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# Newsletter

## Report from Eastern North Carolina Section

**Mary Ellen Randall**  
Chair IEEE Eastern NC Section



Mary Ellen Randall  
Chair, Eastern NC Section  
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The Eastern North Carolina Section includes the Greater Raleigh Area east to the coast of North Carolina, and includes the Lower Cape Fear subsection. We owe our thanks to Subsection Chair Brian DosSantos, Section Vice Chair Dave Ruden, Treasurer Roger Lawrence, Secretary Tom Jepsen, and the entire Executive Committee for their great service this year!

We have many societies with active local chapters:

- Computer Society
- Engineering in Medicine and Biology (EMBS)
- ElectroMagnetic Compatibility
- Power Engineering / Industrial Applications
- Geoscience & Remote Sensing
- Communications Signal Processing Information Technology
- Engineering Management Society
- Robotics & Automation
- ACME (Antennas and Propagation, Components, Packaging, and Manufacturing Technology, Microwave Theory and Techniques, and Electron Devices)
- Neural Networks

Special committees include: Awards and Recognition, Student Activities, Educational Activities, Member Development.

Your Eastern North Carolina Section has been very active, holding 69 meetings this year with three upcoming meetings for December:

Instead of a separate Awards event, this year we held an Awards Picnic. This permitted the honored engineers to bring their entire family to the event. We received positive feedback on this format. Awards were given for:

Subroto Bhattacharya: 2003 Outstanding Engineer  
John Gibson: Exceptional Service and Leadership Award  
Yungtaek Jang: 2003 Outstanding Engineer  
Thomas Jepsen: 2003 Outstanding Engineering Author  
Mo-Yuen Chow: 2003 Outstanding Engineering Education  
Michael Randall: 2003 Outstanding Student Entrepreneur

### IEEE Membership Renewal 2005

It is still time to renew your 2005 IEEE Membership

<http://www.ieee.org/renewal>

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Abhinav Aggarwal 2003 Outstanding Service Award  
 Esther Lumsdon 2003 Outstanding Service Award  
 David Ruden Outstanding Volunteer  
 Ratan Piplani Outstanding Engineering Career  
 Bill Hulette 2003 Outstanding Mentor  
 Jonathan Bittner 2003 Outstanding Student Leader

Congratulations to all our winners!

The first ever conference called "Technology For Life: North Carolina Symposium on Biotechnology and Bioinformatics" was held October 12 – 15, 2004 at Research Triangle Park, North Carolina. Many nationally known speakers presented an outstanding program. Tom Jepsen, Conference Chair, and Esther Lumsden, Conference Co-Chair, did an outstanding job at pulling together an excellent Symposium.

Many of our members serve as mentors to others, including K-12 school programs. Some of the mentoring this past year includes: Science Olympiad, FIRST (Middle School) Lego League State Competition, FIRST (High School) Robotics, Girl Scouts, Boy Scouts Explorer Post, Merit Badge College at Duke, Human Generated Electricity (Pedal Powered). To help fund some of these programs, we have instituted a Recycling Program which "pays back" to our section. It is easy and FREE to use. Please see the article on Recycling later in this newsletter.

Thank you for the opportunity to serve as Section Chair this past year. Please get the most from your membership by attending meetings and volunteering to be a leader in this outstanding organization.

Best Wishes for continued success!

Mary Ellen Randall

*Editor's Note: Mary Ellen Randall was appointed to the position of Women In Engineering Committee Chair (WIEC) by the IEEE Board of Directors at its November 21, 2004 meeting. The appointment is for a three-year term, 1 January 2005 - 31 December 2007. WIEC represents women engineers from around the world. Please contact Mary Ellen if you have business you wish considered by the committee. ♦*

## IEEE ENCS Pharma Job Hunt Collaboration

**Esther Lumsdon, Chair**

The Biotech/Health/Pharma Job Hunt Collaboration Group has been meeting regularly this fall. On Sep.

