chapter, and the NJIT Center for Communications and Signal Processing Research will present a talk on "Extraction of Information from Compressed Digital Video." The speaker will be Professor Bede Liu.

### About the Talk

Moving images are becoming increasingly important in every aspect of modern life: entertainment, education, training, scholarly research, etc. There is already a large body of video material in repository and more material are added to this collection at a fast pace. It is expected that much of video material will be in compressed form.

For analog video, it is difficult to develop effective tools for search, browsing, navigation, etc. because of its sequential or linear nature of the media. Digital video offers the potential to overcome these limitations. However, in comparison with text based material, very few tools have been developed to date to make moving images a more useful information format.

A multimedia 'table of content' for a video containing images, audio, and temporal information would facilitate browsing of the video and navigating in a large collection of such material. It would also help us to develop tools to analyze the video.

One such 'table of content' is a recently introduced notion of Scene Transition Graph (STG) which can be automatically extracted from a compressed video. This talk will discuss the steps involved in its construction.

### About the Speaker

Bede Liu did graduate work at the

Polytechnic Institute of Brooklyn where he collected two degrees. He was hired by the Bell Laboratories as a Member of Technical Staff. After three years, he joined the faculty of Princeton University where he currently teaches, publishes, and gives talks.

Professor Liu has published 100 journal papers and 110 conference papers, coauthored senior text, and edited one research volume. He has obtained 5 patents with 2 more pending. His current research includes video coding (HDTV, low bit rate), digital library and medical imaging. He supervised 46 Phd's (including 6 joint supervisions), among whom 1/4 are Fellows of IEEE, 1/2 are teaching at universities in the U.S. and abroad. He won the IEEE Centennial Medal in 1984, IEEE Signal Processing Society Technical Achievement Award in 1985, IEEE Circuits and Systems Society Education Award in 1988, IEEE Video Technology Transactions Best Paper Award in 1994 and 1996, and IEEE Circuits and Systems Society Mac Van Valkenburg Award in 1997. He served in the IEEE Board of Directors in 1984 and 1985, as President of IEEE Circuits and Systems Society in 1982 and General Chair, and at the IEEE International Conference on Image Processing in 1995.

### All Welcome

All are welcome to attend. Free pre-meeting refreshments will be provided at 4:45 PM and the meeting will start 5:00 PM.

**Time:** 4:45PM, Tuesday, November 25, 1997. Election for SP Chapter Officials will be held prior to the talk.

**Place:** NJIT, 202 ECE Center, Newark, NJ.

**Information:** Yun Shi (973) 596-3501 (shi@tesla.njit.edu) or Nirwan Ansari (973) 596-3670 (ang@njit.edu).

*No. Jersey SMC Society:*

## Advanced Tutorials on Excel 7.0

On November 6, 1997, the IEEE North Jersey Systems, Man and Cybernetics Society Chapter will host the continuance of three or four (depending on interest) free tutorials and demonstrations by Mike Liechenstein on the development and usage of spreadsheets.

### About the Talk

The lectures will progress in sophistication, using Excel 7.0 as a vehicle. Applications in business and personal usage will be discussed, as well as the utility of spreadsheets in data analysis, data description (including graphical presentation), and projections. Database capabilities, such as sorting and data filtering, will also be examined.

The final lecture will cover some of the built-in statistical tools for estimation and forecasting (e.g., stock market time series projections), their interpretation and underlying assumptions. The presentations are progressively sophisticated and assume some prior knowledge (e.g., completion of the first tutorial or the equivalent, plus some familiarity with the Windows 3.X, 95, or NT environments).

### All Welcome!

You need not be a member of IEEE to attend and there is no charge for admission. Light refreshments will be served.

### Times:

2nd Tutorial -- 7:00 PM, Thursday, November 6, 1997.

3rd & 4th Tutorials - To be announced.

**Place:** Clifton Public Library, 292 Piaget Ave, Clifton, NJ, (973) 772-5500 for directions or see Newsletter web page.

