

# The Beacon

Think Spring!

The Monthly Publication of the Maine Section, IEEE [www.ewh.ieee.org/r1/maine/](http://www.ewh.ieee.org/r1/maine/)

## Chairman's Message

by Ron Osgood, Chair

I'd like to take the time to recognize some outstanding volunteers with you. The Maine Section exists for its members. It is organized and grows thanks to its dedicated volunteers. About 6 months ago, IEEE instituted an IEEE Third Millennium Medal Recipient program. The purpose was to allow IEEE to recognize outstanding volunteers all over the world. The number of medals available to each organization was dependent on the number of members in the respective organization, the Maine Section, in our case. We have the opportunity to award 7 medals. Nominations of deserving individuals were sought mostly from past and present Executive Committee members. The sole criteria was for significant, continued contribution to the Maine Section. All of those nominated were deserving of this special recognition. In fact, I'm sure there are many others just as deserving, that for whatever reason, were not nominated.

However, I'm pleased to list those nominated, and the actual medal recipients. All will be honored at the Annual Meeting (watch the Beacon for news on this upcoming event) or at a time and place suitable for them.

I congratulate them and the many other deserving volunteers of past and present who make our Maine Section so successful.

<b>John Andrews</b>	Recipient
<b>Thomas Carbone</b>	Recipient
<b>George Elliott</b>	Recipient
<b>Brian Huntley</b>	Recipient
<b>Stanley Koski</b>	Recipient
<b>James Patton</b>	Recipient
<b>James Skilling</b>	Recipient
<b>David Conroy</b>	Nominated
<b>Scott Dunning</b>	Nominated
<b>Paul Lerley</b>	Nominated
<b>Ron Osgood</b>	Nominated

April, 00  
Volume 9  
Number 3  
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Short Course (4/1/00)

CS/EDS Chapter  
Meeting: *A Brief  
History of MEMS*  
(4/26/00)

PES/IAS Chapter  
Workshop: *Should You  
be Generating Your Own  
Power?* (4/6/00)

Maine Section Annual  
Meeting (6/2/00)

Information Articles

Letter from the Editor:

### Attention Communications Society Members! Your Chapter Needs a Chairman

I'm sure that all of you who attended Communication Chapter meetings organized by Brian Huntley for many years remember the good times you had meeting with your friends and hearing excellent talks on timely communication topics. Since Brian completed his long-term tenure as Chairman of the Communications Chapter in Maine, the Section has been unable to locate someone willing to work to maintain an active Communications Chapter in Maine. The effort is not as much as you might think. You only need to organize two technical meeting a year. And if you get other officers to help you, no one should feel overburdened. If you would like to volunteer to keep an active Communications Chapter in Maine, please contact Ron Osgood at:

[Ron.Osgood@fairchildsemi.com](mailto:Ron.Osgood@fairchildsemi.com) or (207) 775-8068.



# Introduction to Visual Basic Short Course

*presented by*

**Computer and Electron Device Society**

*at the*

**University of Southern Maine**

*Saturday, April 1, 2000*

*8:30 AM to 4:30 PM*



Since the late eighties “event-driven” programming has all but replaced the traditional procedural approach to applications development. The use and implementation of “objects” has made the task of coding easier and greatly reduced the software development life cycle. Recently, the n-tier model of distributed applications design has introduced new challenges in software design.

This one-day tutorial will introduce you to perhaps the most popular object-oriented /object-based visual programming tool on the market today, Microsoft® Visual Basic. VB is more than a programming language; it is a programming environment. Using version “Introduction to Visual Basic Programming” will familiarize you with the environment, the language, its strengths and weaknesses, tips and tricks, and GUI design fundamentals, and will include an introduction to how VB can create more efficient and scalable n-tier design and new component object models (COM).

Due to the demand to repeat our original Visual Basic Tutorial, Maine’s Computer & Electron Devices Chapter is pleased to provide you with this updated opportunity.

## **INSTRUCTOR**

Stephen Wallace is a Microsoft Certified Systems Engineer and Microsoft Certified Trainer with over 9 years classroom experience. He holds certifications in Microsoft products including Visual Basic, Exchange Server, Internet Information Server, Site Server, SQL Server, NT Workstation, NT Server and Windows 95. Prior to becoming a trainer, he worked as an architectural designer having studied architecture at Harvard Graduate School of Design and Maine College of Art. He is currently employed as a full-time programmer for Forum Financial Group in Portland, Maine where he designs and develops Internet solutions using Java script, SQL and Visual Basic using following the model of n-tier COM distributed application design.

