



SUNCOAST *July 1999*

SIGNAL

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

July Section/PACE Joint Meeting Electronic Commerce Resource Center Facility Introduction

DATE/TIME: Thursday, July 15, 1999 - 6:00 PM - 8:00 PM

LOCATION: Electronic Commerce Resource Center
7990 114th Avenue, Suite 2, Largo, Florida 33773

RESERVATIONS: Contact Mark McKeage at (727)826-4393 to reserve a seat for this special presentation

Want to start a web-based business? Want to do business with the Federal Government? Your first step should be at the doors of the Electronic Commerce Resource Center. The ECRC offers education, training, course work and technical support for businesses, many at no cost!

Trudy Ramsay, Outreach Manager for the Largo Electronic Commerce Resource Center (ECRC), will present an overview of the services provided by the ECRC. The Largo ECRC helps small and medium-sized enterprises understand how electronic commerce can impact their businesses. Through training and education services, small and medium-sized businesses, prime contractors, and government agencies choose from over 20 different courses covering a wide variety of electronic commerce topics. Technical support services help a company identify needs that can be met with electronic commerce technologies and produce a technical or business process solution that best meets those needs.

Ocea Lattimore, Associate EC Engineer, will provide an overview of business and technical issues related

to emerging Internet and web-based technologies. This presentation will also explore how these technologies are changing the way electronic commerce is conducted.

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Chair's Comment

by **Al Rosenheck**

In May our Section meeting speaker, Donnie Miller from Florida Power Corporation, spoke on preparations of the Electric Power Systems of North America for transition to the year 2000 (the Y2K problem). The focus of the preparations is to ensure that mission critical computers and software can recognize the transition to 2000. It seems that we have become so dependent on computers that the transition to the 2000 has the capacity to disrupt vital services. Donnie described the measures being taken by the major power companies and assured us they will be ready. He noted preparations are being done on a voluntary basis and there may be some of the smaller companies and cooperatives that may be at risk. Those who attended expected to hear from an expert on what to expect in reference to Y2K and they were not disappointed. It was helpful to get a balanced and knowledgeable view. But everyone is not as prepared as the large power companies and we are bombarded with advice and warnings to prepare for the worst and lay in stores of cash, water, food, batteries, fuel, etc.

While there are a variety of opinions on what you ought to do or not do, many people are taking Y2K threat seriously. If you are confused and would like to know more about the subject, I recommend you visit your local library with the Y2K reference guide given below and than decide on your own course of action.

Books

Year 2000 Personal Computer Fix-it Guide, Charles River Media 1999.

Hanna, Nick The Millennium: The Rough Guide. Rough Guides, 1998

Hyatt, Michael S. The Millennium Bug: How to survive the coming chaos, Regnery Publishing, 1998

Morris, J.R. Year 2000, Personal protection guide, Sterlingmoor Publishing, 1998

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Yourdon, Edward Time Bomb 2000, Prentice Hall, 1998

Periodical Articles

"How to Prepare for Y2K," Consumer Reports May 1999:23-27.

de Jaguar, Peter. "Y2K: So Many Bugs...So Little Time." Scientific American January 1999:88-93.

Dyball, Bob and Greg Swain. "The Y2K Bug...and a few other worries," Electronics Now May 1999:32-40.

WWW Sites

President's Council on Year 2000 Conversion.
<http://www.y2k.gov>

Small Business Help for the Year 2000.

<http://www.sba.gov/y2k> IEEE-FWCS - The Suncoast Signal - July 1999 - Page 3

PACE Report

by Mark McKeage

Last month, I shared with you IEEE-USA's objectives for the new millennium. I also provided you with their Career Support Initiatives from their What Have We Done for You Lately? document. For July, I have attached their technology policy initiatives.

IEEE-USA Working to Shape U.S. Technology Policy

- Adopted a list of legislative priorities for the 106th Congress on such topics as intellectual property protection, doubling of federal research and development, permanent extension and expansion of research and experimentation tax credit, space commercialization, restructuring of the electric utility industry, relaxation of U.S. export controls on encryption technologies, and privacy of medical records.

- Supported efforts resulting in significant increases in research funding for the National Science Foundation, a reversal of declines in defense funding of basic and applied research, and an extension of the research and experimentation tax credit.

- Blocked passage of intellectual property restrictions on the use of databases.

- Promoted the exchange of information on the Y2K computer problem through statutory liability relief.

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Web Page <<http://ewh.ieee.org/r3/floridawc>>

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All material for THE SUNCOAST SIGNAL is due by the Friday following the 1st Thursday of the month preceding the issue month.

