



From the Chair

The biggest event for the month of February was the celebration of Engineers' week at the Carnegie Science Center. We thank the IEEE members, especially the students from the University of Pittsburgh at Johnstown campus for volunteering their time at the 12th IEEE Robot Car Race. The race was between 10 schools from around the area. Each school sent a team of 2 to 4 members from their 8th grade class. These students arrived at the Science Center at Noon for instruction, and the race began at 3:15PM. During that time they designed and constructed their car, and developed the software to make it run down the track. By 5:00PM, the results were in and the team from Ingomar Middle School was the winner.

The monthly Executive Committee meeting was held at the University of Pittsburgh main campus with active participation from the students.

We thank you for responding enthusiastically to volunteer for the Executive Committee positions. The Chair for the Educational Activities is still open. We solicit your participation in this important position where your contribution will be truly appreciated. Please contact me if you are interested (senkk@ieee.org or (724) 696-1611).

- Kal Sen

Next Generation Search Engines: Altavista, Google, What's Next? Raul Valdes-Perez, Ph.D.



Altavista was the first mass-market web search engine, but it had problems (user experience, technical quality) which Google was able to exploit. Users of Google, MSN, and Yahoo face a different set of issues which competing technologies are racing to exploit.

Vivísimo, a CMU spinoff based in Squirrel Hill, is the leader in one of these technologies: clustering of search results into meaningful category folders. Vivísimo hosts its own popular web search engine at Clusty.com and recently licensed to AOL Search its clustering technology as part of AOL's stepped-up competition with Google, MSN, and Yahoo. Vivísimo CEO and co-founder Raul Valdes-Perez, Ph.D. will offer an historical perspective, discuss the inefficiencies of web and enterprise search, and try his hand at foretelling the future.

Mr. Valdes-Perez has been President and Chairman of Vivísimo Inc. since he co-founded it in June 2000. Before starting Vivísimo, he was on the Carnegie Mellon computer science department faculty since 1991; he is now an Adjunct Associate Professor there. His research was on new methods of knowledge discovery and their use in accelerating scientific research. He received a Ph.D. in computer science at Carnegie Mellon, studying under Herbert A. Simon (Nobel Laureate, 1978). Before that he spent two years as a Research Scientist at the MIT Artificial Intelligence Laboratory working in Randy Davis's knowledge-based systems group. He also has a B.S. and M.S. in engineering from the University of Illinois.

Place: Benedum Hall, Room 360
3700 O'Hara St. Univ. of Pittsburgh.
Date: March 16th
Social: 6:00 PM Pizza and soda will be provided.
Program: 7:00 PM

Organization of the Consultants Network

If you are a consultant or are considering becoming a consultant of engineering services, where do you go to meet other IEEE members who are also consultants? At present, there is an on-line listing of IEEE members who are consultants. However, there is no active Consultants Network that meets in the Pittsburgh area. The purpose of this meeting is to organize the Pittsburgh Area Consultants Network.

This group can be a very valuable resource on consulting information and networking for IEEE members. Speakers can discuss such topics as taxes, self-marketing, finances, fee setting, software, and liability insurance.

Place: Westinghouse Energy Center, Monroeville
Date: March 22nd
Social: 6:30 PM
Program: 7:00 PM

For more information or to register, contact George Crawford at (412) 672-9164 or gwc2@psu.edu by March 15th.

Directions: From downtown Pittsburgh, take the Parkway East Outbound to Exit 14A (Monroeville). Cross the traffic light (Business 22) and proceed on Rt. 48 South for two traffic lights. Turn left onto Northern Pike. Proceed East ~ 0.2 miles and turn right at the first traffic light onto Westinghouse Drive. Travel 0.7 mile to the three flags where the main entrance is located. Parking in the evening will be plentiful in the large area in front of the building. Enter the main entrance. Check with the security inside. You will be directed to the proper auditorium for the presentation.

From PA Turnpike, take Exit 57 (Monroeville). After the toll plaza, get in the left lane (Business-22). At the first light, turn left on to Rt. 48 South and follow the directions shown above.



New Techniques for Telecom Network Monitoring

Dr. Robert Boza

Place: 5th Floor IS Building
 135 N. Bellefield Ave. Univ. of Pittsburgh
 Date: March 25th
 Social: 10:30 AM
 Program: 11:00 AM

Dr. Robert Boza is the Director of Network Monitoring and Analysis at TeleContinuity. Prior to joining TeleContinuity, Dr. Boza was Technical Director, Web Applications Development, for the QRC Division of Macro International. He managed the development of large-scale, web-based data collection and data management systems for projects supported by several US federal agencies. Prior to Macro, he worked at various divisions of Biospherics Inc., including the Information Services, Environmental Services and Biotech Divisions. His work there included the first web-based campground reservation system for the National Park Service and development of the company's Intranet. Dr. Boza began his professional career as a Biologist. He received a Ph.D. in Agriculture Science in 1988 from University of Arkansas.



