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THE

SUNCOAST

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Eighth Annual WAMICON
IEEE WIRELESS AND MICROWAVE TECHNOLOGY
An IEEE/Industry/Government/Education Conference
December 4 and 5, 2006

The conference will address up-to-date multidisciplinary research needs and interdisciplinary aspects of wireless and RF technology. The program includes oral presentations, poster presentations, and tutorials. (To register or for more info visit <http://wamicon.eng.usf.edu/>)

Keynote Speaker: **Dr. Kumar Balachandran**, Ericsson Research, RTP, NC, USA will present a talk tentatively entitled "Where is the cellular mobile radio going?—Perspectives on 4G."

Tutorials: On December 4 there are four tutorials planned; admission is included with the general registration. Presenters will include:

- Dr. Ed Callaway, Motorola Labs, "Wireless Sensor Networks"
- Dr. Tom Willis of AT&T Labs, "WiMax Technology"

Invited Talks: Among the planned invited papers at this year's conference will be:

- Achievements of European Research Cooperation on Microwave Amplifiers in the TARGET Network (G. Magerl and T. J. Brazil)
- Volterra-Based Behavioral Modeling of Power."

See **WAMICON page 3** for more information or go to <http://wamicon.eng.usf.edu/>



WAMI Center



Pix from the picnic: Irene Wiley with Students



Federikis, Morson and Irene Wiley

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"How will we retire if there is no one to take our place?" (Editor's Column)

A student asked this question in Dr. Paul McCright's class (USF department of IMSE) on a discussion forum where it was suggested that the number of engineering students is decreasing. His answer was so interesting to me that I thought our readers may find it stimulating. Dr. McCright's response:

"My answer is that there will be people to take your place, but they won't be your younger siblings, nieces, cousins, or neighbors. They will mostly be well-educated immigrants (as [another student] mentioned a few comments back) who are willing to work hard to get a good education. As an educator myself, I have become very disenchanted by the under 25-crowd (my apologies if any of you are in that group – you are obviously exceptions to what I am about to say). Today's typical college student is desperately interested in graduating, but is not interested in hard work, taking responsibility for one's own mistakes, learning as much as possible, or making it 'on my own.' This typical person is lazy and thinks the world owes him/her whatever is desired and feels only modest effort should produce stupendous results. America's coddling of our kids has taken a serious toll on the Now Generation and a big percentage of them are lousy students and on track to be lousy professionals. There are still a lot of wonderful, hard-working, serious students in America, but they are a small minority now. If you have not noticed it yet in your company, you will soon notice that a good portion of your newest engineers are lazy and whiny. Those foreign students who are able to get to the US are mostly a lot more hard-working, although some also seem quick to adopt the 'it's not my fault' approach to dealing with failure.

"This probably seems shockingly pessimistic as you read it. It is deep, gut-level honesty about how I feel – and I'm a very optimistic sort in general. The state of American youth is largely appalling with a few bright spots of light scattered around. I repeat that you are exceptions to all this because you are willing to work hard or you would not be where you are today.

"Obviously, it is about time I retire from this line of work or at least stop teaching undergraduates!"

Thank you, Dr. McCright for allowing us to publish your thoughts.

I welcome comments and will gladly print excerpts.

—PS



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A Boy And His iPod

[Ed. Note: You may not know where he is going but hang in there to the end.]

My wife accidentally won two bids on eBay and so I received an iPod as a gift awhile back. This is a very cool toy. I use it to listen to music just like everyone else; however, I also use it to listen to books-on-tape while I'm in my car. My 2000 Honda Accord does not have one of those fancy new iPod jacks on the stereo and so I had to resort to using a \$20 cassette adapter purchased at Best Buy. It worked ok, but the volume was a problem – even cranked up as high as it could go, the sound was still muffled and if it happened to be raining outside you could forget about hearing anything. So what was an IEEE member to do? I considered buying a new car stereo (\$250+) but I didn't want to because (1) I'm cheap, and (2) the one I had worked just fine.

