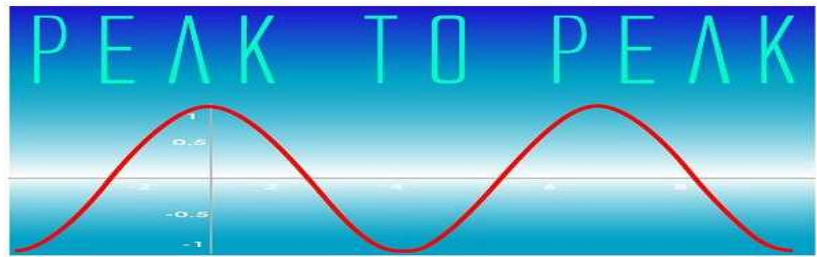




DECEMBER 2006  
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## THE IEEE NEW HAMPSHIRE SECTION

### Chairman's Thoughts

*By Tom Perkins*

On behalf of the NH Section I wish to express our sincerest condolences to Jim Isaak and his family on the recent death of his mother.

As we approach the end of 2006, I can only say that it seems that this year went by very quickly. We've accomplished a great deal, but there are numerous opportunities to do more for our profession.

I am pleased to announce that we now have a Membership Development Chair, Stuart Macpherson ([stuart.macpherson@comcast.net](mailto:stuart.macpherson@comcast.net)). Incidentally, our section had the greatest increase in membership in the Northeast Area of Region 1 between 2004 and 2005, more than 7%.

Women in Engineering (WIE) now has an affinity group formed in our section. A group of people headed by Jennifer Ng ([jng@ieee.org](mailto:jng@ieee.org)) have done a great job in meeting all the requirements and getting approval from IEEE headquarters.

We are in the early planning stages of an engineering conference next year, which will be sponsored jointly with NHSPE, SENH, ASCE and other organizations. It will be a daylong meeting in October with topics of general interest to all engineers. Stay tuned for more on this next year.

We're looking forward to moving the TISP forward with a meeting with Nashua science teachers on December 7.

*Continued on Page 2*

### From the Editor

*By Jim Anderson*

#### Life Member Affinity Group

Aging has many positives. For IEEE members who have reached or are about to reach 65, becoming a Life Member (LM) is one of them. The IEEE LM status is an automatic process. IEEE members become LMs when, their combined age and years of IEEE membership equal or exceed 100. Members who will be eligible on January 1 are notified by mail a month or two beforehand. Therefore, if you are becoming a LM in 2007 you have probably been notified already.

There are several benefits of becoming LMs:

- Dues and regional assessments are waived for a LM
- Society fees are usually waived if you have been a member of the society for the five years before becoming a LM
- LMs usually receive reduced member rates at IEEE sponsored conferences
- LMs continue to receive the same benefits as other IEEE members

*Continued on Page 13*

## Chairman's Thoughts (Cont'd)

I wish to thank our officers, executive committee, and Donna Davis for all their help this year. Also those who assisted in organizing our annual banquet did a great job.

May all of you and your families have a wonderful, joyful, and restful holiday season.

If you have any topics that you think should be discussed at next month's ExCom meeting, normally held on the second Thursday of the month, or if you want to discuss any other topic, please feel free to contact me at [tomperkins@ieee.org](mailto:tomperkins@ieee.org). I would enjoy hearing from you.

## Chapter News



### Computer Society

*By Jim Isaak*

XML Update

Speaker: David Marston

IBM

Date: Thursday, December 14, 2006

Time: 7:00 pm - 9:00 pm

Location: Walker Auditorium of Robert Frost Hall at SNHU

#### Abstract:

XML is a standardized way to organize data, the biggest advance in data representation since ASCII was standardized over 45 years ago. Now, XML itself has been with us for about 10 years and is well entrenched, especially in Web technologies. XML serves more needs than just interchange of data across systems; it is widely used for stable data storage and as the foundation for other Web tools. Although nominally a "markup" language or "tagging" system, XML has emerged as a system of providing structure to information in a platform-neutral way, and it came along when the Internet really needed just enough data structuring for online commerce. The next challenge is to get more domain-specific standards built on the generic IT standards that are built on XML.

#### Biography:

David Marston is a lifelong resident of New Hampshire and a graduate of Dartmouth College. He started working with open systems in 1982, and in recent years has been involved with several Working Groups at the W3C and OASIS that are promulgating XML standards and supporting technologies for conformance testing. He works for IBM Research on XML, related open and extensible technologies, and business process modeling. He is a member of the ACM and member (and in a couple cases, co-founder) of various technology groups in New Hampshire.

For the 2006 - 2007 academic year, the chapter is scheduling its IT Seminar Series on Thursdays from 7:00 to 9:00 PM in the Walker Auditorium of Robert Frost Hall at SNHU. See:

<http://www.snhu.edu/209.asp> for directions.

For access to previous presentations go to:

[http://acadweb.snhu.edu/Isaak\\_James/ITseminars/index.htm](http://acadweb.snhu.edu/Isaak_James/ITseminars/index.htm). If you have particular topics you would like to see covered, or speakers to suggest, please send a note to: [ITSeminar2007@JimIsaak.com](mailto:ITSeminar2007@JimIsaak.com)



### Engineering in Medicine and Biology Society

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](mailto:wjsmith@cisunix.unh.edu)



### Microwave Theory and Techniques Society

It is planned to have at least two meetings in the spring of 2007. There is a good probability that we will have Professor Tatsuo Itoh from UCLA speak on Metamaterials and Structures. He is a Life Fellow of IEEE and a Distinguished Lecturer.

