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The January 2008 IEEE New Hampshire Section Newsletter

http://ewh.ieee.org/r1/new_hampshire/newsletters.html

Chairman's Thoughts

By Jim Anderson

james-w-anderson@ieee.org

I hope that you all had a wonder filled Christmas or Hanukkah.

One of my friends sent me the following New Year's wish and I pass it on to you.

May peace break into your house. May thieves come to steal your debts. May the pockets of your jeans become a magnet for $100 bills. May love stick to your face like Vaseline and may laughter assault your lips! May your clothes smell of success like smoking tires and may happiness slap you across the face and may your tears be that of joy. May the problems you have forget your home address! In simple words, may 2008 be the best year of your life!!!

My first official act as the 2008 Chairman is to offer my heartfelt thanks to Tom Perkins and all the other officers, committee chairs, and other people who have done so much to help in the revitalization of the section over the past two years; and also to the people who have been laboring for many years to keep the section active.

We are starting off a little slow this year due to the Dec. 13th snow storm which caused us to cancel the Ex Com meeting, and it was not possible to reschedule it in 2007. Now we will have to map out our plans for 2008 at the Jan. 10th meeting.

My second official act is to invite all the rest of our 1,800+ members to become more active in YOUR section. We have a core group of 13 people who work very hard to keep the section running.

Make a New Year's Resolution to become more active. This does not have to be a big commitment. Here are some suggestions:

1- Attend two more chapter or section meetings than last year.

2- Help out with one of the chapters or committees.

3- Help advertise our activities at school or where you work by posting event notices. There are two in this issue of the Peak to Peak.

4- Write a short article for the newsletter on how you became interested in engineering, or about a particularly challenging project.

5- Let people know that you are a member of IEEE by wearing our distinctive IEEE NH Section shirts, jackets, and hats at work and at school, and around the neighborhood.

6- Give a talk on your work at a chapter or section meeting.

The February newsletter will have more specific opportunities for you to become active in the IEEE at the local level.

MBO Pilot Program

IEEE is changing the way they issue bonuses to the sections. Currently we get a bonus for each chapter or affinity group that holds at least two meetings for the year and another bonus if we submit our reports to IEEE on time.

Region 1 is running a pilot test of the Management By Objectives program where the section in conjunction with the Region will set a number of goals for the year and the section's bonus will be based on how well they meet the objectives.

Our section is one of several sections asked to participate in in this pilot program.

eBallot Beta Test Report

Thank you very much to our members who participated in the test. I am pleased to report that most of the responses that I received were very positive but there were a few members who had some problems.

5.9% of the eligible members voted. This is the biggest response ever. I would hope that if we had some contested positions the percentage would be considerably higher.

The ballots were easy to prepare and the system provides a lot of data besides the number of ballots cast for each candidate.

I am attempting to analyze the participation in the voting vs. tenure in IEEE, vs. membership grade etc. However, due to all the holiday festivities, plowing snow, and shoveling snow, and plowing and shoveling some more, etc. I have not completed the analysis. Tune in next month for the results.

Reflector Survey

For at least the last two years the Ex Com has debated canceling the Reflector to save about $4,000 a year. The older members of the Ex Com want to keep the printed Reflector but the younger members would like to use the money for other projects. However, I am the oldest member of the Ex Com and I do not want the printed version either.

If we were to cancel the Reflector we would include the information from the eReflector in the section's newsletter, which you get 12 times per year whereas you only receive ten Reflectors per year.

Obviously, the Ex Com is a rather small cross section of all our members, so we are going to poll you the members hopefully this month.

I would like to use the eBallot system again but this depends on IEEE's contract with the vendor. If this is not possible the IEEE IT Department has a survey tool that they can set up for us.

So start thinking about what you want and watch your in box for the survey questioner.

Tis the Season Update

In response to my information last month about sending Thank You cards to our troops by going to www.LetsSayThanks.com Jennifer Schelly, the WIE Vice-Chair, sent me information about Moore-Mart, a local NH organization dedicated to sending care packages to our troops deployed overseas. Jennifer has been volunteering with them for about two years. Jennifer included a copy of the following message from Paul Moore.

Moore-Mart passes 10,000 care packages packed for our troops!!

I thought this would be a great time to provide all of the Moore-Mart volunteers with an update as to the status of the 2007 Christmas Stocking Drive.

On November 17th, 2007, 28 Volunteers met at Daniel Webster College in Nashua NH and packed 2,337 Christmas Stocking Care packages for our troops in the Middle East. The care packages contained an overflowing Christmas stocking, Dunkin Donuts coffee, Girl Scout Cookies, Christmas ornaments and gifts, personal care items, candy and a number of letters and cards from our local churches, civic groups, veterans organizations and businesses.

Our goal was to beat last years packing of 1,868 care packages. We did by 469 care packages bringing the grand total of care packages packed to date to 10,909 - a new record!!!!

From the 2,337 care packages approximately 500 will be going directly to the servicemen and woman who are signed up to receive our monthly care packages, with the remainder going to our special forces group and our schools in Afghanistan, to a number of Churches throughout the Middle East which will be distributed via their local Chaplains, 2 Coast Guard Cutters and the In and Out Processing center in Kuwait so that every soldier up and contributed to this event, who steps off of a plane in Kuwait on Christmas Eve / Day will have a reminder that they are missed and their sacrifice for our country is truly appreciated.

I just want to thank everyone who helped organize, pack, clean.

On behalf of our troops and the Moore-Mart family thank you!!!

/Paul

For more information on Moore-Mart please go to www.mooremart.org

Feedback

Please contact me if you have any comments about, or suggestions for, the newsletter.

In This Issue

Pre-Engineering Technology Advisory Council

Jennifer Ng Ain Kin fills us in on the latest news from PETAC and announces a job opening for a retired engineer.

(Page 10)

Student Activities

UNH Durham Student Branch

Garrett Partridge updates us on their November 30th factory tour and their December 14th holiday party.