While surfing the net I discovered that a company called Crutchfield sold an adapter that converts a factory car stereo's CD changer port into an auxiliary input port (I don't have a CD player in the car so who cares about losing that?). \$60 and two days later I had my part. I installed it, plugged the car stereo back in and clicked it on only to discover no change – the new adapter was not being seen and could not be used. Sadly I called Crutchfield to report that I had gotten a bum part. The nice lady on the phone asked me if I had followed the instructions. I said yes. She then asked if I had followed ALL of the instructions including disconnecting the car's battery before installing the new part. Umm, well you see, it was hot in the sun and I needed to have the A/C running so I had skipped that part. Quite embarrassed I unhooked the battery cable, waited 5 minutes for the radio to discharge and then everything worked perfectly. I can now plug my iPod in and crank up the volume to my heart's content.

Learn from my mistake: when you cast your vote for the IEEE officers (you are going to vote, aren't you?) make sure that you follow ALL of the instructions. If you vote online then you don't have to worry about sorting through the ballot mix-up that occurred. Good luck and good voting!
—James Anderson

WAMICON (cont.)

December 4 and 5, 2006

Topics of interest include (but are not limited to):

- Next Generation (3G/4G) wireless communication systems
- 802.11/HiperLAN2 Wireless LAN Systems (OFDM and multi-carrier)
- 802.16/WiMax Wireless Metropolitan Area Networks and related technologies
- Spread spectrum wireless systems
- Communications in disaster/emergency/rescue
- Smart antennas, adaptive antenna arrays, MIMO, and space-time processing
- Cognitive radio, Software Radio, and Emerging Technologies
- Ultrawideband (UWB) Communication: Applications, system and RF issues
- Wireless Sensors Networks and Ad Hoc Networks
- Telemetry and telemedicine application of wireless devices and systems
- Advanced propagation modeling and sounding of communication channels
- Cross-layer designs, integration of the physical layer technologies with other layers
- System Architecture, Integration, and Convergence Issues
- System Level Design, Modeling, and Simulation
- RF channel characterization and modeling
- Front-end subsystems; Low-Power RFIC and System-On-Chip Solutions
- Power Amplifiers, Linearization and Active Components, incl. NL transistor modeling
- Advanced wireless and microwave circuit design and packaging, including RF MEMS
- Base station and handheld antenna technologies, design and measurement
- RF/Microwave measurement techniques

Again, to register or for more info visit <http://wamicon.eng.usf.edu/>



Great American Teach-In Sign up now!

The Great American Teach-In in Pinellas County needs you. This is an opportunity for you to make our profession more visible in the schools in our neighborhoods. We need help on Nov. 15th; give us an hour of your time.

If you reside in Pinellas County and want to participate in the Great American Teach-in as a speaker for K-through 12th-grade students, please call Pinellas County Schools at (727) 588-6000 ext 1951 or contact the Great American Teach-in coordinator at a school. They can provide registration forms. You can also email Dr. Rudy Henning henning@eng.usf.edu or Sean Denny at Venner20@aol.com.

AESS Member Affairs

Some thoughts from Jim Howard

Being recently elected to the position of AESS Vice President – Member Affairs, I had to ask myself, what can I do for the membership? What is it that they really would like from their Governing Board? How do we make these things happen?

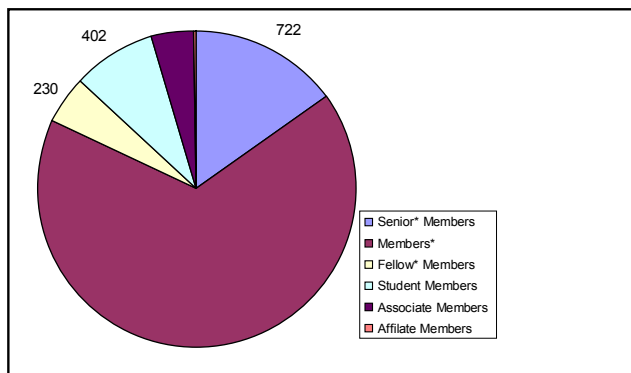


Now, on to the questions – I began a search to find out more about our membership. Beginning with the basics, like where do our members work and live, what membership grade do our members hold.