If you have any suggestions for meeting topics or speakers; or if you would like to become more active in the Chapter, please feel free to contact me, Tom Perkins, at [tomperkins@ieee.org](mailto:tomperkins@ieee.org). I would enjoy hearing from you.



### Power Electronics Society

If you have any suggestions for meeting topics or speakers; or if you would like to become active in the Chapter please contact Chuck Button at [chuckbutton@ieee.org](mailto:chuckbutton@ieee.org)



### Power Engineering Society

If you have any suggestions for meeting topics or speakers; or if you would like to become active in the Chapter please contact Paul Krell at [krell@unitil.com](mailto:krell@unitil.com)



### Product Safety Engineering Society (CNEC)

If you have any suggestions for meeting topics or speakers please contact Paul Smith, our meeting scheduler, at [paulsmith1@cs.com](mailto:paulsmith1@cs.com)



### Women In Engineering

*By Jennifer Ng*

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 are encouraged to join and participate in their local group activities to promote growth within the WIE.

- ✂ Go to <http://www.ieee.org/go/wie> for details
- ✂ Use [nhwie-excom@ieee.org](mailto:nhwie-excom@ieee.org) mailing list to contact the NH WIE Affinity Group Officers.

The 2007 officers listed below were nominated and approved by acclamation:

- ✂ Chair: Jennifer Ng
- ✂ Vice-Chair: Liberty Gunter
- ✂ Secretary: Fan Gu

Next Steps:

- ✂ Plan activities for next year - please email me your ideas!

If you are interested in supporting WIE activities (or joining WIE), please contact me, Jennifer Ng, at [jng@ieee.org](mailto:jng@ieee.org) or [nhwie-excom@ieee.org](mailto:nhwie-excom@ieee.org)

## Nominations for 2007 Section Officers

The Nominations Committee has submitted the following slate of candidates:

Chair	Thomas Perkins
Vice Chair	Jennifer Ng
Treasurer	Jason Hui and Don Sherwood
Secretary	Celine Bilodeau and Chuck Button

The available biographies and position statements appear below:

Anyone wishing to nominate another candidate for any of the above positions must submit a petition signed by at least 1% of the section members which would be 18 members. The petition must include contact information for the candidate and IEEE membership numbers for the candidate and all petition signers. A short biography and position statement of the candidate should accompany the petition. The candidate and those signing the petition must be full IEEE members (not associate members) or graduate student members of the section. The petition should be sent to James Anderson, 48A Howe Lane, Hollis, NH 03049-6006 and must be post marked no later than 12/30/2006, or scanned and sent to [james-w-anderson@ieee.org](mailto:james-w-anderson@ieee.org) by midnight December 30, 2006.

Ballots for the election will be emailed the second week of January.



**Thomas O. Perkins III**

**Biography:**  
Tom holds a BSEE from Monmouth University, West Long Branch, NJ with postgraduate studies at Northeastern University.

He spent his first 3 years as an engineer in the electric utility field in distribution planning. For the past 37 years he has been engaged in microwave module, subsystems and antenna design. Tom joined IEEE in 1962 as a student member. He became a member in 1966 and a senior member in 1983. Currently he is Manager, Sensor Systems Microwave Module Design at BAE Systems, Nashua, NH. He has held a radio amateur license since 1957. Amateur Extra call letters - AC1J

Tom and wife have been residents of Bedford NH since 1973

- American Radio Relay League - Member and VEC
- Association of Old Crows, Granite State Roost - Treasurer 2003-2007
- Granite State Amateur Radio Association; Vice President 2005-2007
- Quarter Century Wireless Assn. - Member
- Civil Air Patrol (Auxiliary of USAF) - Senior Member with radio license
- CNE/Boston Microwave Theory and Techniques Chair 1991, 1996
- IEEE International Microwave Symposium, 2000 - Digest Editor
- Member of Technical Committee - 2009 IMS Boston
- IEEE NH Microwave Theory and Techniques Chair 2004-2006
- IEEE NH Section Vice-Chair 2005
- IEEE NH Section Chair 2006

Position Statement:

My goals for our Section are stated briefly:

- Increase membership
- Promote growth through establishment of active societies and affinity groups
- Make sure the societies we embrace are active, useful, and accessible
- Provide membership upgrade opportunities
- Offer quality technical forums
- Provide opportunity for dialog and networking within IEEE membership
- Reach out to schools and students at all levels to promote engineering and science
- Support our university student chapters
- Work with other engineering societies in NH to share knowledge and promote our profession
- Provide leadership and encourage people to get involved
- Provide for open dialog and frequent meetings of the executive committee
- Encourage increased attendance at Area and Region level events
- Keep our NH section fiscally solvent
- Enable political leadership of our nation to have increased awareness of the importance of engineering education
- Help folks realize that this profession is enjoyable, rewarding, and essential to preservation and growth in our state and country



Jennifer Ng

Ms. Jennifer Ng is currently employed at Mercury Computer Systems, Inc. in Chelmsford, MA, where she is the Software Quality and Release Manager for the CIV (Commercial Imaging and Visualization) Business Unit.

She started her career as a software engineer at Curtiss-Wright Embedded Computing Controls (formerly Dy4 Systems Inc, Ottawa, Canada) where she developed VxWorks BSPs (Board Support Packages) for SBCs (Single Board Computers) and wrote firmware diagnostics. She has held increasingly significant positions in software engineering, software release quality and software quality management.

Nowadays, her responsibilities consist mainly of ensuring compliance for ISO standards (ISO 9001:2000 and ISO 13485:2003) as well as CDMCAS - (Canadian Medical Devices Conformity Assessment System) and MDD (Medical Device Directive) for the CIV Quality Management Systems and products. Furthermore, she is applying Regulatory standards for FDA (Food Drug and Administration), Health Canada and CE Mark in order to sell CIV Medical Devices products to these different countries.