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- Lobbied successfully for the Commission on the Advancement of Women in Science, Engineering and Technology Development and Maryland Sci-Tech Scholarships.
- Issued policy recommendations arising from a symposium on space technologies for disaster mitigation and global health.
- Developed positions on tort law and product liability reforms as well as principles for privacy, confidentiality, and security of personal health information..

Students Corner

by John Tatum

Many Thanks! The IEEE USF Student Branch would like to thank Dr. Madhu Gupta of FSU for his seminar on Low-Voltage, Low-Power RF devices and MMIC's. Dr. Gupta lectured on May 11th at the university before an audience of about twenty. It was a rewarding experience.

On June 15th, the student branch hosted a meeting open to all Electrical Engineering students. The topic of the meeting was "Careers In Electrical Engineering". The meeting included a one hour video, from the Sloan Career Cornerstone Series, about Electrical Engineering and Computer Science careers. The video provided valuable career information for all who attended.

As always, if anyone would like to speak to the IEEE Student Body regarding a topic of expertise or in an effort to recruit, feel free to call the student branch office at (813)974-4776 or e-mail me at johntatum@ieee.org and I will be more than happy to arrange a date and time.

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Again, thanks for all the support!

MTT/AP/ED July Meeting

"Personal Satellites for Data Communications"

Date/Time: July 20, 1999 6:00 PM

Location: Raytheon St. Petersburg

Speaker: J. V. Evans, VP & CTO, COMSAT Corporation

The talk briefly reviews the growth of satellite communications for fixed services (voice and data). Currently, about 25% of the voice traffic between countries, and essentially all of the TV traffic is carried by satellite. In addition, there is considerable growth in data as ISPs in overseas markets seek better access to the US backbone. Domestically, satellites are used principally for distributing TV, both to cable head ends and directly to the home, though in some parts of the world (e.g.. the Philippines) they are still used for voice traffic.

A new use for satellites will be to link consumers and small offices directly to the Internet. Worldwide, several hundred applications have been filed with the ITU for delivering such service. Here in the US the FCC has conducted four Notice of Proposed Rule Makings, offering companies the opportunity to file for new satellite systems operating a) in the Ka-Band, b) in the Q/V-Bands, and c) as non-geostationary satellites in the Ku-Band. These applications are all briefly reviewed, and the balance of the talk is spent describing some 13 US systems that the FCC has so far licensed.

The 13 US licensed systems will all operate at Ka-band, where rain fading introduces considerable design problems. These are described and the ways that they are to be overcome are outlined. All of the systems entail extremely large investments (\$ billions), so that it is likely that only a few will actually get built. The paper concludes with the author's best guesses as to which these are likely to be.

Biography: Dr. John V. Evans is Vice President and Chief Technical Officer of COMSAT Corporation, a position he assumed in September, 1996. Dr. Evans joined COMSAT in April, 1983, as Vice President for Research at COMSAT Laboratories. He became Director of the Laboratories later that year, and was named President of COMSAT Laboratories in September, 1991. During his thirteen-year tenure as Laboratory Director, Dr. Evans was responsible for overseeing a transformation of the Laboratory from a largely Corporate-supported entity, concerned chiefly with spacecraft design and construction, to one only partially supported by the Corporation, and involved primarily with the development of new satellite services, including commercial products to permit these services.

Before coming to COMSAT, Dr. Evans was with the MIT Lincoln Laboratory, which he joined in 1960 as a staff member in the Radio Physics Division, assigned to the group operating the Millstone Hill Radar in Westford, Massachusetts. There, he conducted research into the radar reflection properties of the moon, planets, and meteors, and commenced high-power radar studies of the upper atmosphere and ionosphere. He is the co-editor (with T. Hagfors) of the book, Radar Astronomy, and has published over 100 scientific papers on these topics.

He was appointed Associate Leader of the group at Millstone Hill in 1970, and Group Leader in 1972. In September, 1975, Dr. Evans was appointed Associate Head of the Aerospace Division and member of the Laboratory's Steering Committee, and in May, 1977, to the post of Assistant Director of the Laboratory.

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July Section/PACE Joint Meeting

Trudy Ramsay has a Bachelor of Science degree in Industrial Engineering from the University of Florida. She has over 18 years of experience in manufacturing and quality engineering, government contracts support, and cost control while in positions with major corporations including General Electric, Martin Marietta, and Lockheed Martin. The Department of Energy presented Trudy with an "Award of Excellence" for significant contributions to the Nuclear Weapons Program, and she is a certified Quality Systems Provisional Auditor and certified Associate Safety Professional. Currently employed by Concurrent Technologies Corporation as the Outreach Manager for the Largo Electronic Commerce Resource Center, Trudy assists small businesses with the implementation of Electronic Commerce technologies.