But before we take a look at some of the answers to these questions, let me share with you a little about myself and my background with IEEE.—I have served on the Board of Governors for the Power Engineering Society as Vice-President of Membership and Chapters, served as Chairman of the IEEE Membership Development Committee, served as Vice-President of Membership for the Regional Activities Board, served as Region 3 Membership Committee Chair – beginning to get a hint that I really enjoy working in the membership area? I have also served as Region 3 Director and on the Board of Directors for the IEEE, as Chair of the IEEE Audit Committee, and many other positions including positions on my local Chapter, Section, and Council.

My goal here on the AESS Board is to work with and for each of you, the Members of the AESS, so please take a few minutes to read thru the following information and let me know if it was of interest to you.

This information is available to officers of the Society, but sometimes you have to dig a little to figure it out. As you can see from the following chart, our membership covers



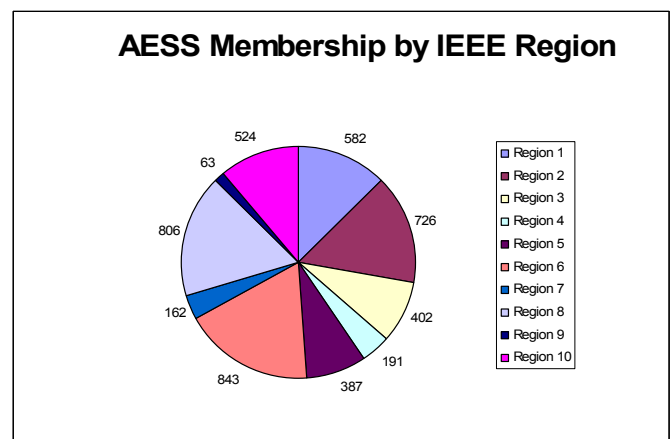
*Includes Life Members (i.e., Senior Members & Life Senior Members are combined, etc.)
Data is from SAMIEEE July 15, 2006 data.

all the Grades of membership in the IEEE, but the majority of our Membership are Member Grade. So how many of you know the differences in Member Grades? Interested in how to become a Senior Member (no it is NOT based on age)? Take a few minutes and browse though the IEEE Membership pages at:

<http://www.ieee.org/portal/pages/membership/understanding.html>

Here you will find a complete description of the various Grades of IEEE Membership (graph above), and while you are there, consider applying for Senior Membership if you meet the qualifications.

As mentioned, we also would like to know more about where our members work and live, and that information is shown in the graph below.



Data is from SAMIEEE July 15, 2006 data.

Ok, so we have covered a couple of the questions I began with, and in future articles we will cover more about our membership, and if you think of specific questions you have about membership, be sure to let me know.

By the way, did you happen to notice the “Benefits of Membership” on pages 46 & 47 of the June AESS Systems Magazine – if not, you might want to find it and take a look – it is very interesting.

Jim Howard, Vice-President – Member Affairs, AESS 2006



Coming Soon—Watch for the announcement next month.:

IEEE C37.96-2000 IEEE Guide for AC Motor Protection

This day-long meeting is January 26, 2007 featuring

Albert N. Darlington, P.E., Consultant, DEDA Industries & Adjunct Professor – Electric Systems & Power System Protection, University of South Florida;

Thomas Blair, P.E. Consulting Engineer, Tampa Electric Co.

First the picnic at Riverfront Park was a great success. Besides the usual fun and food, we had a special treat: Greek Souvlaki prepared by Chapter advisor, Chris Federekis. Well done Chris! See photos below and elsewhere in this Signal.

Here is a brief run-down on other Student Branch activities.