Jennifer obtained her Bachelor of Electrical Engineering from McGill University, Montréal, Canada (B.Eng '94). She also completed her Management Certificate from the Boston University Corporate Center in 2004.

IEEE Activities (S'90 M'94)

Jennifer joined IEEE in 1990 (and a WIE member since 1996). She held Secretary and Chairperson positions in the student branch chapter at McGill University. She participated in the local Section activities in Ottawa, Canada (Region 7) where she started her career. Recently she has reconnected with the NH Section where she is now the co-editor of the monthly newsletter. She is very involved in mentoring students (McGill Mentor Program) and IEEE members (Mentor-Net). In 2006, she was the recipient of the Young Engineer Award for the NH Section and was key in forming the NH WIE Affinity Group.



Jason K. Hui

Biography:

Jason K. Hui received the B.S. and M.S. degrees in Electrical Engineering in 1997 and 1998, respectively,

and the Ph.D. degree in Mechanical Engineering in 2002, all from the University of California, Los Angeles (UCLA). He is currently pursuing the M.S. degree in Systems Architecture and Engineering from the University of Southern California (USC).

Dr. Hui was at The Aerospace Corporation, El Segundo, CA, from 2002 to 2004 as a Senior Member of the Technical Staff in the Guidance Analysis Department. Since 2004, he has been with the Guidance Systems Group at The Charles Stark Draper Laboratory, Cambridge, MA, where he is a Systems Engineer. His research interests are in guidance and navigation, control systems, and model identification of micro-sensors.

Dr. Hui was a member of the IEEE Control Systems Society Technical Committee on Control Education from 2002 to 2004. In 2004, he served as Treasurer of the IEEE Coastal Los Angeles Section. He is a member of the IEEE and a senior member of the AIAA.

Position Statement:

I am honored to stand as a candidate for Treasurer of the New Hampshire Section. I have been an IEEE member for over 10 years, serving in various capacities including Treasurer of the Coastal Los Angeles Section in 2004. If elected, I will maintain accurate and timely financial records for our section in accordance with IEEE policy. In addition, as an officer of the Executive Committee I will lend my support to existing chapters as well as emerging ones (Graduates of the Last Decade, Women In Engineering), continue promoting the senior member elevation program, and encourage further student branch activity.



Don Sherwood

Biography: Don Sherwood received BSEE and MSEE degrees from Northeastern University in 1968 and 1973 respectively. Don started his career with Sanders Associates and

recently retired from BAE Systems (heritage Sanders) after a combined span of 27 years. His main interests are in the areas of microwave components, modules and systems. He worked in various engineering and engineering management positions on several major EW and space based programs. Don also worked at Microwave Associates, Atlantic Microwave, Raytheon, and Omni Spectra.

Don joined the IEEE in 1968, and is a member of the MTT, AP, ED, and SSC Societies. He is heading up the

section's Teacher In Service Program, which promotes technological awareness at the pre-university level. Don is also a member of the Boston IMS 2009 Planning Committee and is a representative for the IEEE NH Section on the NHSPE 2007 Joint Society Meeting Committee.

Don's hobbies include sailing and collecting old records.

Position Statement:

As treasurer, I will adhere to the IEEE and NH Section bylaws. These include working with the chairman to establish a section approved budget, tracking funds, maintaining financial records, and submitting reports to the section and IEEE financial services staff director.



Celine Bilodeau

Biography:

Celine Bilodeau is the mother of three teenaged children and received her Bachelor's Degree in Electrical Engineering Technology in 2005 (Summa Cum Laude) from the University of New Hampshire. She also won the UNH Program Technology award in 2005. She has been employed with Public Service of New Hampshire for more than 20 years and currently works in the Substation Engineering Department at PSNH.

IEEE Activities: (S'04, M'06) Section Vice-Chair: 2006

Position statement: To serve the New Hampshire section members in 2007.

Chuck Button

No information was provided.

## Politically Active Professional

### 2007 Presidential Candidate Meetings

*By Jim Isaak*

The NH Section will be working with IEEE-USA to set up a series of meetings with Presidential candidates of both political parties. We can only make these happen if we have 40+ persons who would expect to attend these forums. To get information about the meetings and indicate your interest in participating, please join the NH IEEE Community, which requires a web account, at:

<https://www.ieeecommunities.org/nhsection>

The IEEE web account and the IEEE community are described in the next two articles.

We will be using the email list associated with this for announcing events and other aspects of the visits. This is a chance to meet the candidates, and also to provide a sense for the value and influence of our engineering related disciplines for the future of innovation and the U.S. economy.

We will identify guidelines for the meetings that will establish appropriate expectations for candidates and participants. If you have questions on this, contact: [PC2007@JimIsaak.com](mailto:PC2007@JimIsaak.com)

### Web Accounts - your path to access IEEE online

*By Jim Isaak*

Any member (and even non-members) can sign up for a "web account" which gives you access to online IEEE facilities such as the eXplore Digital Library (access to most material is on a subscription basis), MyIEEE with information about conferences, and local events you may find of interest, and the virtual communities.

To get a web account, go to: <http://www.ieee.org/portal/pages/web/accounts/index.htm>

Have your membership number (from your card or renewal bill) available to make sure you have access to all of the materials associated with your membership. [There is a PIN number associated with your membership invoice, but you don't need this to complete the web account process, it is used as one way to verify your membership.]

Your web account provides a User Name and Password

that you can then use to access the other online services.