**Information:** Dr. Mike Liechenstein (973) 471-0721 (m.liechenstein@ieee.org) or Mel Lewis (914) 964-3820 (m.lewis@ieee.org).

# NOVEMBER 1997

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### NEWSLETTER STAFF

Editor.....Theresa Saracinello  
Business Manager.....Keith Saracinello

**Deadline for receipt of material** is the 1st of the month preceding the month of publication. All communications concerning editorial and business matters, including advertising, should be sent to the Business Manager via e-mail at [k.saracinello@ieee.org](mailto:k.saracinello@ieee.org) or to *The IEEE Newsletter*, c/o Keith Saracinello, 96 Everett Rd, Parsippany, NJ 07054-3164, (973) 515-8829.

### IEEE NJ SECTION HOME PAGE

<http://megahertz.njit.edu/~ieeenj>

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<http://www.ece.stevens-tech.edu/~nar/inews>

### REPORT ADDRESS CHANGES TO:

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### SECTION OFFICERS

Chairman.....Arthur Greenberg  
a.h.greenberg@ieee.org (973) 492-1207  
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m.lewis@ieee.org (914) 968-2500 Ext. 2304  
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### Members-at-Large:

Amy Galarowicz (201) 818-3740  
a.e.galarowicz@ieee.org  
Dr. Haim Grebel  
Dr. Nirwan Ansari

*The North Jersey Section Executive Committee usually meets the first Wednesday (except holidays and December) of each month at 7:00 PM. Meetings are open to all members. For information on meeting agenda call Secretary Alan Stolpen (973) 822-1300, ext. 2416.*

## Nominations for New Fellows

Nominations for new Fellows to be announced in December 1998 must be submitted by March 1998 including all endorsements. For additional information call Ken Oexle, Awards Chairman, at (973) 386-1156.

### NJ PES/IAS:

## Satellite Power Systems

The November 20, 1997 meeting of the NJ Section Power Engineering and Industrial Applications Society will present a program on Satellite Power Systems. The speakers will be Dennis Hildenbrand and Richard McFadden.

### About the Talk

The presentation will cover the basics of the modern satellite power bus including system architecture, hardware and operational considerations.

### About the Speakers

Dennis Hildenbrand is a Senior Power Systems Engineer for Loral Skynet in Bedminster, NJ. Richard McFadden is a Power Systems Analyst for SAIC in New York City.

**Time:** 7:00 PM, Thursday, November 20, 1997

**Place:** GPU Energy, 300 Madison Ave., Morristown, NJ.

**Information:** Ken Oexle (973) 386-1156 or Dennis Hildenbrand (908) 234-7855.

## IAS/PES Officer Nominations

The following nominations are submitted for officers of the Industry Applications and Power Engineering Chapters:

IAS: Ken Oexle, Chairman  
Vittal Rebbapragada, Vice Chair.  
Won Kim, Secretary  
PES: Vittal Rebbapragada, Chairman  
Tom Piascik, Vice Chairman  
R. Natarajan, Secretary

The elections will be conducted at the joint IAS/PES technical meeting on November 20 at GPU Energy, 7:00 PM, 300 Madison Ave, Morristown, NJ.

## Discover How to Become a Senior Member!

You may be qualified for Senior Member Grade. Get information on becoming a Senior Member by contacting Don Weinstein, Kulite Semiconductor, One Willow Tree Road, Leonia, NJ 07605-2239, (201) 461-0900 ext. 234 mornings or Amy Galarowicz, Glatt Air Techniques Inc., 20 Spear Road, Ramsey, NJ 07446-1288, (201) 818-3740, FAX (201) 825-0389, e-mail: [a.e.galarowicz@ieee.org](mailto:a.e.galarowicz@ieee.org).

**PUT PHOTO HERE**

*New IEEE Fellows and other award winners gathered for a group photo at the section's recent awards reception.*

*IEEE LEO Chapter:*

## **Radiationless Transitions in Semiconductor Nanocrystals**

On Wednesday, the 12th of November 1997, the IEEE Laser and Electro Optics Chapter will present a talk on "Radiationless Transitions in Semiconductor Nanocrystals." The speaker at this meeting will be Louis Brus of the Department of Chemistry and Columbia Radiation Laboratory, Columbia University.