- We have a joint effort with HKN and the European Student exchange group to throw a tailgate bar-b-que for USF homecoming game.
- We will have an S-PAC luncheon this semester and with one guest speaker. Date and speaker to come.
- The Branch holds weekly officer's meeting on Wednesday to accommodate the schedules of the new officers.
- We have a project to get more members to be active: we encourage members who want to be more involved to attend officers' meetings and to accept duties to help the Branch. We are asking members to build a Tesla coil or a Van de Graff generator to be used as an exhibit at Expo in the spring. An additional incentive is a cash prize.
- The Senior Banquet will be at the USF Alumni Hall Friday Dec. 8th from 7pm to 12 am. We need more table sponsors. (Contact Kosol Sol for more information.)
- We are designing new banners for the College of Engineering Open House and other events.
- We also need a new banner for Engineering Expo. The old one needs to retire.
- There will one robotics team for the SECon 2007. Our first meeting will be on Monday, Oct. 9th at 12:00. We will also enter the website design competition.
- Buc's games are still our primary fundraisers. We will have one pizza sale. T-shirt sales; we have come up with a design. We found out that Student government will fund the T-shirt cost up to 5.75. We can pay the \$0.25 difference. We can use these shirts to give out during meetings and many of our events. Of course, they will also be available for purchase.



Hungry Students



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- We are still looking into purchasing a laser for light shows. In the past these shows have been very popular and if we can put the funds together, it would be a good investment.

For more on any of these items email: kson@mail.usf.edu



Chris and Paul—Branch Advisors



Opportunities for Learning & Research at USF

Date: November 9, 2006
Time: 11:30AM – 1:30 PM
Speaker: Dr. Ralph E. Fehr III, Instructor – Power and Energy Systems, University of South Florida
Location: University of South Florida, CUTR Building, Tampa, FL 33618
Cost: \$10 Members, \$20 Non-Members, Includes Lunch
(Note, you must obtain a \$4 parking pass from the visitors center at the main entrance of USF off Fowler Avenue to park on campus).

Reservations: Make em online at <http://time2meet.com/fwcs-meetings/>

Questions: Tom Blair at 813-228-1111, ext 34407 or thblair@tecoenergy.com

Technology is revolutionizing every aspect of our lives - communication, transportation, information access, entertainment, even our electric power infrastructure. Keeping with the latest technological developments, the College of Engineering at the University of South Florida offers a cutting edge power systems program to allow engineers to develop and maintain a competitive edge in the industry.

The USF College of Engineering provides an environment of comprehensive courses, state-of-the-art research activities, world-class engineering resources, and outstanding faculty in the area of power systems. Power courses can be taken as non-degree status, as undergraduate credit, or applied toward a Master of Science or Doctor of Philosophy degree in engineering. Short courses for continuing education credit are also offered. Close ties to other engineering departments and other colleges allow the student to develop a graduate degree customized to meet career objectives.

Please take advantage of this opportunity to explore the power systems program at the University of South Florida.



Computer Society Helps TISP

A big thank you to Jim Lumia and the Computer Society for their donation of \$500 to our continued efforts to make Teacher In Service in Tampa Bay a success.

The topic for the October 13th Hillsborough Professional Day will be Science in the Workplace. The event will take place at Middleton Senior High School. Sean Denny will talk about TISP and show a 15 minute video of recent TISP Presentations. This will be similar to his presentation in Orlando with added footage. Brian Hogg of IEEE Melbourne said it was a success when shown on August 28th. It inspired more educators to take advantage of participating in getting engineering into precollege education. Anyone who hasn't seen it is welcome to join Sean on October 13th?

Dr. Rudy Henning is building a campaign to help with the Youth Engineering Society program in Pinellas County. The Teacher In Service Program is tailor-made to help on a similar goal.

Sean was thanked for his work by Wing Ying Kwong and Doug Gorham. It confirms that we are accomplishing our goals.

Celebrate Engineering 2007

The Banquet will be held February 16, 2007 at the Wyndham Westshore Hotel in Tampa. CEB 2007 will be a wonderful networking event bringing together local leaders and engineering professionals to recognize the outstanding achievements of Engineers, Science & Math Teachers and Students in our community. You can check on the latest details and even register for this event at this website:

<http://ewh.ieee.org/r3/floridawc/celebrate/>



BTC Cont. — On Christmas morning I am looking forward to getting a new pen with a roller ball tip that is 1 mm in diameter. I can adjust the thickness of the line it draws by how hard I push down on the tip. Assuming the paper wraps around the tip smoothly as the tip pushes into it, how wide is the line if I press down 0.1 mm? How wide is it at 0.2 mm depth? I hope the paper doesn't tear.