### Online Community for New Hampshire

*By Jim Isaak*

We have established an online community for New Hampshire IEEE members. This allows us to post a calendar of events, exchange relevant information, and even poll our members on a variety of considerations.

One use for this community area is to coordinate activities for the 2007 Presidential Candidate Meetings. A subgroup has been formed as part of the virtual community, along with a Discussion Forum where you can post your thoughts and respond to the considerations of others related to the candidate meetings. To join, go to:

<https://www.ieeecommunities.org/nhsection>

### Get to Know Your Elected Congressmen

*By Russ Harrison*

Congressman-Elect Hodes to Focus on Engineers' Issues

New Hampshire elected a new Congressman this past November. Representing the second district (roughly, the western half of the state), Congressman-elect Paul Hodes could become a good friend to engineers in next year's Congress.

Hodes has an unusual education for a Congressman. His Bachelors degree is in French and Drama, although he also has a law degree. Hodes has maintained his interest in the arts over the years, including writing and performing award winning children's music. What does this have to do with engineers? Hodes has expressed interest in improving America's intellectual property laws. As someone who knows both the legal and creative side of IP law, he should be uniquely placed to work with engineers to improve the patent process, protecting small inventors.

Hodes has also expressed interest in investing in alternative energy and science and math education. Both are high on IEEE-USA's list of legislative priorities. As a former prosecutor, Hodes has a good shot at securing a seat on the powerful House Judiciary Committee, where he would also play a key role in forming immigration policy. IEEE-USA is optimistic

that Congressman Hodes will be willing to help reform the badly flawed H-1B program and make other needed improvements to America's high-skill immigration program.

IEEE members in New Hampshire's second congressional district are encouraged to contact their new Congressman at (603) 223-2006. Engineers can use this opportunity to congratulate Mr. Hodes and to voice their opinions on issues of concern to them and to the New Hampshire engineering community.

You can contact Russ at [r.t.harrison@ieee.org](mailto:r.t.harrison@ieee.org) or (202) 530-8326.

**Call for Nominations for NH Engineering Societies Awards**

We are pleased to announce the call for nominations for the New Hampshire Engineering Societies' annual Engineer of the Year and Young Engineer of the Year Awards, to be presented at the 2007 Engineers' Week Awards Banquet (February 22, 2007).

The Engineer of the Year and Young Engineer of the Year Awards are the highest awards given to individuals by the New Hampshire Engineering societies. Each award is presented to an engineer who has made outstanding contributions to the engineering profession, the public welfare, and humankind.

These awards provide the New Hampshire engineering community the opportunity to recognize outstanding individuals worthy of these honors.

Dean Bacon will represent the IEEE New Hampshire Section on the selection jury. If you know of someone worthy of one of these awards, please contact Dean at: [bacondl@nu.com](mailto:bacondl@nu.com) no later than December 15, 2006.



## NH IEEE GOLD?

*By Kheng Swee Goh*

GOLD stands for Graduates of the Last Decade. If you are a fresh engineering graduate or it has been less than 10 years since you graduated from your first engineering program (including Masters/PhD students), you are automatically a member of GOLD. In NH there are currently 141 GOLD members!

Why do we need a NH IEEE GOLD affinity group?

GOLD affinity groups cater closer to the needs of all fresh graduates and young professionals. We organize events and activities that are more interesting and have more relevance to the career and life of young professionals at this "early" stage. The type of events would include technical, educational, professional development and social / networking functions. Among the topics that GOLD affinity groups have previously visited are First Time Home Buying, Hands-On Investing, Identifying a Good Business Idea, Video-Over-IP, Stock Market Investing, Project Management, etc. And did we say we have a lot of fun too? We also organize fun social / networking events like skiing, camping, white water rafting, paint ball games, beach volleyball, bowling, etc. for members to let loose once in a while!

The value of GOLD

GOLD affinity groups offer an environment that is peer-supported where members are encouraged to develop ideas for activities and to take a leading role without the risk of negative consequences. This will in turn help develop future leaders in IEEE, increase IEEE membership retention rate, increase participation in IEEE events and also attract other GOLD member volunteers.

Are you ready for GOLD?

We are currently looking for volunteers to be the first NH IEEE GOLD committee members. These members will be mentored by committee members from the Boston IEEE GOLD, and we may even have joint events! If you are keen, please email Tom Perkins ( [thomas.perkins@baesystems.com](mailto:thomas.perkins@baesystems.com)).

## UNH First Lego League Tournament

*By Bob Lee*

The University of New Hampshire [Robotics Club](#) held their third annual FIRST LEGO League ( [FLL](#)) tournament on Saturday, November 11<sup>th</sup>. Twenty teams competed for nine opportunities to advance to the New Hampshire State Tournament.

The two weeks leading up to the UNH Tournament were not unlike any major project deadline. The kids spent the next to last week in a flurry of activity completing their research, writing their skit, designing attachments to their robots, programming missions and improving reliability. We held a marathon session the Saturday before the tournament. The day culminated in a pizza party and mock robot competi-

tion. Coordinating who runs which mission, assembling the next attachment, selecting the correct program and aiming the robot within the confines of 2.5 minutes proved to be more challenging than the kids had anticipated. They improved their scores with practice. After our marathon session we froze functionality, and they spent the final week perfecting and rehearsing.

The day of the tournament finally came. The coaches arrived early to set up the pit (a table to showcase their research project, set up their battery charger, robot repair kit and laptop) and register the team. The registration packet contained the times for all three matches and each of the three judging sessions. After the kids arrived, teams were lined up for the opening ceremony. The tournament opened with a procession similar to the Olympics. Teams were announced and entered the auditorium one at a time to the cheers of parents and other spectators.