### **About the Talk**

Room temperature optical excitation of single CdSe nanocrystals in a confocal optical microscope reveals a fluorescence bistability or intermittency on a time scale of minutes. This effect is missed due to averaging in studies of ensembles. The photoinduced dark state appears to be a nanocrystal ionized by a sequential two photon process. An ionized nanocrystal has a low luminescence quantum yield due to a fast, purely electronic nonradiative Auger recombination of the electron-hole pair in the presence of a third carrier. Additionally, consideration of the size dependence of Auger processes in Si nanocrystals under steady state illumination indicates why the luminescence quantum yield is a strong function of size.

### **About the Speaker**

Lou Brus was a Distinguished Member of Technical Staff in the Materials Research Division of Bell Laboratories, Murray Hill, NJ, and joined Columbia in 1996. His interests include the chemical physics of molecules and nanocrystals in condensed phase. He has contributed to the chemical synthesis, spectroscopic characterization, and theoretical modeling of semiconductor nanocrystals. He currently serves on the Board of Trustees of the Gordon Research Conferences, and is a fellow of the American Physical Society. He won the Herman Bloch Award of the University of Chicago in 1995.

**Time:** 5:00-6:00 PM, Wednesday, November 12, 1997. Free pizza and soda will be served at 4:45PM.

**Place:** NJIT, Room 202, ECE Building, Newark, NJ.

**Information:** Haim Grebel (973) 596-3533.

## **North Jersey Section Activities November 1997**

**Nov. 5**—"NJ Section Executive Committee Meeting" – 7:00 PM, Plant 11, GEC-Marconi, 164 Totowa, NJ. Alan Stolpen (973) 822-1300, ext. 2416 or a.stolpen@ieee.org.

**Nov. 6**—"Advanced Tutorials on Excel 7.0 (2nd Session)" – NJ Section Systems, Man and Cybernetics Society, 7:00 PM, Clifton Memorial Library, 292 Piaget Ave, Clifton, NJ. Dr. Mike Liechenstein (973) 471-0721 (m.liechenstein@ieee.org) or Mel Lewis (914) 964-3820 (m.lewis@ieee.org).

**Nov. 12**—"Radiationless Transitions in Semiconductor Nanocrystals" – IEEE LEO Chapter, 5:00 PM, NJIT, Room 202, ECE Building, Newark, NJ. Haim Grebel (973) 596-3533.

**Nov. 13**—"Low Dimensional Quantum Structures Made by Man and by God" – NJ EDS/C&S/AP/MTT Chapters, 7:00 PM (Buffet 6:00 PM), NJIT, Room 202, ECE Center, Newark, NJ. Dr. Chandra Gupta (973) 633-4469 (GEC-Marconi), Dr. Richard Synder (973) 492-1207 (RS Microwave), or Dr. Edip Niver (973) 596-3542 (NJIT).

**Nov. 20**—"Satellite Power Systems" – NJ IAS/PES Chapters, 7:00 PM, GPU Energy, 300 Madison Ave, Morristown, NJ. Ken Oexle (973) 386-1156 or Dennis Hildenbrand (908) 234-7855.

**Nov. 20**—"Vagus Nerve Stimulation to Treat Intractable Epilepsy"—NY/NJ/LI EMBS, 7:30 PM, Rockefeller University, Weiss Building, Room 301, 1200 York Ave, NY, NY. Joel H. Levitt (718) 891-6460 or Edna Feher (212) 757-0610.

**Nov. 20**—"92nd Semi-Annual Seminar - INTRANETS"—NY Communications Society, 9:00 AM to 4:30 PM, United Engineering Center, 345 47th Street, New York, NY. Jim Barbera at j.p.barbera@ieee.org or by fax at (212) 465-8877.