27th, Michael Janas of INCresearch spoke about jobs in clinical research and how to land a job with a CRO. On Oct. 25th, Connie Perrill gave a talk on titled "Introduction to Data Integrity in Clinical Research." On Nov. 15th, there was a panel discussion "How We Transitioned to Jobs in Life Science" with Nick Verna, Bill Deerhake, and Esther Lumsdon. Presentations are archived on the Section's Virtual Community website, in the Biotech section of the files area.

The Technology for Life Symposium in October was a valuable experience.

Because I have landed a job, my life has become very busy. This group is in need of a small committee to lead it. I can serve as a resource, and mentor the new committee. Leading this group was a great experience for me, and it helped me make the professional connections and get the job I have now at Duke Clinical Research Institute. If you are interested in making a transition to life sciences, I encourage you to consider taking on this role.

### Job Description for Leading BHP-JHC:

- Find speakers and plan meetings
- Reserve meeting location and make arrangements for security guard
- If the ISA location is not available, find alternate location (preferably free)
- Publicize meeting
- Send around attendance sheet for meeting
- Edit meetings on IEEE calendar at [www.federal-systems.com/ieee/calendar/htdocs/cal.html](http://www.federal-systems.com/ieee/calendar/htdocs/cal.html) and in the virtual community website
- Submit L-31 meeting form at IEEE website (meeting report) for every meeting

### Optional Tasks:

- Provide food and drinks for meeting (food/snacks could be dropped)
- Attend IEEE Executive Committee meeting every month (lunch, 3rd Friday at NCSU)
- Periodically send notification to the mailing list about other meetings of interest
- Post files to VC website files area (meeting notes and presentations)
- Submit articles to IEEE ENCS newsletter
- Submit expenses to IEEE section for reimbursement
- Stay within IEEE ENCS budget
- Submit budget request to IEEE Eastern NC Section in Jan/Feb ♦

## North Carolina Symposium on Biotechnology and Bioinformatics - October 13-15, 2004

Tom Jepsen [tjepsen@ieee.org](mailto:tjepsen@ieee.org) 919-933-0377

"Technology For Life: The North Carolina Symposium on Biotechnology and Bioinformatics," was held at the North Carolina Biotechnology Center in Research Triangle Park, NC, on October 13-15, 2004. Approxi-



Attendees at Reception (l to r: Sal Mungal, DCRI; Dr. Simon Lin, Duke University Medical Center; Paul Kizakevitch, RTI; Professor Mo-Yuen Chow, NCSU; Thomas Jepsen, conference chair

mately 70 people attended the 17 sessions that were held over three days. (The conference program can be viewed online at <http://ewh.ieee.org/cmte/tech4life>) The conference was sponsored by the IEEE, Duke University Medical Center, North Carolina State University, the University of North Carolina, and the North Carolina Biotechnology Center. Corporate donations were provided by SAS Institute, Icoria, Embrex, Ascot Technologies, and ITSolutionsOnline.

### Conference Highlights

North Carolina Secretary of State Elaine Marshall gave the keynote address at the opening plenary, in which she talked about the importance of developing the biotechnology industry in the state and its importance in job creation and economic development. Dr. Ken Tindall, Senior Vice President for Science and Business Development at the North Carolina Biotechnology Center, followed with a talk on the role of the

Biotechnology Center in promoting research and development; according to a recent Millikin Institute report, the Raleigh-Durham-Chapel Hill area is the third largest metro area in the nation for biotechnology research.



NC Secretary of State Elaine Marshall gives the opening plenary speech.