Jack lines up the robot for the next mission.



Teams 1559 Jenius in Disguise and 1561 Robotics Bricks line up for ceremony

The robot competition was the focal point of the tournament. Two tables were set up side-by-side in the main auditorium. A camera projected the tables onto a screen where the audience could view the action. Each team was given one match in each of the first three rounds. Two teams competed side-by-side, but not against each other initially. Teams strove for their best score. The best of their three scores was used to determine the top eight teams. The top eight teams moved on to the next round of head-to-head, single elimination competition. The winner of each match moved on until a winner was crowned.



Sarah prepares to deliver the buckyball

Teams underwent three judging sessions during the day for technical design, research project and teamwork. Teams had a chance to show off their robot design, explain their programs and demonstrate some of their missions during the technical judging. During the project judging teams presented their innovative solutions using nanotechnology. The boys presented their breathable fire suit of the future using carbon nanotubes and the girls their buckyball delivery system for blood clot medicine. The teamwork judges



grilled the teams to see how well they worked together to overcome technical and interpersonal challenges.



Team 1561 Robotic Bricks present their breathable fire suit of the future made with carbon nanotubes.



Team 1559 Jenius in Disguise answer teamwork questions.

The boys' team placed 4<sup>th</sup> overall in the first three rounds of robot competition with a high score of 181 and qualified for the next round. Thoughts of the World Festival started racing through their minds (Don't we all dream of hitting the home run? Catching the touchdown pass? Scoring the winning goal?). The girls' team had the 9<sup>th</sup> highest team score, missing the cut off by five points. The girls took it in stride and cheered the boys on. The girls lost their first head-to-head match when their normally reliable buckyball medicine delivery system malfunctioned.

After the robot competition finished, the judges convened to select the winners in each category. The awards reflect FIRST values and determine which teams move on to the state tournament:

Directors Award	Given to the best all around team that performs well in all categories.
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Technical Award	Given to two teams that demonstrate innovative robot design and/or programming.
Project Award	Given to two teams that have an innovative solution that impacts society utilizing nanotechnology.
Teamwork Award	Given to two teams that exemplify the FIRST values of teamwork and gracious professionalism.
Performance Award	Given two teams that win the robot competition.

All of the teams gathered in the auditorium for the closing ceremonies and awards. Each team was called to the stage one at a time where each child was given a medallion for participating and shook the judges' hands. Then came the moment everyone was waiting for: the awards. You should have heard the shriek of surprise when they announced the girls' team had won the first place Teamwork Award. The boys' season had come to an end, but the girls' continues on to the state tournament.



Team 1559 Jenius in Disguise accept the Teamwork Award.



Team 1561 Robot Bricks with their medallions

One other state-qualifying tournament was held on November 11<sup>th</sup> and three more the following week-

end. In total 52 teams will move on to the state tournament. Many prizes will be awarded for teamwork, research, design and robot performance, but only one team will have the honor of representing New Hampshire at the World Festival in April.

If you have never been to an FLL tournament, I would encourage you to attend the state tournament. But be careful. FLL is contagious. The state tournament will take place at the Nashua North High School on December 2<sup>nd</sup>. Admission to the event is free of charge and the public is welcome. Opening ceremonies begin at 8:30pm. For more information on the tournament and directions, visit [BAE Systems FIRST LEGO League](#).

Bob Lee is a firmware engineer for GE Energy in Somersworth, NH, where he designs firmware for electricity meters. Bob graduated cum laude from Dartmouth College in 1982 with a BA in Computer Science. He has been a member of IEEE Computer Society since 1982.

## Pre-University Education

*By Don Sherwood*

### Teacher In Service Program (TISP)

A follow up meeting with the Nashua School District is scheduled for Dec 7. The TISP team will meet with Dr. Althea Sheaff, Executive Director Curriculum & Instruction and five specialists from the REACH program for talented and gifted students. At our initial meeting, Dr. Sheaff identified the REACH program as an area where they felt a need existed to develop activities that challenge the students. She thought the TISP program could make an immediate impact in this area. She asked that in the follow up presentation we use one of the activities from the web site to show how it can be tailored to address the interest of students at various levels.

We are very fortunate that a two hour block of time has been allotted for this meeting. This will allow us to include some important introductory material into the presentation. The initial choice for the activity is Rotational Equilibrium. This activity demonstrates how to calculate the balance point of a mobile using three different approaches for the solution; substitution, graphical, and matrices and determinants. This activity also allows calculus to be introduced by removing some of the simplifying assumptions. There will also be time for feedback and to have discussions on how to tailor a program that best meets their needs.

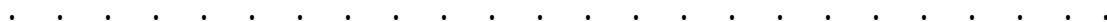
## Power Up

The Boston Museum of Science hosted an “Engineers and Educators Summit 2006”. Jennifer Ng, Jim Anderson, and I represented the IEEE NH Section at the Nov. 14<sup>th</sup> meeting. This seminar was sponsored by Power Up, a national project to advance technical awareness and literacy at the elementary and high school levels. Participants were fairly evenly split between engineers and educators to promote interaction between the two groups.

I found the opening talk to be very interesting and relevant. It was titled *Technology and Society*, and was presented by Professor Ronald Sandler, an assistant professor of philosophy and senior researcher in the “Nanotechnology and Society Group” at Northeastern University. Professor Sandler’s primary areas of research are environmental ethics and technology, ethical theory, and Spinoza. In this presentation, Professor Sandler talked about new and emerging technologies driving societal changes. He cited a number of interesting examples to highlight this theme. The first was the Terri Schiavo case. Regardless of one’s position, this tragic event came about only because of advances in medical technology. In this case, the impact of medicine’s ability to prolong life resulted in social conflict that extended beyond those immediately concerned. Another example is the impact resulting from the expected dramatic increase in the use of nanotechnology in areas such as food and cosmetics. How industry defines and develops these products will influence diverse areas such as government regulations and liability insurance. I found Professor Sandler’s choice of topic to be enlightening and one that addressed a set of concerns that engineers are not normally exposed to.