Ocea Lattimore is an electronic commerce engineer with the Largo ECRC program and is focused on providing technical support to ECRC clients. Prior to working with the ECRC, Ms. Lattimore spent over three years doing software development for database marketing at Harland Corporation. She was also a developer of bar coding software for Westinghouse Electric Corporation and ran her own software company before joining the corporate world. Ms. Lattimore is a graduate in electrical engineering from the University of Central Florida.

Directions:

[From Tampa] Take I-275 to 688 West (Ulmerton Road, second exit west side of Tampa Bay). West on Ulmerton Road to Belcher. Make a left onto Belcher (South). Make a right at the first stop light into the STAR Facility parking lot (this is 114th Avenue). The ECRC building is located in the back of the parking lot on the right-hand side (behind "NOVA"). Web address: <http://www.fecrc.ctc.com>

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July MTT/AP/ED Meeting

In this latter position, Dr. Evans became responsible for the programs at the Laboratory in Advanced Electronics Research. In January, 1980, Dr. Evans was appointed to the position of Director of the Haystack Observatory and Professor in the MIT Department of Meteorology. In this new capacity, Dr. Evans remained an Assistant Director of Lincoln Laboratory, and continued to oversee the program of high-power radar studies of the upper atmosphere and ionosphere being conducted at the Millstone Hill field station.

Dr. Evans has served on the US National Committee of the International Union of Radio Science and as its Chairman (1975-1978). He has also served on various committees of the National Academy of Sciences. He is a Fellow of the Institute of Electrical and Electronics Engineers, and a Fellow of the American Institute for Aeronautics and Astronautics, as well as a member of the National Academy of Engineering.

In 1975, Dr. Evans was awarded the Appleton Prize by the Council of the Royal Society of London for his contributions to ionospheric physics.

DIRECTIONS:

From Tampa, take I-75 South to I-275 south across Tampa Bay to Exit 12 (22nd Ave N.). From Sarasota, take I-75 North to I-275 north over Sunshine Skyway Bridge to Exit 12 (22nd Ave N.). Turn west on 22nd Ave. past Tyrone Mall to 72nd Street N. Turn left at the traffic light to the Engineering building. Park in the lot farthest south of complex. GILL ROBB WILSON CONFERENCE ROOM - 2ND FLOOR - ENGINEERING BLDG.

Ethernet TCP/IP Networking Seminar

Insert Here

July PE/IAS Meeting

Recent Innovations at TECO's ETRC

Location: TECO's Energy Technology Resource Center (ETRC)

Date: Thursday, July 22nd, 1999

Time: 4:00 PM - 5:00 PM

Topic: The ETRC will show case some of the recent innovations in technologies in the bay area with Heating/Ventilation/Air Conditioning, Wastewater, Variable Frequency Drives, Medical Waste and Lighting. The meeting will conclude with a tour of the many technologies on display.

Location: ETRC Go east on Fowler, to the new Embassy Suites. Turn left (North) on to Spectrum Blvd. It will be the 2nd street on the right, Suite 100.

Reservations: Please leave your name with the receptionists (813)202-1770.

Please contact the following PES/IAS Officers with any questions:

Mary Ellen Thacker - M.Thacker@ieee.org
Paul Leal - ST053@tecoenergy.com

James Reed - MICREED@earthlink.net
James Howard - j.howard@ieee.org

1999 Review Seminars For PE Electrical and EIT/FE October Examinations

Review seminars for the PE (Electrical) and Engineer In Training / Fundamentals of Engineering (EIT/FE) exams will begin:

Tuesday, August 10 for the EIT/FE Exam

Thursday, August 12 for the EE Exam

Seminars are conducted from 7-10 P.M. (Tues or Thurs) for ten weeks. The registration fee is \$200 and includes text. The seminars will be held at the St. Pete Campus of the University of South Florida

To register, contact: Alan M. Keith, P.E., P.O. Box 14042, (EC51), St. Pete, FL 33733.

Alan.M.Keith@fpc.com

Phone (727) 384-7937 FAX (727) 384-7994
Pinellas Chapter, Florida Engineering Society

July Brain Teaser Challenge

by Butch Shadwell

I imagine by now, all of my readers have seen the new Star Wars movie. I don't often speak of it, but George Lucas is actually another of my distant relatives with whom I have occasion to exchange a little inside information. For example, G.L., as we call him, was telling me about some great scenes that had to be cut from the final version of the film. Did you know they had to apply a warning label to the light sabers saying "Be sure to turn off light saber before tucking it in your belt." There was one particularly amusing tale about the propulsion system used for the submarine Boss Nass loaned to Qui-Gon Jinn. Jar-Jar told me it was powered by hamsters in a wheel, but I found out from G.L. that it was really a hydrogen-oxygen fuel cell. These devices produce electricity while generating a particular by product. The month I want to know the by product of this type of fuel cell.