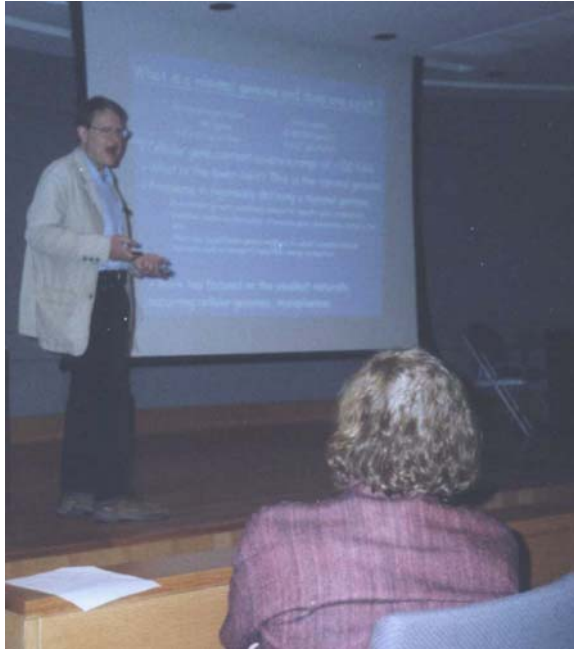
The "Educating for Biotechnology" session was chaired by Dr. Troy Nagle, head of the joint UNC/NCSU Biomedical Engineering program. Dr. Nagle provided an overview of the various training and educational programs available in the state in support of biotechnology, bioinformatics, and biomedical engineering.

After the opening plenary sessions, the remainder of the technical sessions were divided into two tracks, one focusing primarily on genomics/proteomics, and the other focusing on healthcare standards and quality assurance.

The Genomics/Proteomics session featured a presentation by Dr. Clyde Hutchison of Craig Venter Associates on defining a minimal cellular genome. The Standards/QA sessions were chaired by Jill Kaufman, Director, IBM Life Sciences Standards, and featured a presentation by Dr. Peter Elkin of the Mayo Clinic on including genomic information in healthcare records. Dr. Donald Bitzer of NCSU talked about the role of information theory in genomic research. Stanley O. Starr, Chief Engineer of the Dynamac Corporation,

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gave a presentation on the Space Life Science Lab at the Kennedy Space Center. Other conference topics included bioethics, telemedicine, healthcare informatics, and grid computing.



Dr. Clyde Hutchison discusses the minimal genome.

### Student Awards

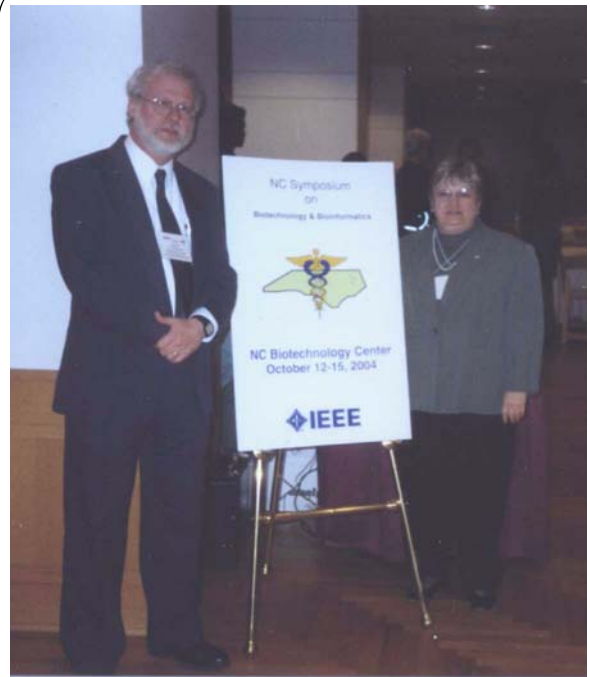
Prizes were offered for the two best papers authored and delivered by a student at the university level. Papers had to be at least 70% authored by students, and presented by students. The first prize was a \$50 Barnes and Noble gift certificate, and the second prize was a \$25 Barnes and Noble gift certificate. Winners of the student paper contest were:

First Prize: Kherlopian, Gerrein, Wu, Bakhru, Rodriguez, Wald, Columbia University - Medfolink: A Powerful Concept-Based Approach to Medical Report Processing.