**Nov. 21**—"One-Day Seminar: Industrial Electric Power Systems and Equipment"—IAS/PES Chapters, 8:30 AM to 5:00 PM, GPU Energy, 300 Madison Ave, Morristown, NJ. Dick McFadden (212) 239-8510 or richard.h.mcfadden@cpm.saic.com.

**Nov. 25**—"Extraction of Information from Compressed Digital Video" – NJ Signal Processing Chapter, Communications Chapter, and the NJIT Center for Communications and Signal Processing Research, 4:45 PM, NJIT, 202 ECE Center, Newark, NJ. Nirwan Ansari (973) 596-3670 (ang@njit.edu) or Yun Shi (973) 596-3501 (shi@tesla.njit.edu).

## **Members and Non-Members Welcome PLEASE POST**

NJ EDS, C&S, MTT/AP Chap.:

## Low Dimensional Quantum Structures Made by Man and by God

The IEEE NJ Section Electron Devices, Circuits and Systems, MTT/S/AP Society Chapters in conjunction with NJIT will host a talk November 13, 1997 on "Low Dimensional Quantum Structures Made by Man and by God." The speaker will be Dr. James L. Merz.

### About the Talk

In this talk we will describe a number of fundamental investigations of low dimensional quantum structures which utilize optical and atomic force measurement techniques to determine their physical properties. Examples will be drawn from research carried out at the University of Notre Dame and at the Center for Quantized Electronic Structures (QUEST) at the University of California, Santa Barbara.

We have studied a system of coherently strained, self assembling InGaAs/GaAs quantum dots grown by molecular beam epitaxy (MBE) in the so-called Stranski-Krastanov growth mode. Dots of unexpectedly uniform diameter result by making use of the transition from film to island growth. A combination of low temperature photoluminescence (PL), PL excitation (PLE), and selective PL (SPL) have been used to isolate dots of a common monolayer thickness, and to measure sharp delta-function density of states with unprecedented spatial and spectral resolution.

We have also investigated the growth of self-assembled dots in an alternate growth mode, where a remarkable phenomenon of "ripening" is observed to occur at room temperature. These studies were carried out in the wide-bandgap II-VI compounds of CdSe/ZnSe, and could have important implications for blue lasers and LEDs. In addition to PL studies, the experiments emphasize atomic force microscopy (AFM) investigations of the evolution of these dots over time.

### About the Speaker

Dr. Merz received a BS degree in Physics from the University of Notre Dame in 1959. He attended the University of Göttingen, Germany, as a Fulbright Fellow in 1959-60. He then attended Harvard University as a Woodrow Wilson Fellow and a Danforth Fellow, receiving an MA degree in 1961

and the PhD degree in Applied Physics in 1967. He joined basic research at Bell Laboratories in 1966, where he investigated the optical properties of compound semiconductors. In 1972 he served as Gordon McKay Visiting Lecturer on Applied Physics at Harvard University, and then returned to Bell Laboratories to work on GaAs optoelectronic devices and integrated optical circuits. In 1978 he joined the University of California, Santa Barbara, as a Professor of Electrical Engineering. He was appointed Chairman of the Department of Electrical and Computer Engineering in July 1982, Associate Dean for Research and Development of the College of Engineering from 1984 to 1986, Associate Vice Chancellor for UCSB from January to September, 1988, and Director of the Compound Semiconductor Research Laboratories (CO-SEARCH) at UCSB from 1986-1992. He was Director of the Center for Quantized Electronic Structures (QUEST), a NSF Science and Technology Center from February, 1989, until he moved to the University of Notre Dame as Frank M. Freimann Professor of Electrical Engineering in 1994. In 1996 he became Vice President for Graduate Studies and Research at Notre Dame.

### All Welcome

You do not have to be an IEEE member to attend.

**Time:** 7:00 PM, Thursday, November 13, 1997. Free buffet will be starting at 6:00 PM.

**Place:** NJIT, Room 202, ECE Building, Newark, NJ.

**Information:** Dr. Chandra Gupta (973) 633-4469 (GEC-Marconi), Dr. Richard Synder (973) 492-1207 (RS Microwave), or Dr. Edip Niver (973) 596-3542 (NJIT).