(Page 11)

Other Articles

Expanded Selection of IEEE NH Section Monogrammed Clothing

Don Sherwood, our resident haberdasher, reminds us about the new items suitable for the cooler weather. Don has added pictures of two of the jackets. Even more items are available from the suppliers catalog.

(Pages 11 and 17)

Donated Ham Radio Gear

Tom Perkins reports on Life Senior Member Bruce Smith's very generous donation of ham radio gear to the Granite State Amateur Radio Association.

(Page 11)

Membership Activities

Stuart H. MacPherson explains the benefits of renewing your membership and updates us on the Senior Member Campaign.

(Page 12)

Governor's Fifth Annual Advanced Manufacturing Summit

Jennifer Ng Ain Kin reports on the summit that took place in Concord on December 18th.

(Page 12)

Brain Teaser Challenge

Butch Shadwell provides us with the answer to last month's digital temperature controller question and challenges us this month to calculate the maximum power that can be supplied by a dry cell.

(Page 13)

Other Meetings of Interest

(Page 14)

WANTED

We need additional Section Photographers, and "How I Became interested in Engineering" articles.

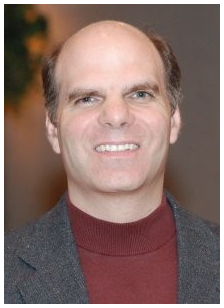
(Page 15)

Questions and Answers

(Page 16)

New Senior Member

By Stuart H. MacPherson
stuart.macpherson@ieee.org



Dr. Kenric P. Nelson is a Principal Systems Engineer with Raytheon Integrated Defense Systems. Nelson is developing classification algorithms for radar systems at Raytheon. Prior to joining Raytheon, Nelson was the Technical Director and Program Manager for the SI International team supporting the Air Force Research Laboratory (AFRL) in Rome, NY. He led projects in signal intelligence and information assurance. He co-invented a novel algorithm for generating random variables, which will appear in the December 2007 issue of the IEEE Transactions on Information Theory.

In 2001, Nelson received his Ph.D. in Electrical Engineering from Boston University. He consulted for Polaroid Corp and Calimetrics, Inc. on optical data storage while pursuing the doctorate. Nelson received an MS in Electrical Engineering from Rensselaer Polytechnic Institute and BS degree in EE from Tulane University.

Nelson is a life-long New Englander and active member of the community. While career and education have taken him to other parts of the country, the pull of New England has always held sway. He is a member of the Squam Lakes Association and enjoys hiking and boating in the lakes region. His permanent residence is in Hollis, NH. As a graduate student he was an active member of the Laser & Electro-optics Society and is currently a member of three IEEE societies: Signal Processing, Communications, and Computer.

Meet the Ex Com

By Jim Anderson
james-w-anderson@ieee.org

Liberty Gunter

Miss Liberty Gunter is currently employed at BAE Systems in Nashua, NH, where she is involved with Business and Technology Development at the Microwave Electronics Center (MEC). She feels this is an exciting change from her previous position and enjoys informing others of the vast capabilities of BAE's foundries for both internal and external collaboration. Prior to accepting this role in September of 2007, she was a semiconductor engineer in the Research and Development group at the MEC. There, her responsibilities included GaAs, InP and GaN HEMT process development with an emphasis in developing and managing advanced 6" GaAs PHEMT technologies.

She started her career at BAE Systems in 2001 during the summer of her Master's program as a graduate level intern working on space-based InP HEMTs and joined full time upon graduation. Since then, she's developed many processes and has led development of the 6" PHEMT line, before transferring it to production. Five out of the six years she's been with BAE Systems, she has been on teams which have been awarded the distinguished Chairman's Award for Innovation. She also has one patent pending and has authored several publications.

Her interest in semiconductors was piqued during her two summers at NC State's Physics Research Experience for Undergrads (REU) during 1998 and 1999.There, she worked under Dr. Gerald Lucovsky investigating alternative gate metals for Si MOSFETs. Additionally, she earned the "Best Research" award and presented her research at the 1999 Centennial APS Conference.

Liberty obtained her Bachelor of Arts in Physics in 2000 from Wheaton College with a minor in Computer Science. In 2002, she obtained her Master of Science in Electrical Engineering from Boston University with a thesis entitled, "Process Design and Development of a Gallium Nitride Permeable Base Transistor" under the direction of Dr. Charles Eddy, Jr. Currently, she is enrolled at UNH studying Management of Technology/Master of Science (MS-MOT) with an expected graduation date of December 2008.

In her spare time, Liberty is an avid equestrian and shows her Hanoverian mare at local dressage competitions. She attributes many professional qualities she has (public speaking, visual presentations and networking ability) to her involvement with 4-H as a child where she gave her first visual presentation at age 8.

Ravi Subrahmanyan

Dr. Ravi Subrahmanyan is a Senior Principal Engineer with AMCC in Andover, MA, where he has been involved in the design of communications and processor ICs. Prior to AMCC he was at National Semiconductor where he worked on mixed-signal and thermal sensor design. Before that, he was at Motorola (now Freescale), working on the PowerPC CPU design and process technology development.

His interests are in high speed circuit design, signal processing, and chip architecture. He is currently involved in setting up an NH joint chapter for the Communications and Signal Processing societies.

Ravi has M.S. and PhD degrees in Electrical Engineering from Duke University, and a B.Tech. (also in EE) from the Indian Institute of Technology, Bombay.

He is a senior member of the IEEE, and has 45 publications in conferences and refereed journals, and has 20 issued or pending patents.

He enjoys photography and travel. He lives in Windham, NH, with his wife Jayshree and two daughters.

Dean Bacon Retires

By Jim Anderson

james-w-anderson@ieee.org

Dean and Mary Bacon

On Wednesday evening, December 12th, 111 of Dean's coworkers, retirees, friends, and relatives came out to celebrate his retirement after 31 years of service to PSNH. Many people were not able to attend because the banquet facility could not accommodate any more guests.