The group activity involved pairing a teacher and engineer with each interviewing the other. I was paired up with Dr. Steven Cushing, head of the computer department at the Advanced Math and Science Academy Charter Scholl in Marlborough MA. One common area that became evident is the importance of properly funding projects. Steve is interested in getting his students involved with the Lego’s robotic project. However, he is finding it difficult finding the funds to purchase the Lego kit. I mentioned that the IEEE is interested in promoting these types of activities, and that the NH Section recently donated money to a local elementary school to purchase a Lego robotic kit. I suggested that he contact the Boston section and I forwarded him the chairman’s name and address.

The second talk was titled *Engaging, Exciting and Lets Not Forget Educating*. It was presented by Mr. Ed Rodley, Exhibits Developer at the Museum of Science.



Ed is in the middle of developing a new Museum demonstration project that utilizes existing technologies in a Star Wars theme. Ed explained the importance of using familiar themes in projects as a method for attracting a wide and diverse audience that visits museum exhibits. I found the approach he uses parallels closely the system engineering process used in industry. His team is responsible for establishing overall project goals and defining detailed approaches to implement specific objectives. They were given free reign at Lucas Studios for several weeks to develop ideas. Storyboarding techniques and group discussion are utilized to establish general agreement within the team on how best to implement specific details of the project. Once the approach is narrowed down, detailed construction will be handed off to Lucas Studios and others. His team will then oversee integration on the exhibit floor and make any final adjustments. Since this project will be displayed at several museums across the country, Ed routinely makes presentations outlining selected approaches and progress to insure consensus among funding members.

Following the meeting we were provided passes to *Gunther von Hagen's Body Worlds 2: The Anatomical Exhibition of Real Human Bodies*. The exhibition explores human and comparative anatomy, health science, anatomy, and physiology through the study of real human bodies that have been preserved using the ground-breaking process called Plastination. The large display provides an unprecedented opportunity to discover the wonders of the human body. Prior to the meeting, I was somewhat hesitant to commit time to attend this exhibit. However, I found it fascinating and recommend it highly to anyone with a couple of hours to spend while in the Boston area.

If you are interested in the TISP and other topics discussed in this article, and would like to volunteer, please contact Don Sherwood at [donsherwood@ieee.org](mailto:donsherwood@ieee.org)

## Brain Teaser Challenge

*By Butch Shadwell*

### Last Month's Challenge Solution

Last month, for Christmas, I pondered "...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?"

Maybe it is just too early to start thinking about Christmas. About half of the answers I received were very close, but not correct. It seems many of you missed the part where I stated that the paper would wrap around the ball as the pen presses down. When the pen is raised the ink would have transferred to a line equal in width to the length of the arch in contact with the paper. Some folks calculated the length of the cord, which is a little shorter.

The way I approached the problem was to imagine that two right triangles were formed (back to back) from the center of the ball (or circle in 2D) to the points where the paper and ball separated. In the first case the angle of the contact arch is equal to  $2 * \arccos((.5-.1)/.5)$ . This comes to 1.287rad. To get the length of the arch you multiple the angle in radians times the radius (.5 mm), which gives us 0.644 mm for the line width. In the next case we get 0.927 mm. But I bet you already knew that.

### This Month's Challenge

I've been going to a lot of funerals lately. At many of them I did not know the deceased. A lot of people dressed in dark clothes, not quite sure what to do or say. Often you can tell which ones may not have parted with this loved one on the best of terms. But, I think the really weird thing about funerals is that everyone there really has their own idea about what has happened, or is going to happen to the "spirit" of the person being planted in the ground. From my experience, regardless of their choice of religion (or not), people tend to come up with their own unique ideas for the disposition of the dead. I suspect that their ideas more reflect the broad spectrum of human uncertainties and insecurities, rather than the catechism of a church or other belief system.

Maybe it would help things if each of us took time now to write down what we think is going to happen to us and have it read at our funeral, so that others may wish us well on that journey rather than the one they would imagine for themselves. I guess this wouldn't really help. Since folks tend to think they are right and that others are wrong about such things, the atmosphere of the funeral might be marred with the thoughts that the deceased was not only dead but also badly deluded in his or her description of the afterlife.

The preceding paragraphs aren't that funny I suppose, but sometimes I like to go for "thought provoking". So let's say your lung capacity is 1 liter, and with every breath you remove 20% of the oxygen in that air. Then you get trapped in an airtight box that is 70 cm by 220 cm by 50 cm inside. How many

breaths will it take you to consume 50% of the available oxygen in the box, just before you pass out? Assume that when you breathe out, the gas in the box is immediately homogenous again before you breathe in, so the air starts 100% oxygenated and then it is reduced with each breath. Also we will ignore the biological effects of the rising CO2 levels. This sounds pretty hard. I hope I can get it right.

Reply to Butch Shadwell at [b.shadwell@ieee.org](mailto: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.

## Distinguished Section Member Authors Book

IEEE FELLOW, PAUL H. CARR, authors *BEAUTY IN SCIENCE AND SPIRIT*, which includes COOL COSMOLOGY

Of particular interest to IEEE members is the fact that microwave technology was critical to discovering the fossil remnant of the big bang. Paul describes this in Chapter 3 "From the Music of the Spheres to the Big Bang's Whisper." The Big Bang's Whisper is how Paul describes the cosmic microwave background radiation noise from every direction in space.