## **TUITION**

	Early Registration	After March 1st
Full-time students & faculty	\$100	\$150
IEEE Members	\$195	\$245
Non-IEEE members	\$225	\$275

Lunch and coffee breaks are included in the price. Each attendee will be provided a personal copy of all foils in a bound volume as well as VB demonstration programs on floppy disk.

## **REGISTRATION**

Mail checks to Maine IEEE CS/EDS: to:  
Maine CS/EDS VB Tutorial  
C/O David Potts M/S 10-26  
Fairchild Semiconductor  
333 Western Avenue  
South Portland, ME 04106

Name:			
Street:			
City:			
State:		ZIP	
E-mail:			
Phone:			
Cred. Card:			
Exp. Date:		Type	

On-site, cash-only registration will be accepted on a space-available basis. Registration will be acknowledged by mail and will include a USM parking permit.

## **CONTACT**

Send e-mail to: [J.Andrews@IEEE.Org](mailto:J.Andrews@IEEE.Org) or see:  
[www.ewh.ieee.org/r1/maine/calendar/cseds/01apr00.html](http://www.ewh.ieee.org/r1/maine/calendar/cseds/01apr00.html)



# Computer and Electron Device Society Meeting

## *A Brief History of MEMS*

### EDS Distinguished Lecturer

**Dr. Paul Zavracky**

*Wednesday, April 26, 2000*

Micro Electro-Mechanical Systems (MEMS) technologies have come a long way in the last twenty years. The author was fortunate to become involved in the late seventies, when the notion of micromachining was just beginning to capture people's imagination. Many companies and universities wanted to understand this new technology and to do so established in-house capabilities. A significant portion of the early research on MEMS was conducted in industrial labs such as IBM, Foxboro, Honeywell and others. Much of this early work went unreported. The author was responsible for establishing a MEMS program at The Foxboro Company. During this period the initial groundwork and many important fabrication techniques for MEMS were developed in both industrial and university laboratories.

In this talk, the author will describe his own view of the history of MEMS starting from 1979 at The Foxboro Company and advancing to the present. The work reported will be the author's own research with references and comparisons to the work of others. Topics will include processing techniques developed for silicon and other materials, and devices such as pressure sensors, accelerometers, relays, and optical devices.

#### **About the Speaker:**

Paul M. Zavracky obtained his PhD in Solid State Physics at Tufts University. He has extensive experience both in material and device technology. Zavracky is the President and Chief Operating Officer of The MicroOptical Corporation. MicroOptical manufactures eyeglass display systems and fabricates optical MEMS devices. Prior to joining MicroOptical, he was a professor of ECE at Northeastern between January 1991 and July 1998. Zavracky established a MEMS program at Northeastern that developed both surface and bulk micromachined devices including accelerometers, Fabry Perot interferometers, microswitches and microrelays. Dr. Zavracky was the Chief Operation Officer of Kopin Corporation, a manufacturer of advanced display devices. Dr. Zavracky spent 5 years at The Foxboro Company where he established a program in MEMS beginning in 1979. During this period, Dr. Zavracky developed such diverse devices as resonant hollow beam pressure sensors, quartz double tuning fork force sensors, and silicon piezoresistive pressure sensors. Dr. Zavracky also spent five years at Coulter Corporation working on thin films of II-VI compounds and 5 years at MIT Lincoln Laboratory where he was involved in the development of materials for solar energy applications. He has over 100 publications and 39 patents.

**Schedule:** 5:30 PM - *Social*  
6:00 PM - *Dinner*

7:15 PM - *Presentation: A Brief History of MEMS*

**Cost:** \$20.00 per person for dinner. (Full-time students \$5.00)

No cost for talk **only**, but you must still register to ensure a chair is saved for you.

**Location:** **Embassy Suites**, South Portland, ME

#### **To Make Reservations:**

You may register online at the Maine IEEE Web site at <http://www.ewh.ieee.org/r1/maine/> or you may contact Carrie O'Rourke@ 207-775-8242 or e-mail at [corourke@spf.fairchildsemi.com](mailto:corourke@spf.fairchildsemi.com) to reserve your slot. Entree choices are Chicken Dijonnaise or Medallions of Tenderloin with a Beurre Rouge. If you have a special dietary need, be sure to tell Carrie. Please inform Carrie if you will attend the dinner or just the meeting. Please make your reservation by noon on Friday, April 21, 2000. Note that dinner reservations canceled after this time will still be charged unless you are able to fill your vacated slot. As always, you are welcome to attend the talk without any cost, but please let us now you are coming so that we may ensure that there are enough chairs. For information only about this talk or the Maine IEEE Computer and Electron Device Society, contact Dave Potts at (207) 775-4633 or [potts@ieee.org](mailto:potts@ieee.org).