Dean and His Family

Dean With His Aunt and Two Sisters

In what I am told is a long standing company tradition, they roasted Dean unmercifully. Even Dean's uncle joined in on the roast!

Dean Enjoying His Roasting

I don't know if this is also a company tradition, but at the end of the roast Dean had his own PowerPoint presentation where he gave a mini roast of his roaster, and shared some humorous and some serious thoughts about his family.

Dean Saying Good Bye to Ready Kilowatt

In one of the few serious moments of the evening, Tom Perkins presented Dean with the Region 1 Award for over 25 years of distinguished service to the New Hampshire Section. During Tom's brief presentation, he asked that all the IEEE members raise their hands. From where I was sitting it looked like one third of the people were members.

Tom Perkins Presenting Dean's Award

Current and Former Ex Com Members and Some of Dean's Coworkers

For some unknown reason, Dean and Mary are planning to spend the three best months of the year in Florida golfing, swimming, sun bathing, etc. instead of shoveling and plowing snow. However, Dean has agreed to continue to serve the Section as our Awards Committee Chairman for 2008.

In the name of the entire section I wish Dean and Mary a joyful and relaxing retirement for many years to come.

Chapter and Group News

Computer Society

By Jim Isaak

CSNH2007@JimIsaak.com

Report on Dec. 4th Distinguished Visitor Program Presentation

The Computer Society Chapter in collaboration with the Women in Engineering hosted as a distinguished visiting speaker, Kathy Land, who is also the 2009 President Elect of the Computer Society. The event was well attended with over 40 persons.

Kathy spoke of her experience using ISO / IEEE software engineering standards and related methods at transforming the U.S. Army "Americas Army" project into a coherent multi-vendor working team. The classic problem of gaining acceptance for project management methods such as projecting delivery times, bounding the scope of deliverables, and incorporating integration and testing into the process where part of her discussion. One unexpected gem was the team's replacement of the traditional power point report to management (in this case an undersecretary of defense), with selected video game clips that presented key results and objectives of the team. The result was an increased interest, and rapid approval of additional funding.

America's Army is both an engaging example of serious gaming, and also representative of the challenges of any major multi-group project. The experienced professionals in the group were shaking their heads with painful recognition if the challenges, some of the students expressed the concern that managing such a project might not all be fun and games.

Microwave Theory and Techniques

By Tom Perkins

tomperkins@ieee.org

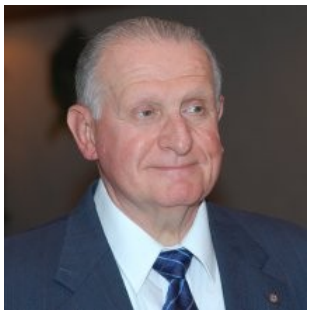
Last year we held five chapter meetings. We have several prospects in queue for meetings in late winter / early spring. The first will be in early March with Applied Wave Research (AWR) speaking on software. The exact date is TBD as of late December.

The NH Chapter has a growing presence and involvement with the June 2009 MTT-S Symposium that will be in Boston. The committee starts to have monthly meetings in January. If you are interested in assisting, please contact me.

Power Engineering

By Jim Anderson

james-w-anderson@ieee.org



On December 10th Gary Epler, Chief Regulatory Counsel of Unitil Service Corp., gave a very interesting Overview of Energy Policy Act of 2005 (EPAct).

Garry started with the basics and gave an explanation of how the constitution divides the legislative powers between the federal government and the states.

As an aside, he mentioned that the Constitution took up about eight pages in one of his law books and the amendments to the Constitution took up about another ten pages. As best as I can recall, when I went to a library that maintains a complete set of the Code of Federal Regulations (CFR) about ten years ago, it took up about five shells of books. The Congress turns out more regulations all the time. The website http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=%2Findex.tpl has the e-CFR which is updated daily. Of course, each state has there own set of laws. All this flowing from about 28 pages.

The EPAct replaced several old laws governing the utility industry and it required states to consider five new federal standards which might reduce the cost of electricity to consumers. Two of these are Time Based Pricing and Real Time Pricing.

Currently we are billed on the average cost to provide the electricity over the entire year, however, it is the peak demand that dictates the infrastructure that the utilities must provide and maintain.

In Time Based Pricing the day is broken up into four periods; Peak, Off Peak, and two other shoulder periods. The consumer is charged a different price during each period. In Real Time Pricing the consumer is charged the actual cost to provide the electricity at any given moment. In both systems the consumer is encouraged to reduce electrical usage during peak periods by charging a higher rate, and he is encouraged to use electricity in off peak periods by charging a lower rate.

In both systems the utilities have to install sophisticated meters that can transmit the usage and time data to the utility and to automatically reduce consumption during peak times. It might also require modification of equipment within the home or factory to take advantage of the pricing structure.

The above is a gross oversimplification of Gary's presentation and only covers some his topics. He presented a lot of information in a very short time. If you would like more information, you can view Gary's PowerPoint presentation at: http://ewh.ieee.org/r1/new_hampshire/Docs/Overview_of_EPAct_2005.ppt Gary also provided a reading list which can be found at: http://ewh.ieee.org/r1/new_hampshire/Docs/EPAct_2005_Reading_List.pdf

WIE NH News

By Liberty Gunter

liberty.gunter@baesystems.com

IEEE Women in Engineering (WIE) is dedicated to important issues for Women Engineers. Affinity groups provide the opportunity for members to network at a local level. All members (male and female) are encouraged to join and participate in their local group activities to promote growth within the WIE.

We will be starting off the New Year with a bang! Our first event will be Saturday January 26 (12:00noon) in Boston at the Langham Hotel to indulge in their chocolate bar. Fee for IEEE members: $15; fee for non-IEEE members: $35. For more details on this event, contact Mikell Taylor (mtaylor@BluefinRobotics.com). Attendance will be caped at 20 so reserve your spot early! All reservations must be made on or before January 15.

Additional events this coming year will offer both educational and social gatherings. These will include our second annual afternoon tea with a featured speaker as well as collaborative recreational events with Boston GOLD (plus more!). If you are interested in joining WIE or participating in any of our events, feel free to contact me for more information.