Second Prize: Xing, Mishra, Vu, Alexander, Bitzer, Vouk, North Carolina State University - Free Energy Based Analysis of the Coding Region of *Saccharomyces Cerevisiae*.

### Results

The conference created “cross-fertilization” among area universities and corporations, and enabled participants to learn of small business and grant programs offered by the state and federal governments. It also increased the visibility of the IEEE, and especially the Eastern North Carolina Section; many participants said they did not realize that the IEEE was involved in biotechnology-related areas. IEEE members learned of employment opportunities in the biotech/healthcare sector; several have already found jobs. Feedback from participants was highly positive, and many indicated they would like to see the conference become an annual event.



Conference Chair Thomas Jepsen and ENCS Chair Mary Ellen Randall.

In short, we feel that the conference was a success, and fulfilled a need for a regional conference for the North Carolina region; a special thanks to all those ENCS members who helped to make this event a success. We need to begin planning to make this an annual, self-supporting event; if you would like to become involved, please contact Tom Jepsen. ♦

## Remote Sensing of Coral Reefs

Linda Hayden

Remote Sensing of Coral Reefs and Change Detection was the key topic of discussion during the November 18th meeting of the Eastern North Carolina Chapter of the IEEE-Geoscience and Remote Sensing Society. The meeting was held in the Center of Excellence in Remote Sensing Education and Research (CERSER) on the campus of Elizabeth City State University. Dr. Phil Dustan was the key speaker.



His recent coral reef research and conservation efforts include using satellite imagery to detect coral reef change, giving testimony to the US Senate in support of the Coral Reef Conservation Act, representing The Cousteau Society at the US Coral Reef Task Force Meetings and developing methods to support the scientific monitoring of coral reef health. Dr. Robert Y. George, from the GIS Institute, reflected on the local implications during his discussion of Global Warming and Ecosystem Conservation of Coral Reefs with Emphasis on NC Coast.

Also during the meeting, Dr. William Porter was elected as the new Vice President of Chapter #03181. Dr. Porter is a professor in the Department of Geological, Environmental and Marine Science at ECSU. One of his responsibilities will be to serve as representative to EXCOM meetings.

The next meeting of the Eastern NC IEEE-GRSS Society Chapter will be on March 3, 2005 in 229 Dixon Hall, ECSU. At that time Dr. Scott Hensley, Radar Engineer with NASA's Jet Propulsion Labora-

tory will discuss "Mapping the World's Topography from Space - The Shuttle Radar Topography Mission."

Dr. Hensley is an IEEE-GRSS Distinguished Lecturer.



## Software Job Hunt Collaborations

Harold Meder [hwm@ieee.org](mailto:hwm@ieee.org)

We are approaching full employment. Your help is needed to finish the job and then to switch gears from Job Hunt Collaborations to Career Development Collaborations. Please forward information regarding opportunities that would help your peers advance their careers to Harold Meder.

Congratulations go out to Dennis Laws. Dennis participated in the Sun Certified Java Programmer Study Group and then took the certification test. He not only passed, but bent the needle against the top end of the scoring range. The study group will be starting up again in the new year. Let me know if you are interested in participating. We will also be starting up a J2EE study group.

The Struts Learning Group is under way. It is still easy to catch up with the group and join in this learning opportunity. This opportunity will extend to include some experience with Eclipse, Tomcat, MySQL, and J2EE. For more information, visit <http://www.stikiweb.org/stikiweb/viewPage.do?name=StrutsLearningGroup>

Networking is the corner stone strategy for advancing your career. Therefore, it is important to keep an eye

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on local networking opportunities such as IEEE meetings. To keep up with what is happening in the Research Triangle Area, sign up for the weekly Networking Newsletter by visiting <http://rtpnet.org/mailman/listinfo/ieee-jhc>

Are you interested in advancing your career, but have difficulty forging a career path on your own? You are not the only one fighting this battle. So why are you fighting alone? Let Harold Meder know if you are interested in joining a Career Development Collaboration. ♦