#### **Directions:**

From Maine Turnpike Exit 7 follow the signs for about two miles to the Portland Jetport. Within the Portland Jetport Complex, follow signs to the Embassy Suites which is located 500 feet beyond the Portland Jetport Main Terminal.

***Early Notice: May 24, 2000 Dr. Bruce Smith, RIT, Lithographic Challenges for 130nm Devices***

**Combined Heat and Power:  
Should You be Generating Your Own Power?**

*workshop sponsored by:*

The Northeast/Midwest Institute  
U.S. Department of Energy  
Maine Manufacturing Extension Partnership  
The University of Maine  
Maine Chapter, PES/IAS Societies of IEEE

*Thursday, April 6, 2000*

**Soderberg Center  
University of Maine  
Orono, Maine**

**Proposed Agenda**

- |                 |  |
|-----------------|--|
| 8:00 -8:30 AM   | Registration   |
| 8:30 – 8:45     | <b>Welcome and CHP Challenge Mission Statement</b><br><i>Denise Swink, Deputy Assistant Secretary, US DOE Office of Industrial Technologies (Tom King will stand in if Denise cancels)</i> |
| 8:45 – 9:30     | <b>CHP Technology Overview</b><br><i>Dr. Michael Muller, Office of Industrial Productivity and Energy Assessment, Rutgers University</i>   |
| 9:30 - 10:15    | <b>Markets for Combined Heat &amp; Power</b><br><i>Bruce Hedman, Vice President, ONSITE SYCOM Energy Corporation</i>   |
| 10:15 - 10:30   | Break  |
| 10:30 - 11:15   | <b>Successfully Managing CHP Projects</b><br><i>Fred Farrand, Vice President of Engineering, Vanderweil Engineers</i>  |
| 11:15-12:00     | <b>Financing Opportunities for CHP Projects</b><br><i>Gil Waldman, Director of Development, Trigen Energies</i>  |
| 12:00- 12:45 PM | Lunch  |
| 12:45 - 1:30    | <b>Policy Issues with CHP Implementation</b><br><i>Richard Silkman, President, Richard Silkman Associates</i>  |
| 1:30 - 2:15     | <b>What are the Currently Available CHP Technologies for Forest Products Companies?</b><br><i>Mark Juergensen (invited), Solar Turbines, Power Technology Division</i>                     |
| 2:15 to 3:00    | <b>Pulp and Paper CHP Case Study</b><br>To Be Announced...(Glenn Poole invited)  |

**For additional information:** contact Joan Saks at the Maine E2 Center in Portland, ME.  
Ph: (207) 775-1200  
e-mail: [e2maine@zwi.net](mailto:e2maine@zwi.net)

# Top 20 Engineering Achievements of the 20th Century Are Announced

**Editors note:** *The following article is a compilation of press releases issued by the IEEE and ASEE.*

The 20 Greatest Engineering Achievements of the 20th Century as selected by the National Academy of Engineering (NAE) were announced by astronaut/engineer Neil Armstrong at the National Press Club as part of National Engineers Week 2000. Nominated by 29 professional engineering societies, the top 20 list of Great Engineering Achievements was selected and ranked by a distinguished panel of the nation's top engineers, working in anonymity to ensure objectivity. The achievements were selected to show the important role engineering has played in improving the quality of life during the 20th century.

"The IEEE-USA is proud that electrification was named as the single greatest engineering achievement of the 20th century," said Merrill W. Buckley, Jr., President of the U.S. career services and public policy arm of the worldwide Institute of Electrical and Electronics Engineers. "In fact, the IEEE nominated most of the top ten. But what is most important is to recognize that the greatest achievements of engineering lie ahead of us, in ways that will combine and transcend these different disciplines to improve our lives."

"Without electrification, there would be no Internet. We couldn't have the commerce we do now, the communications. We would literally be in the dark. There wouldn't even be hospitals and clinics in most parts of the world," said Buckley. "Our whole way of life could not exist."