Other Chapter Contact Information

Engineering in Medicine and Biology Society

By Wayne Smith

If you have any suggestions for meeting topics or speakers; or if you would like to become active in the Chapter please contact me at: wjsmith@-cisunix.unh.edu

Power Electronics Society

By Chuck Button

If you have any suggestions for meeting topics or speakers; or if you would like to become active in the Chapter please contact me at: chuckbutton@ieee.org

Pre-University Activities

ThinkFest 2008 Project Contest

By Dov Sherwood

donsherwood@ieee.org

I was hoping to present some neat projects submitted for the ThinkFest contest. But so far, none have been sent in. This is a very busy time of the year, so the deadline has been extended from Dec. 31st to Jan. 15th. I'm sure many of you have ideas for activities that will excite high school and middle school students about electrical engineering. Perhaps you can make use of the extended time to share them with us.

ThinkFest is a day long carnival type program designed to get students interested in science and technology. Throughout the day, students travel from station to station completing activities from a variety of disciplines, mostly civil and mechanical, to earn points for prizes. We agreed to add an electrical engineering activity for the next event which is scheduled for March, 2008. I need your help coming up with a really neat activity that highlights our electrical engineering discipline to the students. The ground rules are pretty simple:

• The activity must be safe.

• The activity must be appropriate for students primarily in middle school and high school.

• The activity should be able to be completed in a time span ranging from about 10 minutes to 1 hour.

•The activity must have a measurable output (to assign points for prizes)

• The activity must be relatively inexpensive.

Four ideas that were kicked around at the meeting as examples are given below.

1- Build a DC motor. This is kind of a stretch for the time frame, but it can be done by the older students. Speed or weight lifting ability could be used as a measurable parameter to determine prizes.

2- Measure the current drawn from a #40 flashlight bulb at three or four voltages. Use the measured data to fit the nonlinear response to a parabolic or other nonlinear function. Use the curve fitted function to predict the current at a different voltage, and then make a measurement to determine the accuracy. Percent error can be used to determine winning points. This seams complicated, but the data can be taken in 5 minutes or less and the curve fitting should not take too long. It is definitely geared toward high school students though.

3- Build a motor boat form a kit of available parts and measure the time it takes to travel a length (maybe 5 meters) in a water filled rain gutter. The boat can be either propeller driven or air driven. Again this is a stretch for the time limit, but it sure looked like a lot of fun from the pictures; and the water aspect adds a unique dimension. Two or more rain gutters can be set up side by side for racing. That would give teams more time to build their boats.

4- Build a simple radio with parts that connect magnetically and see how many stations it can pick up.

CONTEST!!!

I'm sure you can use your imagination to come up with much more innovative projects. As an incentive, the person whose activity is selected as the best for use at ThinkFest 2008 can select an IEEE NH Section piece of clothing of his or her choice from the expanded list presented elsewhere in this newsletter. Please send your activities to me no later than Jan. 15th, 2008. The winner will be personally notified shortly after that and the project will be featured in the February newsletter. Good luck!

Pre-Engineering Technology Advisory Council

By Jennifer Ng Ain Kin
jng@ieee.org

Recent News:

Upcoming changes to NH Legislature Title XV Education Chapter 188-E Regional Vocational Education Section 188-E:14. The changes will remove some restrictions in order for more schools to get access to the state funding for pre-engineering programs.

Non-profit fund raising organization created: **Engineering Education Corporation of New Hampshire**. The idea will be for businesses to invest funds in the organization instead of individually. The funds will then be used to support PETAC and other pre-engineering activities.

A full re-design of the Pre-Engineering NH website (http://www.preengineeringnh.org) is currently underway. The website is intended to become an information portal for educators, parents, and students about everything concerning pre-engineering in the state. For details please contact me.

There will be a PETAC logo contest kick-off in the spring (March 2008). PETAC has been established since 2002 and this state-wide contest will help bring visibility to the council and its numerous works. More details in the New Year.

Planning for the annual spring Women In Engineering UNH conference has started (March 2008). This conference will be primarily for grades 10 and 11 students and will feature workshops and speakers as in previous years. A second conference for the lower grades (8 and 9) is being discussed for the fall of 2008. If you are interested to participate, please contact Bob Henry (robert.henry@unh.edu)

Preliminary information about the first annual UNH Tech Camp:

- 2 weeks long (late July/early August)
- Students in grades 7 to 10
- About 30 students
- Computer Science/Engineering topics and workshops
- For more information, please contact Kristin Harris (kharris@iol.unh.edu).

PETAC CONTACTS:
CHAIR, Robert Henry (robert.henry@unh.edu)
V ICE CHAIR, Michele Munson (michelemun@comcast.net)
S ECRETARY, Jennifer Ng Ain Kin (jng@ieee.org)
To reach all PETAC members, email to the list petac@preengineeringnh.org

If you are interested to know more about PETAC activities, do not hesitate to contact me.

Job Opening for a Retired Engineer

North Country School-to-Career Regional Partnership 39 Chandler Ledges Rd. Milan, NH 03588
Kevin J. Shyne, Regional Director
Tel/Fax 449-3406. Email - kshyne@ncia.net

POSITION: Engineering Programs Administrator:

REPORTS TO: The Science, Technology, Engineering and Math, Tech Prep Director.

REQUIREMENTS:

- Bachelors Degree in education, engineering, or related field
- Demonstrated understanding of the School-to-Work and Tech Prep education reform movements
- Experience with Technical Education, CTE Pre Engineering programs a must Experience with Engineering by Design or Project Lead the way programs a plus
- Excellent management, organizational, interpersonal, computer, written and oral communication skills
- Ability to solve problems and effectively communicate with a wide range of individuals and groups

PRINCIPAL DUTIES:

- Works with the director to enhance the process of introducing Pre Engineering Technical Curricula into the public schools.
- Works with school districts in Southern NH to promote, to support the implementation of new programs, and to maintain the Project Lead the Way (PTLW) Curriculum.
- Works with school districts in Southern NH to introduce, to promote, and to support the implementation of the Engineering by Design (EbD) Curriculum.
- Maintains and updates school based records for PLTW and EbD.
- Makes biweekly written and oral project progress reports to the STEM Director.
- Performs other duties as assigned.