## ACME (AP/CPMT/MTT/ED) Chapter Update

**Dev Palmer, Chair**

The ACME Chapter held its Fall Meeting on Monday, November 8th, in the Auditorium of the new Center for Interdisciplinary Engineering Research and Applied Sciences (CIEMAS) on the Duke University Campus. The meeting was hosted jointly with the Electrical and Computer Engineering Department and the Duke Student Chapter. Dr. Daniel J. Radack, Program Manager with the DARPA Microsystem Technology Office, gave a talk on his current programs and future interests in development of advanced semiconductor devices, circuits, and integration techniques for high performance microsystem applications. Over 40 IEEE members and guests attended the presentation, which was followed by a reception in the lobby of the Teer Engineering Library Building. The ACME Chapter officers would like to extend their thanks to Dr. April Brown, Duke ECE Department Chair, and Mr. Adam Durity, 2004 IEEE Student Chapter President, for their help in organizing and executing the meeting.

ACME also participated in the NCSU ECE Department Open Seminar Series by co-sponsoring their meeting on Wednesday, November 17th, featuring Dr. Gabriel M. Rebeiz, MTT Distinguished Lecturer and Professor of Electrical Engineering and Computer Science at the University of Michigan, Ann Arbor. Dr. Rebeiz's presentation was entitled "RF MEMS for Commercial and Defense Applications." It covered the latest work in high isolation switch networks, phase shifters and tunable filters, a comparison of MEMS devices and comparable GaAs devices, and finished with an overview of the latest research areas in RF MEMS switches, varactors and tunable networks. The

meeting was organized by Dr. Kevin Gard, Assistant Professor in the Department of Electrical and Computer Engineering.

The ACME Chapter holds four technical meetings per year that rotate between the topics of interest to the constituent societies: AP for antennas and wave propagation between systems, CPMT for reliable, high-performance packaging systems, MTT for microwave theory, circuits, and applications, and ED for the development of transistors and other electron devices. The ACME Winter Meeting will be held some time in February 2005, subject and location TBD. If you have an idea for a technical meeting topic, would like to present a talk, or would like to host a meeting at your institution, please contact Dev Palmer, chapter Chair, by email to [dev.palmer@ieee.org](mailto:dev.palmer@ieee.org). We welcome the participation of all interested IEEE members from government, industry, and academia. ♦

## We Recycle to help K-12 Technology Education

**Mary Ellen Randall**

Mentoring is an important role for engineers. In our section, we have many members who generously volunteer to mentor young ladies and gentlemen from Kindergarten through 12th grade. We receive many requests to fund programs staffed by our member volunteer mentors, but rarely can meet all the needs.

The Eastern NC Section is announcing a **recycling program, to help raise some funds for the K-12 technology programs**. Save your old ink cartridges, laser printer cartridges or copier toner cartridges. There are several ways to help:

1. You may drop them off at **PIP Printing at 1074 W Chatham St., Cary, NC 27511**.
2. Pick up a **free plastic mailing envelope** at an IEEE meeting or at PIP.
3. email [acook@ascottechnologies.com](mailto:acook@ascottechnologies.com) to make other arrangements.

**Sending back your cartridges is free, paid by the recycling company.** The mailing envelopes are bar coded so they automatically credit IEEE of Eastern North Carolina. It's easy!

Many thanks to member Chris Siegl for suggesting this project! ♦

## Robotics & Automation

By Grayson Randall [randallg@us.ibm.com](mailto:randallg@us.ibm.com)

We wrapped up this year's programs with a great talk by Dr. Carmena from the Center for Neuroengineering at Duke University. He spoke about the Brain-machine Interface. Duke is doing research on driving robotics using an interface to a live brain. Monkeys are able to control mechanical devices to accomplish tasks. Imagine, you can interact with your computer by just thinking certain thoughts. This work may someday benefit amputees.