The cosmic microwave background radiation was discovered by radio astronomers Penzias and Wilson in 1964. They were awarded the 1978 Nobel Prize in physics. This year's Nobel Prize in physics was awarded to John Mather and George Smoot for their microwave radiometry of the temperature variations in this background radiation, as well as the black body spectrum. They did this with the help of the COBE satellite launched by NASA in 1989.

Paul calls the expansion of the universe, from a hot big bang about 14 billion years ago to the observed 2.7 degrees Kelvin microwave background radiation, the "Hot to Cool Cosmology."

Paul's 194 page book with 37 illustrations, including 16 color plates, was published by [www.BeechRiverBooks.com/id08.html](http://www.BeechRiverBooks.com/id08.html) in October 2006. More information is available on Paul's web page [www.MirrorOfNature.com](http://www.MirrorOfNature.com)

## FOURTH ANNUAL AWARDS BANQUET

*By Tom Perkins*

The banquet was held on Wednesday, November 8th, 2006 at The Yard Steak and Seafood House. There was a time for Hors d' Oeuvres and networking before dinner. There were three entrees available for dinner; chicken, roast beef and lasagna. We were graced with beautiful violin music.



After dinner, Tom Perkins presented awards to several people recognizing their achievements.

Chuck Button was recognized for his service to the NH Section as 2006 Secretary, 2004 and 2005 Chair and Chair of the Power Electronics Society chapter.



Celine Bilodeau was recognized for her service to the NH Section as 2006 Vice Chair.

Dean Bacon was recognized for his service to the NH Section as 2006 Treasurer and for his many years of service as over the years he has held every office several times.



Jim Anderson was recognized for his service as Newsletter Editor and for becoming a Life Senior Member.



Steve Brody was recognized for submitting the winning entry in the Name The Newsletter Contest. He suggested several names and his entry

“Peak To Peak” was selected as the best of all the names submitted by all the members who participated in the contest.

Don Sherwood was recognized for his service in spearheading the NH Section’s Teacher In-Service Program and for his work as Liaison with other NH Engineering Societies.



Dr. Howard Michel was presented a certificate and gift in thanks for being our Keynote Speaker.



Jennifer Ng received the NH Section’s annual Young Engineer of the Year Award. She was nominated by Jim Anderson. She was also recognized for her service as the Newsletter Co-Editor and for organizing our Women In Engineering affinity group.



After the Awards Presentation, Dr. Howard E. Michel, IEEE Region 1 Director Elect 2008, 2009 gave a presentation entitled, *New Membership Models Being Considered and Statistics on a Comprehensive Survey of What Members Want From the IEEE.*

Donna Davis, our Administrator, was recognized for all the help that she has provided the NH Section over the years in setting up special events and sending out notices. Donna had to leave before the awards presentation so we did not get her photograph.



Sue Warrington, Tom’s Administrative Assistant at BAE Systems, was recognized for all the help that she has provided Tom over the years in setting up meetings.

# From the Editor (Cont'd)

*Continued from Page 1*

We are in the process of forming a LM group within the NH Section. We have 160 LMs of various grades in the section. This will allow us to have a very active group. We only need six LMs to sign the petition to get the process started. If you are interested in the formation of this group, please contact me at [james-w-anderson@ieee.org](mailto:james-w-anderson@ieee.org).

Your first question is probably, "What does a LM group do?" The sky is the limit; we are only limited by our imaginations. The list below is just some of the activities the other LM groups have become involved in.

1. Promote technological literacy through the Teacher In Service Program (TISP). An interactive program of "in-service training" to help primary and secondary teachers bring technological literacy into the classroom.
2. Join Northeastern University's Retirees Enhancing Science Education through Experiments and Demonstrations (RE-SEED) program to provide assistance to middle and secondary schools in making science and math attractive to students. This program is supported by the IEEE Life Member Fund.
3. Establish an IEEE Milestone honoring a significant achievement in electrical, electronic and computer engineering in the state of New Hampshire.
4. Share our experience and knowledge with younger members by taking an active part in the activities of the IEEE.
5. Mentor students in the IEEE Student Branches of our several technical schools.
6. Publicize those aspects of the IEEE Financial Advantage Program that meet the needs of seniors.
7. Arrange technical programs that may not be provided by other IEEE organizational units.
8. Find and volunteer for areas of public service that need competent technical support.
9. Make presentations to nearby technical firms to show the virtues of IEEE membership and participation as a means of attracting new members, in cooperation with the Section's Membership Development Committee.
10. Prepare fun, unusual, interesting and short stories that are somewhat tech/work related for publication in the Section Newsletter and the Life Member Newsletter. Our own Duncan Morrill wrote one of the first of these articles for the 2004 Life Member Newsletter.
11. Participate in the LM virtual community at <https://www.ieeecommunities.org/lifemembers> and share information with other LMs around the world.
12. Provide assistance to IEEE entities holding technical conferences in the area.
13. Get together occasionally for a relaxed lunch or dinner and share war stories about the projects that we have worked on and the challenges that we have conquered.

If you are interested in the formation of the IEEE NH LM Group, please contact me at [james-w-anderson@ieee.org](mailto:james-w-anderson@ieee.org)

## 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 the next six months.

Jim Anderson [james-w-anderson@ieee.org](mailto:james-w-anderson@ieee.org)

December 4 - 6, 2006

2<sup>nd</sup> INTERNATIONAL LITHIUM MOBILE POWER CONFERENCE 2006

Miami Beach Resort & Spa

<http://www.knowledgefoundation.com/>

December 4 - 14, 2006

2nd International Joint Conferences on Computer, Information, and Systems Sciences, and Engineering (CISSE 2006)

This international conference will be held entirely online.