Project Management for the Engineering Community

Ray Lucher



To have a discussion about Project Management, one should assume there is more to the subject than the over worked phrase "on time and under budget." What about stakeholder satisfaction and contract compliance? Is project management a discipline or a job classification? If it is a discipline, is there any evidence to support this assertion? What is a project anyway? Is there a body of knowledge for the project manager and would it benefit your organization and your career?

There is strong evidence that the Project Management Office (PMO) is embraced in many business communities. We will explore some of the cultural issues associated with project management assignments; i.e., responsibilities, controls, training, and the resources that are available to aspiring Project Managers.

Mr. Lucher received a BSEE from Carnegie-Mellon University, is a Registered Professional Engineer, and a certified Project Management Professional. He is a past member of ADCOM and past President of the Pittsburgh Chapter of the Project Management Institute. His experience began at Westinghouse Electric Corp, and then continued at Mesta Machine Co., Matrix Engineers, ICF Kaiser Engineer, Eichleay Engineers and Constructors, and LLI Technologies. He has had many assignments as an electrical engineer, with positions as Department Manager, Project Manager, and most recently spent two years in the Philippines as Vice President and General Manager of Eichleay Pacific. Currently Ray is a Project Manager with SNC-Lavalin America, Inc.

Place: Westinghouse Energy Center, Monroeville
 Date: March 30th
 Social: 6:30 PM
 Program: 7:00 PM (Pizza and Soda provided)

For more information on this meeting, please contact Chuck Urso at (412) 338-0700 or cvsurso@ieee.org. For directions to this meeting, please see the Consultant's Network article on page 1.



Graduates of the Last Decade

IEEE GOLD is starting up here in Pittsburgh. Graduates Of the Last Decade (GOLD) is for new professionals and aims to help with networking and social events for our members. If you have graduated within the last decade then you are already a member. We will be hosting an initial startup event in the near future at Dave and Buster's in order to gauge what you want from GOLD.

If you have any questions or would like to suggest functions that you would like to participate in, please feel free to contact Chuck Jewart at (412) 913-0063 or cjewart@engr.pitt.edu.

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IEEE Magnetics Society Distinguished Lecturer

Half-Metals, Spin Torque, and Nanorings

Chia-Ling Chien

The Johns Hopkins University

The exploration of magnetic nanostructures in recent years has resulted in a string of discoveries such as interlayer coupling, giant magnetoresistance (GMR), exchange bias, and tunneling magnetoresistance. Some of these effects were utilized as read-heads in high-density magnetic recording and non-volatile magnetic storage only a few years after the original discovery. This talk will describe several new topics in magnetic nanostructures from inception to realization to potential applications.

Most magnetoelectronic properties are the results of the spin polarization of the constituent materials. The ultimate spin-polarized material with 100% spin polarization is called the half-metal. For example, magnetic tunnel junctions with half-metal electrodes would have the largest possible effect, switching between conducting and insulating states. The unique characteristics of half-metals, the experimental identifications, and the confirmation of half-metals to date will be described.

Since electrons have spin in addition to charge, a spin-polarized current carries angular momentum. For a large current density, the angular momentum can exert a substantial torque onto a receiving magnetic entity to excite spin waves or even to switch its magnetization. The spin torque effects are accomplished in the absence of an external magnetic field. The salient aspects of the spin torque effects in different contexts, such as switching and magnetic recording without a magnetic field, will be described.

Nanorings are small entities with special attributes. A magnetic nanoring can support a vortex state despite its very small size. The two chiralities of the vortex state can be exploited for magnetic recording purposes. Multilayered nanorings have also been proposed as vertical random access memory (VRAM) units. However, fabrication of nanorings using e-beam lithography has considerable limitations in the number of rings, ring size, and areal density. We have developed a new method with which a large number (10^9) of small (100 nm) rings can be fabricated with a very areal density of 45 rings per square micrometer. The magnetic and other characteristics of such arrays of nanorings will be described.

Mr. Chien received the B. S. degree in Physics from Tunghai University in Taiwan in 1965, and Ph.D. degree in Physics from Carnegie-Mellon University in 1972. He has been a faculty member in the Department of Physics and Astronomy of Johns Hopkins University since 1976. He currently directs the Material Research Science and Engineering Center on Nanostructured Materials at Hopkins. His recent research focuses on magnetic nanostructures including magnetic granular solids, nanowires, multilayers, and arrays of rings and dots, and the exploration of GMR, exchange bias, half-metals, spin torque effects, Andreev reflection, and point-contact spectroscopy.

Place: Seagate Research Center Auditorium
1251 Waterfront Place, Pittsburgh
Date: March 31st
Social: 11:30 AM (Lunch will be served)
Program: 12:15 PM

The meeting will be of particular interest to members of the Magnetics Society. Please RSVP to charlotte.wlodkowski@seagate.com so the correct amount of food can be prepared. Seagate Research Center is located in the Strip District, across from the Heinz History Center and next to the Convention Center.

Life Member Chapter

Issues Associated with the Interconnection of Distributed Generation to the Electric Power Supply System

Mr. Joseph L. Koepfinger

The significance of the recent Northeastern Blackout with respect to reliability problems of the U.S. power grid, and the unresolved questions on how to improve it will be presented and discussed. Also, considerations for what can be done at an individual's own home to provide backup emergency power for critical needs will be discussed. The impracticalities inherent in the strategy of supplying a substantial fraction of our electrical power needs by means of wind and solar power will be discussed. The speaker will host a question and answer session on this topic following the presentation.