Valid driver's license required. This is a part time contracted position @$25 per hr averaging 16 hrs per week. Please send resume to Kevin Shyne @ kshyne@ncia.net.

Student Activities

UNH Durham Student Branch

By Garrett Partridge

srvlegend@gmail.com

Here is an update of what UNH IEEE has been doing.

We recently attended a factory tour of Kleenline. They gave a great tour and presentation of their company and was interested in increasing the amount of electrical engineers within the company. They are rapidly growing and plan on implementing more FANUC robots on their product lines controlled by PLCs.

UNH IEEE hosted the 2007 Holiday Party at Libby's Bar and Grill on Thursday, December 13th. Fifty tickets were sold but only 35 people attended because of the weather. Everyone had a lot of fun with help from Microsoft representative Jon Opellaar, who donated Microsoft Office 2007 Ultimate, Halo 3, and a bunch of Frisbees. IEEE also raffled off a thumb drive, t-shirts, and a Best Buy gift card.

Other Articles

Expanded Selection of IEEE NH Section Monogrammed Clothing

By Dov Sherwood

donsherwood@ieee.org

We're expanding the selection of IEEE NH Section monogrammed clothing to include a number of items that are more suitable for the colder weather. We now have a total of 20 items. The linked table on Page 17 shows a representative selection of items that are available from the catalog website: www.thecorporatechoice.com. Pictures of two of the new jackets are included in the table. To see what the other items look like, enter the Catalog # from the table into the website's search engine.

The colors are limited to navy blue and white (off white) to adhere to the IEEE logo requirements and the two thread color restriction of the embroiderer. Pre-paid orders can be sent to:

Don Sherwood
16 Hooker St.
Nashua, NH 03064

Please include the catalog #, description, size, and color along with a check and email address. Orders will be placed once the minimum buy of twelve items has been reached. It then takes about two weeks to complete the order. Items will be available for pick up at the Ex Com meetings or a mutually agreed location. Direct mailing can also be arranged for an additional postage charge.

Other items from the catalog that are not listed in the table can also be ordered. However, since the catalog does not include cost, they will have to be priced separately. Contact me and I will get a price for you.

Have fun looking through the catalog.

Donated Ham Radio Gear

By Tom Perkins

tomperkins@ieee.org

Bruce Smith, IEEE Life Senior Member from Hancock NH, is an amateur "ham" radio operator (call sign KA1TNN). He recently made a generous donation of radio equipment to the Granite State Amateur Radio Association (GSARA). Bruce heard about the club sponsored classes while attending talking to me (call sign AC1J) at the Awards Banquet on November 1.

Wishing to reduce the amount of equipment he had on hand, he donated several radios, a mobile VHF/UHF transceiver, a hand held dual band radio, and a Kenwood TS-440 HF transceiver along with various peripheral equipment and coax cables.

The equipment arrived just in time to provide a surprise giveaway to some deserving students who successfully passed their ham examinations on December 1. Also, some of the equipment may become part of a club station to be established at

the club meeting location in Bedford.

We thank Bruce for this very thoughtful donation that will provide several hams with a great opportunity to get on the air and exercise their newfound electronics skills.

Membership Activities

By Stuart H. MacPherson
stuart.macpherson@ieee.org

2008 Membership Renewal

For those who have not sent in your dues for 2008, they were due by December 31st. Of course, if you renew now you membership will still be in good standing.

Senior Member Upgrade

Congratulations to Dr. Kenric P. Nelson on his elevation to senior member. He closes out the year as our 20th member to be elevated within our section. There are two more members in the elevation process. We will be continuing to be very active in supporting your application process next year. It is easy to start. Just send me an email and I will help you get a nomination letter and references.

Remember, qualifications are straightforward: *"… a candidate shall be an engineer, scientist, educator, technical executive or originator in IEEE-designated fields. The candidate shall have been in professional practice for at least ten years"* (a PhD is equivalent to five years practice, or an MS to four years, or a BS to three years) *" and shall have shown significant performance over a period of at least five of those years."* .

If you believe you have met the fundamental requirements, your colleagues are willing to support you in seeking Senior Membership.

The Section Membership Development Committee has created a webpage describing the simple steps to guide you through the process: simply go to http://www.ewh.ieee.org/r1/new_hampshire/sm.html for details. Highlights are:

- Besides the application, three references must be submitted supporting your nomination. The references must be Senior or Fellow grade Members.

- If you are being nominated by a Section, Society or Affinity Group, only two other references are required.

- It is understood that it may be difficult for some candidates to find references. However, your Section is willing to support you: provide us with a recent CV or resume and a draft application form, we can then write a nomination letter from the Section.

- We have gathered a short list (~20) of Senior and Fellow Members who are willing to review your application and CV/resume, and based on those materials (and possibly emails and phone calls) will provide you with a reference.

The other members of the committee are: Tom Perkins, Past Section Chair; Jim Anderson, Section Chair; Duncan Morrill, PACE Chair; and Jennifer Ng Ain Kin. If you are considering Senior Member elevation, please contact us at nhieee-membership@ieee.org

Governor's Fifth Annual Advanced Manufacturing Summit

By Jennifer Ng Ain Kin
jng@ieee.org

Over a hundred professionals attended the Summit at the Grappone Conference Center in Concord, NH on December 18th.

The half-day event, which ran from 7:30 a.m. To 2:00 p.m., focused on the special workforce needs of manufacturing and on exploring ways manufacturers can work with education leaders and economic development practitioners to cultivate the manufacturing workforce of the future.