<http://www.cisse2006online.org>

December 6 - 8, 2006

2nd International Fuel Cells Durability & Performance Conference

Miami Beach, FL

<http://www.knowledgefoundation.com/>

December 18 - 20, 2006

IEEE Conference on Electric and Hybrid Vehicles (2006ICEHV)

Hotel Le Meridien, R.B.M. Road, Pune-411 001, India

e-mail: [ypnerkar@yahoo.com](mailto:ypnerkar@yahoo.com)

March 7 - 9, 2007

9th Annual International Conference - SMALL FUEL CELLS for Portable Applications

<http://www.knowledgefoundation.com/>

March 13 - 16, 2007

Power Systems Conference

Advanced Metering, Protection, Control, Communication, and Distributed Resources

Madren Center, Clemson, University, South Carolina

<http://www.ces.clemson.edu/powsys2007/>

March 26 - 28, 2007

10th Communications and Networking Simulation Symposium (CNS 2007)

As part of Spring Simulation Multiconference 2007 (SpringSim 2007)

Norfolk, Virginia

<http://www.scs.org/confernc/springsim/springsim07/cfp/cns.htm>

March 26 - 30, 2007

Fourth High-Performance Grid Computing Workshop in conjunction with International Parallel and Distributed Processing Symposium - IPDPS 2007

Long Beach, California

<http://www.cs.unb.ca/profs/aubanel/hpgc/>

April 4-5, 2007

Magnetics 2007

Chicago, IL - Lincolnshire Marriott Resort

[http://www.magneticsmagazine.com/mag\\_conf\\_index.htm](http://www.magneticsmagazine.com/mag_conf_index.htm)

April 16 - 20, 2007

IEEE 23rd International Conference on Data Engineering (ICDE 2007)

The Marmara Hotel, Istanbul, Turkey

<http://www.icde2007.org>

April 17 - 20, 2007

2007 IEEE Radar Conference

Westin Hotel, Waltham, MA

<http://www.radar2007.org/>

May 3 - 5, 2007

IEEE International Electric Machines and Drives Conference, Call for Papers

Antalya, Turkey

[http://www.ieee.org/portal/cms\\_docs\\_pes/pes/subpages/bullseye-folder/July06/July-CFP\\_IEMDC11.pdf](http://www.ieee.org/portal/cms_docs_pes/pes/subpages/bullseye-folder/July06/July-CFP_IEMDC11.pdf)

May 4, 2007

IEEE Long Island Systems, Applications and Technology Conference - LISTA 2007

Farmingdale, NY

Dr. Charles Rubenstein [c.rubenstein@ieee.org](mailto:c.rubenstein@ieee.org)

May 14 - 17, 2007

7th IEEE International Symposium on Cluster Computing and the Grid

Rio de Janeiro, Brazil

<http://ccgrid07.Incc.br>

May 16 - 17, 2007

IEEE Conference on Technologies for Homeland Security

Holiday Inn Select BOSTON-WOBURN, Woburn, MA

[www.ieeehomelandsecurity2007.org](http://www.ieeehomelandsecurity2007.org)

May 21 - 25, 2007

10th IFIP/IEEE International Symposium on Integrated Network Management  
University of Federal Armed Forces Munich, Germany  
Call for Papers, Panels, Tutorials, Workshops  
[www.ieee-im.org](http://www.ieee-im.org)

May 21 - 27, 2007

Second IEEE/IFIP International Workshop on Business-driven IT Management (BDIM 2007)  
In conjunction with IEEE/IFIP Integrated Management (IM 2007),  
Munich, Germany  
<http://www.businessdrivenitmanagement.org/bdim2007/>

### Wanted - Articles on "How I became an engineer."

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, Jennifer Ng, ([jng@ieee.org](mailto:jng@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.

### Wanted - Fellow and Senior Members

If you are an IEEE Fellow or a Senior Grade Member, and you are willing to act as a reference for members aspiring to be upgraded to Senior Member status, please contact Chuck Button at [chuckbutton@ieee.org](mailto:chuckbutton@ieee.org)

### Wanted - Photographer

As you can see from the banquet pictures in the current newsletter, we need some help in the photography department for our events. If you are interested to help out, please email Jennifer Ng at [jng@ieee.org](mailto:jng@ieee.org)

## Questions & 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](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](mailto:james-w-anderson@ieee.org) or Jennifer Ng, the co-editor, can be reached at [jng@ieee.org](mailto:jng@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 Administrator, Donna Davis, at [NHIEEE@aol.com](mailto:NHIEEE@aol.com)

**Q: How do I get elevated to IEEE Senior Member Grade?**

A: Please visit the IEEE Senior Member website at <http://www.ieee.org/organizations/rab/md/smprogram.html>. The NH IEEE Section can support your application and you will need two additional Senior or Fellow grade members as references. Please contact Chuck Button (NH Section Secretary) at [chuckbutton@ieee.org](mailto:chuckbutton@ieee.org) for more details.

**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 can't I read the newsletter on my web browser?**

A: Try downloading the latest free version of Adobe Reader at [http://www.adobe.com/go/gntray\\_dl\\_get\\_reader](http://www.adobe.com/go/gntray_dl_get_reader)

**Q: Why doesn't the URL**

[http://www.ieee.org/nh\\_section](http://www.ieee.org/nh_section) work?

A: At the present time the URL is case sensitive and you must use [http://www.ieee.org/NH\\_Section](http://www.ieee.org/NH_Section). We hope to have this corrected by IEEE shortly.