We are looking forward to providing more, interesting programs next year. If you have any suggestions, please let me know. ♦

## Meeting Notices

Following are a few selected meetings. For a complete list of IEEE events, please visit <http://www.federal-systems.com/ieee/calendar/htdocs/cal.html>

### Embedded Systems / Computer Society December Meeting – Grid Computing

The talk is presented by Dr. Gentzsch, the managing director of MCNC Grid Computing & Networking Services, a non-profit organization in RTP

Grid Computing is the next big thing; at least according to many articles in recent newspapers and magazines, and in the opinion of the IT vendor community. In this presentation, we will briefly introduce the concept of Grid Computing, analyze the current status of grid technology and implementation, considering what's real and what's hype. We will present MCNC's grid strategy, the NC statewide grid, MCNC's grid computing and networking services and projects, and conclude with an outlook into the future.

Wednesday, Dec 15 on 6:00 P.M at 3021 Cornwallis Rd, (for directions visit: <http://www.ieee-embedded.org>).  
Contact: Steve Lund [slund-ieee@pobox.com](mailto:slund-ieee@pobox.com)

### Low Speed / Low Power Wireless Networking - What's the Buzz? – Charles Lord

Embedded systems developers are hearing a lot of hoopla about new low-power wireless standards including Zigbee. This is a presentation about the IEEE 802.15.4 standard, which is the backbone of Zigbee as well as some other low-speed networks - taken from the perspective of an embedded systems

developer. The presentation on Thursday, January 20th on 6:00 P.M. at MCNC (3021 Cornwallis Rd), will include hardware demos. ♦

## Lower Cape Fear Subsection December Meeting

2004 is almost over and as always there seems to be so many things that need finishing. Your Lower Cape Fear Subsection didn't want to finish this year without another all-members meeting. We hope you'll want to come and join this social and technical event. Guests are welcome with a reservation. Here are the details:

- When: December 13, 2004 at 6:30 PM
- What: DARPA Grand Challenge presentation
- Who: Grayson Randall, Grand Challenge participant and team leader
- Where: Progress Energy office building on Military Cutoff (see below: link to a map)
- Dinner Charge: \$2.00 for IEEE Members; \$5.00 for non-members.
- RSVP: Required. Please RSVP with the number attending via email by replying to [lcf-rsvp@ieee.org](mailto:lcf-rsvp@ieee.org)
- Format: The doors open at 6:30 for a casual supper of pizza, snacks, soda, and socializing. Then at 7:00 PM, Grayson will present. The meeting should be over by 8:30 PM.

About the DARPA Grand Challenge:

The DARPA Grand Challenge is a 175 mile desert race with fully autonomous vehicles. These vehicles must traverse the desert course without any human intervention within a 10 hour time limit. The prize for completing the course within the time limit is \$2 million. Last year, of the 25 vehicles that qualified, the best result was a 7 mile run. Insight Racing, [www.insightracing.org](http://www.insightracing.org), is a Raleigh, NC based team that qualified for the 2004 race and is continuing to develop a vehicle for the 2005 race. Grayson Randall, team leader, will present an overview of the project and will speak about the technical problems that need to be overcome to compete in such a project. The presentation has lots of pictures and video of the vehicle in operation. ♦

## Contact Information for IEEE Eastern N.C. Section

### 2004 Officers and Volunteers

Section Chair

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Section Vice Chair

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Section Secretary

**Thomas Jepsen**

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Section Treasurer

**Roger Lawrence**

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Women in Engineering Affinity Group

**Jana Jenkins**

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Robotics and Automation

**Grayson Randall**

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ACME (AP/CPMT/MTT/ED)

**Dev Palmer**

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Neural Networks

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Biology (EMBS)

**Thomas Jepsen**

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### Special Interest / Affinity Chairs

Software Job Hunt Collaboration

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Biotech Job Hunt Collaboration

**Esther Lumsdon**

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**Steve Lund**

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K-12 Outreach

**Chris Siegl**

[siegl@ieee.org](mailto:siegl@ieee.org) ♦