Governor John Lynch gave introductory remarks in the morning. He was followed by a roundtable discussing "Workforce Development in NH Manufacturing". The roundtable speakers were Dr. Charles Annal (Vice Chancellor, Community College System of New Hampshire), Dr. Robert Henry (Associate Dean of Academic Affairs, UNH College of Engineering and Physical Sciences) and Paul Leather (Director, NH Department of Education, Division of Adult Learning & Rehabilitation).

The common thread amongst the speakers was the crucial need on partnerships between academia, government and business to foster an encouraging environment for the next generation

of the manufacturing workforce. The issue of shortage of qualified and educated workers cannot be solved individually, and only by addressing the problems as a whole will there be significant progress in the future.

After the roundtable, participants were able to take part in two of four workshops, led by manufacturing and high-tech company professionals, addressing various facets of workforce development in manufacturing, including:

1. Continuous Improvement in a Job Shop Environment
2. Workforce Development: Building the Talent Pipeline
3. Training Within Industry: Job Instruction
4. Meeting the Challenge: Strategies for Developing Our Manufacturing Workforce

At the Workforce Development workshop, Sean Cafferty, Director of Manufacturing, BAE Systems (Nashua); Melissa Carlson, Director of Human Resources, Hypertherm Inc. (Hanover); and Victor Kissell, Director of Operations, Tidland Corp. (Keene); each outlined the different approaches that their companies use to recruit, train and retain skilled manufacturing workers. The approaches greatly differ due to their diverse markets but it was interesting to hear about their challenges given their locations in New Hampshire.

At the Continuous Improvement workshop, the focus was on Lean Manufacturing methodologies and how it helped the featured two companies (Graphicast Inc. and Scott Electronics) to improve their manufacturing processes and increase production in general. Lean Manufacturing is a process management philosophy derived from the Toyota Production System, and which consists of a set of tools to assist in the identification and steady elimination of waste, the improvement of quality, and production time and cost reduction.

Luncheon speaker Eric Mittelstadt, CEO of the National Council for Advanced Manufacturing (NACFAM) said "The need for increased productivity by definition means producing more with fewer people. What does that mean? An inevitable reduction in the number of manufacturing jobs". Quite a sobering thought at a manufacturing conference.

He maintains that for the US future workforce to be competitive globally the workers will have to gain skills in design and engineering of products with production itself being outsourced overseas. He chose the Apple highly successful iPod, as an example, which is mostly manufactured overseas, but most of the value added (design / innovation / engineering / marketing / etc.) is here in the United States.

He continued on, “Over the next decade, industry will face a critical need to replace the millions of baby boomers who will be retiring by 2018. That means the skills and experience of roughly a quarter of today's workforce is going to be lost over the next decade," he said.

Mr. Mittelstadt was very pleased to hear at the morning roundtable that New Hampshire has already adopted many initiatives to increase awareness of “network centric manufacturing” and bring together all branches (academia, government and business) to make the next generation competitive. He recognized that the new government in Washington will have to play a more prominent role regarding the issues of global competitiveness (“A National Priority”) but that people cannot wait for the government to make all the changes.

The event sponsors were the BIA - Business and Industry Association, New Hampshire MEP - Manufacturing Extension Partnership, New Hampshire Division of Economic Development and the New Hampshire High Technology Council. Program sponsors were More Effective Consulting and the SME - Society of Manufacturing Engineers. New Hampshire Business Review was the media sponsor.

For a copy of the summit agenda please go to: http://www.nheconomy.com/uploads/Manufacturing_Summit_Agenda_2007.pdf

Brain Teaser Challenge

By Butch Shadwell

Last Month's Solution

In the high school science project we discussed last month I asked the following PWM problem. “If we used a DC PWM controlled resistive heater, how many bits do we need in the duty cycle register to allow us to control the heat input to 1 part in 10,000? Assume the resistance of the heating element is constant for this problem. You’re lucky I didn’t ask you about a voltage controlled heater.”

PWM stands for pulse width modulation. In this problem the power to the heating element is turned on and off based on a timer using an oscillator and a binary counter. If the pulse width counter is set equal to half of the period counter, the heater is turned on only half of the time. The number of counts in the rollover period of the counter determines the resolution of the pulse control system. So how many bits do you need to have at least 10,000 states for the counter? A 10 bit counter has a maximum of 1024 states. A 14 bit counter with 16,384 states would be the smallest binary counter with at least 10,000 states.

By the way, power varies as the square of the voltage with a resistive load, P=E^2/R right. Does the heat output respond linearly to varying pulse width in the system described above? The answer is yes as this problem was defined.

This Month's Challenge

As I write this column Christmas day is fast approaching. This season always makes one think of family … the good, the bad, and the ugly. Just about every family has their black sheep. That cousin, brother, aunt, or uncle, that everyone hopes won't make it to the celebration this year. Maybe you are the one they dread. Anyway, my family has one too. My Uncle Gary can be such a pill. He's the type who doesn't care if he insults people, and always tries to sound more important than he really is.

This year Gary came to a pre-Christmas gathering carrying on as usual. One of his less attractive behaviors is always trying to get professional consulting for free from other family members. Now this doesn't sound that bad at first, but he is unrelenting and sometimes you just don't want to talk shop at a festive family gathering. So this year he comes up to me with a plan for several new earth shaking inventions. One was for a perpetual light source by hooking an LED to a photovoltaic cell, where the LED illuminates the photocell (think about it). He also wanted me to help him design an electric tooth brush. To this end can you tell me the maximum power output I can get from a 1.5 volt battery with an internal resistance of 0.1 ohms?

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. (http://www.shadtechserv.com) The names of correct respondents may be mentioned in the solution column.

Other Meetings of Interest

Please let me know if you are aware of other meetings that might be of interest to our members. We each belong to different societies, read different publications, work in different industries, and surf different web sites. So if you see any interesting meetings or conferences please send me the notice or the URL.

To keep the list manageable I have limited it to meetings in North America during the next six months. So far I do not have information on any meetings in February and March 2008.