## The Top 20 Great Engineering Achievements of the 20th Century:

1. Electrification
2. Automobile
3. Airplane
4. Safe and abundant water
5. Electronics
6. Radio and Television
7. Agricultural Mechanization
8. Computers
9. Telephone
10. Air Conditioning and Refrigeration
11. Interstate Highways
12. Space Exploration
13. Internet
14. Imaging Technologies

15. Household Appliances
16. Health Technologies
17. Petroleum and Gas Technologies
18. Laser and Fiber Optics
19. Nuclear Technologies
20. High Performance Materials

The Great Achievements Project, initiated by the NAE, is part of a larger public awareness campaign to bring public focus to the contributions of engineering. For more details, go to:

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

## Be The First

The IEEE became a technical co-sponsor of FIRST (For Inspiration and Recognition of Science and Technology) at a September '99 ceremony in New Hampshire. FIRST sponsors the nationally recognized FIRST Robotics Competition each year for high-school student throughout the United States as well as programs for younger age groups.

As a co-sponsor of FIRST, the IEEE will encourage its members to loan their technical expertise to students. Some ways that IEEE members can participate in the IEEE/FIRST collaboration include:

- volunteering to be a technical consultant for a local FIRST team.
- asking their employer to become a corporate sponsor by providing financial assistance to a local FIRST team.
- assisting FIRST competition coordinators with the planning and development of an event in their region.
- spreading the word about the FIRST Robotics Competition to local schools and IEEE student branches.
- urging their own children to join a local FIRST team.

To speak with a representative from the IEEE about getting involved with FIRST activities, IEEE members should contact Christy Bouziotis, phone: (732) 562-6526, e-mail: [bouziotis@ieee.org](mailto:bouziotis@ieee.org). To find out more about FIRST, visit their Web site at [www.usfirst.org](http://www.usfirst.org).

*(Reprinted from the Pulse of Long Island newsletter.)*

## Maine Section Proposes Changes in Officer Terms

The IEEE Headquarters has required that Section officers serve calendar-year terms. The Maine Section Executive Committee is recommending that the best way to make the change to this new requirement is to extend the terms of the present officers by six months, from June 30, 2000 to December 31, 2000. Newly elected officers would then serve one-year calendar terms starting in 2001. All the current Section officers have graciously agreed to serve an additional six months in their present positions, but the Section members must approve this extension to the terms of the present officers. Consequently, two votes will be held during the Annual Meeting on June 2; one to approve extending the terms of the present officers and one to elect officers for the 2001 Section year.

The current Section officers who would continue to serve until the end of this year are:

<i>Chair:</i>	<b>Ron Osgood</b>
<i>Vice Chair:</i>	<b>Brian Conroy</b>
<i>Treasurer:</i>	<b>Jim Skilling</b>
<i>Secretary:</i>	<b>Merlin Smith</b>
<i>Senior Member-at-Large:</i>	<b>Nathan March</b>
<i>Junior Member-at-Large:</i>	<b>Bridget Rioux</b>

The slate of officers recommended by the Nominating Committee for the 2001 Section year will be announced in the May *Beacon*.

## Continuing Education Requirements For Professional Engineers

The Maine State Board of Registration of Professional Engineers is considering a possible Board rulemaking to require meeting certain continuing educational standards as a condition of license renewal. The Board does not have a definite proposal at this time. They have formed a subcommittee of the Board to investigate need and alternatives.

The Board last considered continuing educational requirements in 1995 and that proposal was very similar to the National Council of Examiners for Engineering and Surveying (NCEES) guidelines. The current NCEES guidelines can be found at <http://www.ncees.org/engineers/cpc.html>. A key item is a requirement for either 15 annual or 30 biennial Professional Development Hours (PDH). NCEES has eight ways to earn PDHs. Examples are a college semester hour for 45 PDH, a Continuing Education Unit (CEU) for 10 PDH and active participation in a professional society for 2 PDH.

Very briefly, some arguments that have been stated for such rulemaking include:

1. the fast pace of change in technology requires continual education,
2. other professions are doing it,
3. it increases professionalism and status and
4. it might limit the number of PEs to the benefit of the remainder.

Some opposing arguments are

1. it would take away time and effort from the Boards testing and enforcement mission,
2. there is no direct connection between earning PDH and being a good engineer,
3. there would be \$10 to \$20 of increased annual state fees for administration plus the cost of the PDH and
4. there is no current public harm that the PDH would correct.

The Board requested the Executive Committee of Maine IEEE to poll its members for their opinion of this possible change and to communicate to the Board by March 30. At its regular March 16 meeting, the Maine IEEE Executive Committee decided that there was too little time to do that and requested the IEEE membership communicate their opinion directly to the Board. The Executive Committee would also like to hear from the membership in order to better represent them.