Reply with the IEEE Florida West Coast Section Suncoast Signal reference to Butch Shadwell by the 20th at (904)223-4465 (voice), 904-223-4510 (fax), b.shadwell@ieee.org, 3308 Queen Palm Dr., Jacksonville, FL 32250-2328. (<http://www.ccse.net/~butchs/>). Only the names of correct respondents are mentioned in the solution column on the next Signal.

June Brain Teaser Challenge Solution

Individual neurons in an artificial neural net are really very simple but as they are interconnected the system can get very involved. The two mathematical operations that these neurons employ are multiplication and addition. Neurons from one layer may be connected to any number of neurons in a subsequent layer. When a neuron is stimulated, it sends a signal through these connections to all of the neurons to which it is connected on the output side. These neurons receiving this signal have a weighting factor assigned to each incoming connection. These weighting factors may be positive or negative, excitory or inhibitory. This factor is multiplied with the input signal to determine how the signal will excite or inhibit the firing of the receiving neuron. In a given neuron, all of these inputs, which have been multiplied times their weighting factors, are accumulated (added to together) and depending on whether the result is positive enough, that neuron may fire and send signals to it's downstream connections. This process is completed when one of more neurons in the output layer fires indicating the result of the computation. For example, a neural net character recognition system may have nine input neurons, representing a 3x3 optical sensor array. Each neuron will send a signal the next layer (hidden layer) depending on the darkness of their portion of the character visual field. The output layer may have ten neurons representing the results 0 through 9 as the character being recognized. This method of character recognition is very common today, and can be implemented with very simple and inexpensive computing technology. One of the more interesting aspects of neural nets is that through a technique call "Back Propagation" the neural net can determine the weighting factors required to achieve the correct output by itself.



Job Opportunity

SENIOR RF SCIENTIST / ENGINEER

Nature of Position: This is an immediately available Electrical Engineering role involved directly with hands-on development of RF circuitry, and then the design / performance verification, on state of the art high volume projects.

Compensation: Initially a starting salary in the \$55 to \$85 K range, plus comprehensive benefits. Please, define your full time employment base salary requirements.

Location: Greater Orlando, Florida area; moderate C.O.L.; no state income tax.

Experience: Requires hands on experience in the RF circuit design field (ideally eight or more years after graduation); experience with solid state multi-channel VHF transmitters, oscillators, impedance matching, components with low current drain; DFA concurrent engineering must be understood; ability to provide PWB design inputs to drafters; Software: RF circuit design simulation skills P-Spice, EESOF, or J-Omega preferred.

Education: B.S. E.E. minimum, prefer M.S. (not required);

ACOUSTIC ENGINEER / DEFENSE PRODUCTS

Nature of Position: This is an immediately available Acoustic Engineering role involved directly with hands-on development of underwater hydro phones.

Compensation: Initially a starting salary in the \$55 to \$85 K range, plus comprehensive benefits. (Please, define your full time employment base salary requirements.)

Location: Greater Orlando, Florida area; moderate C.O.L.; no state income tax.

Experience: Ideally eight (8) or more years direct experience; requires hands on experience in and design capability for underwater hydro phones; active and passive transducer design, utilizing cylindrical ceramics, flexural disks, cantilever beams and geophones; piezoelectric materials and applications; experience with transducer potting materials eg. urethanes; In depth knowledge of sheet metal parts design, die cast, and investment casting part design; rapid prototyping processes, and short and long run tooling options; DFA and DFM concurrent engineering practices.

Software: AutoCAD experience; knowledge of Pro-E or Solid Works a plus; modal analysis and FEA helpful.

Education: B.S. M.E., Physics, or B.S.O.C. minimum, prefer M.S. (not required). (Candidates are requested to address each item.)

Both jobs require U.S. Citizenship!

Action: e-mail*, or mail resume(do not Fax) to: Kent Hedman, Manager, **Hedman and Associates**, 3312 Woodford, Suite 200; Arlington TX 76013-1139.

*E-mail Instructions: hedman@onramp.net (please, copy and paste the resume, and other qualifying information as the e-mail message text, not as an attached document).

NOTE: We are a search and recruiting firm. This is an immediately available, Employer service fee paid, opportunity. All referrals are on an Equal Opportunity basis.

July 1999 Calendar of Events

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4 Independence Day	5	6	7	8	9	10
11	12	13 IEEE-FWCS Executive Committee Mtg at TECO Data Ctr 6:00PM	14	15 Joint Meeting Section/PACE at ECR Center 6:00-8:00 PM	16	17
18	19	20 MTT/AP/ED Meeting at Raytheon 6:00 PM	21	22 PES/IAS Meeting at ETR Center 4:00-5:00 PM	23	24
25	26	27	28	29	30	31

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