Jim Anderson james-w-anderson@ieee.org

January 7 - 10, 2008
PES January Joint Technical Committee Meeting
Hyatt Regency San Antonio, TX
http://www.pestechnical.org/

February 24 - 28, 2008
IEEE Applied Power Electronics Conf. and Expo.
Austin Convention Center
http://www.apec-conf.org/

February 25 - 29, 2008
The International Wireless Communications Expo
Las Vegas Convention Center
http://72.32.233.196/IWCE2008/Public/Content.aspx?ID=1271

March 11 - 12, 2008
MVA Communication Ecosystem Conf.
South San Francisco Conference Center
http://www.mvacec.com/2008/home/

March 11 - 14, 2008
Power Systems Conf.
Madren Center, Clemson, University, SC
http://www.ces.clemson.edu/powsys2008/

March 17 - 20, 2008
THE 25th INTERNATIONAL BATTERY SEMINAR & EXHIBIT, Broward County Convention Center, Fort Lauderdale, Florida
https://powersources.net/florida/frameset.html

March 18 - 21, 2008
IEEE/IAS Electrical Safety Workshop
Hyatt Regency Dallas, TX
http://ewh.ieee.org/cmte/ias-esw/

April 1 - 3, 2008
Annual Conf. for Protective Relay Engineers
College Station, Texas
http://engineering.tamu.edu/prorelay/

April 3 - 6, 2008
IEEE SoutheastCon 2008
Von Braun Center, Huntsville, AL
http://www.southeastcon.org/2008/

April 14 - 17, 2008
Spring Simulation Multiconf.
Crowne Plaza Ottawa, Canada
http://www.scs.org/confernc/springsim/springsim08/cfp/springsim08.htm

April 21 - 24, 2008
Transmission & Distribution Conf. and Expo.
McCormic Place,Chicago, IL
http://www.ieeet-d.org/

April 28 - 30, 2008
IEEE Sarnoff Symposium
Nassau Inn, Princeton, NJ
http://ewh.ieee.org/r1/princeton-centraljersey/2008_Sarnoff_Symposium/index.html

April 30 - May 2, 2008
Small Fuel Cells
Omni Hotel at CNN Center - Atlanta, GA
http://www.knowledgepress.com/events/8011207.htm

May 12 - 13, 2008
IEEE Conf. on Technologies for Homeland Security

Westin Hotel, Waltham, MA
www.ieeehomelandsecurityconference.org

May 27 - 31, 2008

IEEE International Power Modulator Conf.
Mandalay Bay Resort and Casino
www.cavs.msstate.edu/pmc2008

June 9 - 12, 2008

The International Symposium on Electrical Insulation Renaissance Vancouver Hotel Harbourside, Vancouver, BC, Canada
http://ewh.ieee.org/conf/isei/index.html

June 29 - July 2, 2008

The 2nd International Symposium on Bio- and Medical Informatics and Cybernetics: BMIC '08
Rosen Centre Hotel, Orlando, Florida
http://sciiis.org/BMIC2008

June 29 - July 2, 2008
The 6th International Conf. on Politics and Information Systems, Technologies and Applications
Rosen Centre Hotel, Orlando, Florida
http://www.socioinfocyber.org/pista2008

WANTED

Wanted – Additional Photographers

Ravi Subrahmanyan has volunteered to be our photographer but his schedule will not allow him to cover all our events. Therefore, we need one or more additional volunteers to take photographs at our Section events and meetings. If you are interested to help out, please email the Editor, Jim Anderson, at james-w-anderson-@ieee.org

Wanted – Articles on "How I became interested in engineering."

Was it because you were always interested in taking things apart and putting them back together (with "extra pieces")? Was it by chance? Was it because you come from generations of engineers and this was your destiny? What was it? Please send me, Jim Anderson, (james-w-anderson-@ieee.org) your story on how you became interested in Engineering and chose this profession. Every month, we will try to feature an article in the newsletter.

Questions and Answers

Q: Who are the NH Executive Committee members?

A: The list of all the members and their contact information is found on the section website at http://www.ewh.ieee.org/r1/new_hampshire/Officers.html

Q: Who do I contact about suggestions for the newsletter?

A: The Editor, Jim Anderson, can be reached at james-w-anderson@ieee.org

Q: How can I be removed from the mailing list or update my email address for section news?

A: Send email to the NH Section Administrative Assistant, Donna Davis, at NHIEEE@aol.com

Q: How do I start a new society chapter?

A: Please refer to this site for details on eligibility and requirements: http://www.ieee.org/portal/pages/tab/cha/newchap.html

Q: Why doesn't the URL http://www.ieee.org/nh_section work?

A: The URL is case sensitive and you must use http://www.ieee.org/NH_Section.

Table

Available IEEE NH Section Monogrammed Items

Catalog #	Brand	Description	Colors	Cost ($)
HS220	Harvard Square	Storm Jacket, Nylon Men's	Navy	44.00
HS960W	Harvard Square	Ladies' Boot Bay Full Zip Soft Shell Fleece Jacket	Ink, Dove	44.00
HS960	Harvard Square	Men's Booth Bay Soft Full Zip Shell Fleece Jacket	Ink	44.00
HS955	Harvard Square	Men's Booth Bay Soft Shell Quarter Zip Pullover	Ink	44.00
HS950	Harvard Square	Men's Boot Bay Soft Shell Full Zip Fleece Jacket	Ink	38.00
HS350	Harvard Square	Men's Pima Reserve Polo Shirt	Navy, White	22.00
HS355	Harvard Square	Ladies' Pima Reserve Polo Shirt	Navy, White	22.00
HS150	Harvard Square	Men's Long Sleeve Classic Denim Shirt	Dark Blue	21.00
HS155	Harvard Square	Ladies' Long Sleeve Classic Denim Shirt	Dark Blue	21.00
HS800	Harvard Square	Five Panel Brushed Twill Structured Cap	Navy, white	11.00
HS021	Harvard Square	Vector Portfolio	Navy	14.00
HS475W	Harvard Square	Ladies' 100% Cotton V Neck Sweater	Navy, Stone	37.00
HS474	Harvard Square	Men's 100% Cotton V Neck Sweater	Navy, Stone	37.00
4662M	Jerzees	50/50 Heavyweight Super Sweats Crew Neck Sweatshirt	Birch, True Navy, White	17.00
4662B	Jerzees	50/50 Heavyweight Super Sweats Youth Crew Neck Sweatshirt	Birch, True Navy, White	17.00
562W	Jerzees	50/50 Mid weight Ladies' Crew Neck Sweatshirt	Navy, White	17.00
F260	Hanes	90/10 Heavyweight Ultimate Cotton Crew Neck Sweatshirt	Ash, Navy, White	21.00
C1470	Columbia	Ladies' Fern Creek Vest	Columbia Navy	38.00
C1480	Columbia	Men's Cathedral Peak Vest	Columbia Navy	36.00
HS960	Harvard Square	Booth Bay Soft Shell Fleece Vest	Ink	44.00