Please contact the Board at Maine State Board of Registration of Professional Engineers, #92 State House Station, Augusta, ME 04333, email at [pengineers@ctel.net](mailto:pengineers@ctel.net) or Fax at 207-626-2309. Their web page is <http://www.state.me.us/pfr/auxboards/enghome.htm>.

Please contact the IEEE Executive Committee through me at [b.r.hill@ieee.org](mailto:b.r.hill@ieee.org) or 247 Brunswick Ave, Gardiner, ME, 04345.

*Brenton Hill*, Education Chairman

# Maine Section Annual Meeting Carrabassett Valley, ME

June 2, 2000

by Nathan March

Please join us at the Sugarloaf Inn for the 2000 Maine Section IEEE Annual Meeting on June 2nd. Both members and guest will enjoy a series of interesting speakers, a tour of the Stanley Museum, and opportunity to meet with old and new friends- all from the beauty of the Carrabassett Valley and Bigelow Mountain Range!

Presentation topics include how the Gulf of Maine Aquarium is using high technology to connect researchers and local Maine schools. We will have a presentation from US FIRST discussing how a program developed "For the Inspiration of Science and Technology" has organized a number of robot competitions for High School students with the express purpose to excite youth about engineering and technology. Distinguished Lecturer Dr. Fred Jeffers from Iomega Cooperation will give a "Magnetic Magic Show" demonstrating magnetic physics through the use of remarkable and seemingly impossible "magic tricks."

This year's annual meeting will also include a tour of the Stanley Museum in Kingfield, Maine. The museum preserves and interprets the Stanley brother's unique tradition of Yankee ingenuity and creativity, and showcases the Stanley Steamer horseless-carriage era automobile.

For anyone who would consider spending the night, Sugarloaf Grand Summit Hotel has reserved rooms and provides a variety of additional activities of interest. Enjoy mountain biking, hiking, tennis, swimming, or moose watching! Sugarloaf also boasts one of Maine's finest golf courses, an 18 hole par 72-course, rated #1 in New England by Golf Magazine.

Sugarloaf Grand Summit Hotel has reserved 50 rooms and 5 sets of 4 tee-times. Double occupancy rooms are \$98. Additionally Sugarloaf offers a "Golf and Stay" package which includes 1 double occupancy room, 18 holes of golf, and a golf cart for \$99.95! You are encouraged to make your own reservations by May 12th. Reservations can be made through the Sugarloaf Conference Reservations Office at 1-800-527-9879.

I am currently in the process of negotiating meal and dining arrangements and am not ready to accept registration money. I will be publishing an official registration notice via email and the Maine Section web site at "<http://www.ewh.ieee.org/r1/maine>". If you would like to be on my mailing list please email me at [nate@quadic.com](mailto:nate@quadic.com). Additionally please feel free to contact me with any questions you might have. I can be reached via email, or at (207) 773-2662 x55.

Thank you, and I look forward to seeing everyone in June!

## Electronic Commerce and the Future of Wireless Digital Communications, a 2-day conference presented by IEEE NJ Coast Section, May 4-5, 2000

The IEEE NJ Coast Section proudly presents a 2-day Conference on the theme "Electronic Commerce and the Future of Wireless digital Communications" via a series of 8 lectures from leading speakers such as, Selina of Lo Alteon WebSystems, Nader Bolourchi of Motorola, Janet Clark of Cable and Wireless, Stamatios Kartalopoulos of Lucent Technologies, LJ Germinario of Microsoft, Nelson Sollenberger of AT&T Research, Siroos Afshar of AT&T ACM, and George K. Kannell of Lucent Technologies at the IEEE Headquarters conference rooms, Piscataway, NJ from 8AM to 5PM on May 4th and May 5th, 2000.

If you would like to attend, please register at <http://ewh.ieee.org/r1/njcoast/> and send registration fee by April 4, 2000.

More details about the program of activities and individual tutorial tracks are available from the "Calendar of Events", followed by the "2-day Conference" links at this website. Please remember to register early so that you will not have to pay the penalty for late registrations.

*Meeting Schedule:* 8:00 AM - 5:00 PM  
(breakfast from 7AM to 8AM)

*Location:* IEEE Headquarters Conference rooms,  
Piscataway, NJ.

*Cost:* Register Before April 4, 2000, \$300/day  
Register After April 4, 2000, \$350/day

# Beacon Publishing

The Beacon is published on a monthly schedule based upon the need to advertise upcoming meetings. All material submitted for the Beacon must be received by the editor no later than the 15th of the month preceding the issue in which it should be included. Sorry, NO EXCEPTIONS!!

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**The Beacon**