Reply to Butch Shadwell at b.shadwell@ieee.org (email), 904-223-4510 (fax), 904-223-4465 (v), 3308 Queen Palm Dr., Jacksonville, FL 32250-2328

Brain Teaser Challenge Column

—By Butch Shadwell

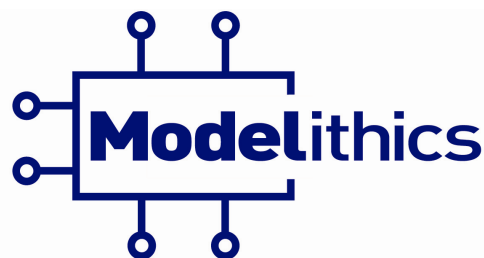
October BTC Last month I suggested some clever repartee. “Walk right up and as you light up a cigarette with a sly grin on your face, ask if he or she has “ever tried to drive an LCD glass directly with the output from a microcontroller?” This question always raises curiosity as they wonder, “What is an LCD?” or “He must be asking me this question because there is something unique about LCDs.” Or “Why is this person talking to me, and with food littering their smile?” Regardless of which of the above runs through their mind, be ready with a clear description of how driving an LCD poses problems not present with LEDs and incandescent displays.”

This may seem like a trivial question to many of you, but I suspect some of you may not know how LCDs work. First, an LED works perfectly well with a small amount of DC current. This is easy to supply directly from any pin of a microcontroller. However, an LCD (liquid crystal display) requires a source of AC bias. An LCD segment becomes opaque due the polarization of light and the particular amount of twist in the organic molecules that compose the “liquid crystal”. In most LCDs the faceplate is a polarizing filter. With no electric field applied these molecules do not alter the polarity of light passing through. With the correct electric field, these molecules twist causing a 90 degree polarity shift. This turns a segment dark. Since the crystals are suspended in a liquid, over time the molecules could simply settle with a new orientation. So the electric field must be continuously changing to keep a segment opaque. But I bet you already knew that.

November BTC Every year my family asks me for a list of suggested Christmas gifts. For some reason they don’t feel they can shop for an EE like a regular person. Besides the fact that my hat size might be deceptively large, I think I am easy to shop for.

So I am working on my recommended gift list. I have to think of things in the right price range, and that don’t have many variations so that they don’t get the wrong thing. Certainly, making this list is harder than just buying the stuff myself. Hey, that gives me an idea. What if I just buy everything I want, and then I can offer shares in the value of the gifts for sale to family and friends. This is perfect. Everyone can look at all of the cool stuff that I am going to get, that they never would have thought of, or would never have spent that much on me, and then simply buy a share of their favorite item. Then they can feel so proud that they picked out the perfect portable digital storage oscilloscope, exactly what I wanted. I wonder if I can patent this process? Finally, for Christmas they can send me a card with the share certificate in it showing the amount they have contributed to my happy Christmas morning (Read: how much they love me).

See BTC Cont. p. 6



RF/MW Engineer Posting



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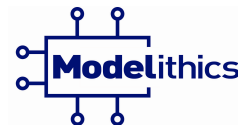
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November 2006 Calendar of Events (For more information see P. 1 *Inside this Signal...*)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29	30	31	1	2	3	4
5	6	7 5:30 pm: <i>IEEE FWCS ExCom TECO Tampa</i>	8	9 11:30 am- <i>Learning & Research USF Lunch-Tampa p.6</i>	10	11
12	13	14	15	16	17	18
19	20	21	22	Thanksgiving Enjoy! 	24	25
26	27	28	29	30	1	2

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IEEE/PES General Meeting, June, 2007 Tampa!
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