See pictures of two of the jackets below.

If you attended the banquet you had a chance to see the men’s and lady's jackets that were presented to Tom Perkins, Jennifer Ng Ain Kin, Dean Bacon, and Jim Anderson in appreciation for their dedicated service to the section. For those that were not able to attend, photos (without the IEEE NH Section logo) are shown below.

Men’s Nylon Storm Jacket, # HS220

Lady's Boot Bay Full Zip Soft Shell Fleece Jacket, #HS960W

Introduction to Cognitive Operational Situation Management

The **IEEE NH Joint Communications and Signal Processing Chapter**

Dr. Gabriel Jakobson, Chief Scientist, Altusys Corporation, jakobson@altusystems.com

Thursday, February 7, 2007 at 6:00 PM

BAE SYSTEMS Headquarters Building Auditorium

Abstract: According to modern US defense doctrine, the future war is characterized by high mobility of troops and weapon systems, increasing operational tempo, and fast evolving operational situations. As a result of that the military commanders need comprehensive and effective methods of battlespace situation management. Situation Management (SM) is as a synergistic goal-directed process of monitoring, control, and prediction of situations in dynamic systems (operational spaces) so that desired goal situations are reached within pre-defined quality, resource and time constraints. The tasks of instrumentation of the dynamic system, modeling the system and the world situations, reasoning about the situations, action planning, and situation prediction are essential technology ingredients of Situation Management. As a rule, the management of battlespace operational situations often involves large number of dynamic objects that change their states in time and space, and engage each other into fairly complex spatio-temporal relations.

Our interest will be mostly on cognitive (intelligent) situation management, i.e. on SM, which is associated with the meaning of situations, the intelligent methods of reasoning about the situations, and actions planning. In order to exhibit such intelligent capabilities, the systems should possess fairly elaborated conceptual knowledge about the domain (domain ontology). Examples of situation management applications: real-time monitoring of networks and complex engineering systems; tactical and asymmetric battlespace operations management; post-disaster emergency, rescue and relief operations coordination, physical infrastructure and cyber security monitoring, and several others. This presentation gives an overview of the concepts and technology of situation management, and gives several examples of application of the technology.

Biography: Dr. Gabriel Jakobson is the Chief Scientist at Altusys Corp., a consulting firm specializing in the development of intelligent Situation Management technologies for defense, cyber security and disaster situation management applications. During his more than 20 years tenure at Verizon (formerly GTE) he had increasing responsibilities of leading advanced database, expert systems, artificial intelligence, and telecommunication network management programs. Dr. Jakobson has authored or co-authored 90 technical publications, has awarded 4 US patents on innovative real-time event correlation methods, and has 4 US patents pending on situation management. He received PhD degree in Computer Science from the Institute of Cybernetics, Estonia. Dr. Jakobson is an IEEE Senior Member and Distinguished IEEE ComSoc Lecturer. He was the chair of the workshops on Situation Management SIMA 2005-2007 and is the current chair of the IEEE Communications Society sub-committee on Situation Management. From January 1st he will be the Director of the North American Region of the IEEE Communication Society.

BAE SYSTEMS Headquarters Building Auditorium, 65 Spit Brook Road, Nashua, NH, 1/4 mile east of Everett Turnpike, Exit 1. For more information contact: Kenric Nelson, kenric.nelson@ieee.org 603-589-4850 or Ravi Subrahmanyan, ravi_subrahmanyan@yahoo.com 603-560-6586

IEEE New Hampshire Section
Computer Society Chapter
IT Seminar Series

Speaker: Marty Swafford, Sr. Product Manager Rational Education - IBM

Subject: **Governance and Software Life Cycle Management**

Date/Time: Tuesday Jan 29, 2008 / 12:00 - 1:30

Place: NH Community Technical College, Nashua, 505 Amherst St., Room 150

Contacts: Barbara Bancroft bbancroft@nhctc.edu / Jim Isaak j.isaak@snhu.edu

Biographical Sketch: Marty Swafford is a Product Manager for IBM Rational Education. He has 20 years of experience in IT, testing, and quality management. He received his B.S. degree from the United States Military Academy in 1980. His dual-major M.A. degree (Management and Human Resources Development) was received from Webster University in 1990. Past certifications held are Software Quality Engineer and Quality Auditor by the American Society for Quality and RAB Certified ISO assessor. Currently, he is an IBM Certified Solution Designer for Rational Manual, Functional, and Performance Tester products.

Abstract: The IBM Rational software presentation will cover governance and lifecycle management for software and systems delivery. Innovation in the real world, the IBM Rational software brand in action, and the IBM Rational software approach are the three main topics of discussion. These topics will include industry trends and solutions for software and systems development. To conclude the presentation, one demonstration will be provided to show integration of a requirement to a test and the execution of the test to validate the requirement.

Notes: 1- Lunch will be provided. 2- You do not have to be an IEEE member to attend. All guests are welcome. 3- For information about future seminars see: http://acadweb.snhu.edu/Isaak_James/ITseminars/

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