Mr. Koepfinger has had a long career as an engineer and manager with Duquesne Light. He was a major contributor to the design of the generation plant at Beaver Falls. Additionally, he has a lifetime of service to the IEEE including many years on the Standards Board, serving as Chairman for some of them. In post-retirement activity, Mr. Koepfinger is a distinguished IEEE lecturer which has taken him as far as India, and continues as a consultant to Duquesne Light.

Place: George Westinghouse Technical Center
Building 801, Room 2C14 (2nd floor corridor between lobby and cafeteria)
Date: April 8th
Program: 1:30 PM

The Technical Center is easily accessed via Exit 10A of the Parkway East in Churchill Borough. A cafeteria is open there every weekday from 11:30 a.m. to 1:00 p.m. and provides a convenient place for those attending the meeting to buy lunch before the meeting. For more information, please contact Bob Grimes at r.d.grimes@ieee.org.

IEEE Pittsburgh Section
Annual History and Awards Dinner
 End of an Era: A History of Transmission
 John A. Casazza, IEEE Life Fellow
 IEEE Distinguished Lecturer

The National Academy of Science has called our national electric power system the “greatest technical achievement of the 20th century!” The key to this system is its transmission grid. This presentation will cover its history the role of people, institutions, and technology – and is based on the speaker’s personal experience.

Success of the transmission system in the past included the development of new and improved equipment, the connection to integrated system, the coordination between companies, and the encouraging political developments. This presentation also covers how the coordination of technical and institutional procedures was achieved through creation of new professional, business, and governmental organizations.

Past successes were based on transferring knowledge between generations of engineers and competition in developing new equipment. Our present grid has been greatly harmed by the failure to continue the transfer of such knowledge over the past 25 years leading to a turbulent period of poor government policy, blackouts, and huge cost increases. The presentation concludes with the speaker’s own views as well as the review of some of the technical and political solutions that are being proposed to solve the current problem.

Mr. Casazza is the President of the American Education Institute, a nonprofit organization that he founded in 1994, which is dedicated to provide the education needed in setting electric power policy. He is a past Director for the Georgia Systems Operation Company, has been a member of the Executive Committee of the New York State Electric Reliability Council and the Energy Engineering Board of the National Research Council. He is a past President of CSA Energy Consultants and Vice President for Planning and Research for the Public Service E&G Co. Recently, he helped to form Power Engineers Supporting Truth dedicated to improving the technical competence of government officials and the leadership role of engineers (www.PEST-03.org).

Place: Westinghouse Museum (APICS Castle), Wilmerding PA
 Date: April 28th
 Social & Dinner: 5:30 PM (\$20 per person, \$35 per couple)
 Awards: 6:40 PM
 Program: 7:00 PM

The menu will be a buffet of: chicken, fish, beef, potato, salad, vegetable, fruit, rolls and butter, dessert, coffee & tea. Please RSVP by April 21st by sending a check payable to “IEEE Pittsburgh Section” to Dr. Tom McDermott, 72 Dutch Lane, Pittsburgh, PA 15236. There is no charge to attend the awards and presentation only, but still RSVP. For more information, contact Tom at (412) 650-8491 or t.mcdermott@ieee.org

2004-2005 Pittsburgh Section IEEE Program Calendar

Group/Society	September	October	November	December	January	February	March	April
ExecCom Kalyan Sen (724) 696-1611	18 Fall Picnic	25 WVU	18 Point Park	16 Point Park	20 Point Park Officer Elections	17 Point Park	17 Point Park	21 Point Park
Section Mtgs Kalyan Sen (724) 696-1611	9 Pirate Game 18 Fall Picnic					19 Robot Car Race		28 History Dinner
Life Members Bob Grimes								8 Distributed Generation
IAS & PES Charles Urso (412) 338-4871 Faruq Ahmed (724) 477-1253	2 Serial Com. 16 Fuel Cells 23 Voltage Sag and Flicker	6 Power Electronics 28 Tutorial	4 Tutorial 11 Industrial Power Systems 17 Tour Alleg. Eng.	2 Dist. Generation 9 Voltage Sag	26 Adaptive Identification	23 Rail Guns	30 Project Management	
Computer John Twigg (724) 387-2772			6-12 SC2004 Conference	15 Software Quality			16 Next Gen. Search Engines	
Communication Prashant Krishnamurthy (412) 624-5144			12 RFID Privacy				25 New Techniques for Telecom Monitoring	
Robotics Guy Nicoletti (724) 836-9922 Ron Stone (412) 488-1100	29 Mathematics of Robotics	26 Image Processing		9 Patient Recovery				
Prof. Activities Joe Kalasky (724) 838-6492		2 Consulting Seminar						
Signal Processing Mike McCloud (412) 624-9674		26 Image Processing	3 Tracing Traitors 18 Double- Disp. Channels					
Magnetics Ganping Ju (412) 918-7046							31 Half Metals Spin Torque and Nanorings	