## HTML Instructors Wanted!

The North Jersey Section Education Committee seeks applications from potential instructors for an HTML course to be offered evenings in the spring of 1998. Since the advance preparations for the course require substantial lead time, interested candidates should submit promptly a course proposal accompanied by a resume emphasizing their experience with HTML and in teaching to:

Dr. Frederick Chichester, Chair  
IEEE North Jersey Section Education Committee  
56 Gordonhurst Avenue  
Upper Montclair, NJ 07043

Further information can be obtained by calling the IEEE North Jersey Section Education Committee information line at (973) 744-3065.

### IEEE New York Communications Society 92nd Semi-Annual Seminar - INTRANETS Strategies, Network Infrastructure, Groupware, Platforms and Applications

**Time:** 9:00 AM to about 4:30 PM, Thursday, November 20, 1997.

**Place:** United Engineering Center, 345 47th Street, New York, NY.

**Information:** Jim Barbera at j.p.barbera@ieee.org or by fax at (212) 465-8877.

# 1998 Officer Ballot

## Instructions for Casting Ballots

Completed ballots should be mailed to the Newsletter Editor as follows:

IEEE Newsletter – BALLOT  
c/o Keith Saracinello  
96 Everett Rd  
Parsippany, NJ 07054-3164

The ballot MUST be filled out completely with members name, membership number, and signature. Without that information the ballots are invalid. Xerox copies of the ballot are acceptable as long as they are filled out completely.

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Chairperson: (choose one)

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☐ ..... Fred Chichester

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☐ ..... Chandra Gupta

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☐ ..... Rodney Cole

Secretary: (choose one)

☐ ..... Keith Saracinello

Members-At-Large: (choose three)

☐ ..... Nirwan Ansari

☐ ..... Timothy Chang

☐ ..... Amy Galarowicz

-----  
Member Name \_\_\_\_\_ Member No. \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

NY/NJ/LI EMBS:

## Vagus Nerve Stimulation to Treat Intractable Epilepsy

On Thursday, November 20, 1997, the Metropolitan Chapter of the Engineering in Medicine and Biology Society of the Institute of Electrical and Electronics Engineers announce "Vagus Nerve Stimulation to Treat Intractable Epilepsy." The speaker will be Dr. Douglas Labar.

### About The Talk

In normal animal models, at properly selected stimulus parameters, electrical stimulation of the vagus nerve desynchronizes the electroencephalogram (EEG). In animal models of epilepsy, vagus nerve stimulation (VNS) has an antiepileptic effect. Based on this experimental work, Cyberonics Inc., developed an automated, implantable programmable system to deliver VNS for the treatment of medication-resistant epilepsy in humans. Typically, stimulation is delivered for 30 seconds of every 5 minutes. To date, 800 such systems have been implanted and more than 2000 patient-years of treatment have been accumulated. On average, VNS reduces the seizure by 1/3 in the first 3 months of treatment. The results are well maintained at least for the next following year of therapy. The most common side effect is deepening of the voice when the stimulation is delivered due to activation of the recurrent laryngeal nerve. The device has been marketed in Europe for 3 years, Canada for 1 year, and was approved by the US FDA in July 1997.

### About the Speakers

Dr. Labar has been Director of the New York Hospital Comprehensive Epilepsy Center since 1988, and is an Associate Professor of Neurology and Neuroscience at the Cornell Medical College. He did his training in clinical neurophysiology and neurology at the Columbia Presbyterian Medical Center in New York. He obtained his MD/PhD in medicine and neuroanatomy from the Medical College of Pennsylvania in Philadelphia.

**Time:** 7:30-9:30 PM, Thursday, November 20, 1997.

**Place:** Rockefeller University, Weiss Building, Room 301, 1200 York Ave, NY, NY. Free parking available – entrance gate at 66<sup>th</sup> St.

**Further Information:** Joel H. Levitt (718) 891-6460 or Edna Feher (212) 757-0610.

