Wavelengths

◆IEEE

CONTENTS

Fall Conference Set for November 9

Please join us for an evening of socializing and technical sessions.

Location: Fairlane Center, University of Michigan-Dearborn, 19000 Hubbard Drive, Dearborn, MI 48128

Registration online at http://www.emcsociety.org/sectionregistration.html.

Please be aware that this is not a fund raising event. This event is presented as a serVice to benefit the Southeastern Michigan IEEE members. IEEE members and their guests, and IEEE student members and their guests, should attend. Dinner space is limited so register early. Early registration ends October 26, 2005.

Schedule of Events
5:00 pm - Registration
5:30pm Chapter Technical Sessions all running concurrently (see schedule)
6:30pm - Vendor Exhibits and University Showcases and networking
7:15pm - Dinner
7:30pm - Awards program during dinner
8:00pm - Keynote Address

Keynote Address
"Impact of Power Industry Restructuring on Power System Planning, Operation and Economics"
John A Casazza (IEEE Life Fellow), President - American Education Institute

Mr. John A. (Jack) Casazza will be the keynote speaker at our Fall Section Conference, He will speak on "IMPACT OF POWER INDUSTRY RESTRUCTURING ON POWER SYSTEM PLANNING, OPERATION AND ECONOMICS ". He will discuss the blackout of August 14, 2003, based on the investigations of the US and Canadian governments taking place this summer in which Mr. Casazza is participating. He will emphasize the role of engineers in determining the reliability and cost of electricity, and will include his recommendations for the future. Jack is an IEEE Life Fellow and has received many awards for his contributions to the development of electric power systems. He is the author of more than 80 publications. His most recent book Understanding Electric Power Systems – An Overview of the Technology and the Marketplace has just been published by Wiley/IEEE Press.

2006 Slate Set

The IEEE SEM Nominations Committee is proud to present the 2006 Ballot. While few of the races are contested, you can write in your own candidates for any office. Areas are provided on the ballot for offices without candidates. To submit other write-in candidates place the office title and candidates name in the area provided below. Remember, however, that only full members may hold office.

If you wish to write in additional candidates, you can do so by attaching a separate sheet of paper. Sign the sheet and attach to your ballot.

(Continued from page 1)

Chapter Presentations

Chapter I - Circuits and Systems, Information Theory, and Signal Processing

"Wireless Sensor Networks: A New Paradigm for Ubiquitous Sensing and Information Processing"
Dr. Martin Haenggi, Professor of Electrical Engineering, University of Notre Dame

Dr. Haenggi was born in 1969, in Zurich, Switzerland. He received the Dipl. Ing. (M.Sc.) degree in electrical engineering from the Swiss Federal Institute of Technology (ETH) in 1995 and the Ph.D. in 1999, also from ETH. After a postdoctoral year at the Electronics Research Laboratory at the University of California in Berkeley, he joined the faculty of the electrical engineering department at the University of Notre Dame as an assistant professor in January 2001. He is a senior member of the IEEE and 6 of its societies, a member of the ACM and the ASEE, a Distinguished Lecturer for the IEEE Circuits and Systems Society, and a reviewer for numerous international journals and conferences. He serves on the Editorial Board of the Elsevier Journal of Ad Hoc Networks. For both his M.Sc. and his Ph.D. theses, he was awarded the ETH medal, and he received an NSF CAREER award in 2005. His scientific interests include wireless communications and networking, with an emphasis on ad hoc and sensor networks.
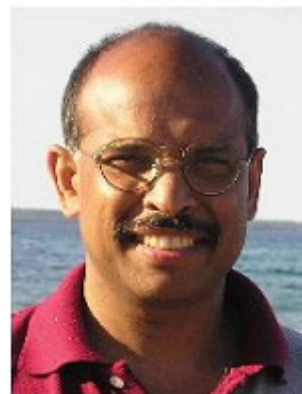
Chapter II - Vehicular Technology

"Automotive: 12v/42v Switch Arcing Phenomenon"
Dr. Sheran Alles

This talk analyses the switch arc phenomenon when using a mechanical switch or relay in turning on/off inductive or resistive loads in the 12v automotive environment, providing in-depth analysis supporting some experimental observations. Depending on the type of load, mechanical switching produce both a sustained arc and showering arc, and depending on the break current, would produce high frequency radiation issues, voltage/current transients, crosstalk to adjacent wires in the harness and contact wear-out.

The loads used in the analysis are the ac-clutch coil (inductive), a standard ISO relay coil and a resistive load. Different suppression techniques are also analyzed, and how simple resistors and/or capacitors across the loads influence these voltage transients. The danger of having a capacitor across the load is also discussed, especially in the event of contact bounce.

Also to be discussed is the comparison of the electrical arc generated for a 42V system compared to that of a 12V system. In the case of inductive components, since the 42V system current is about one-third, the coil turns have to be proportionally increased in order to maintain the same flux for a similar torque/force characteristic as its 12V counterpart. It will also be shown how the voltage alone has a significant influence on arc duration, even for a resistive load.

Dr. Sheran Alles works as a Technial Specialist at Ford Motor Company. He received the B.Sc (Hons.) degree in Electronics and Telecomm engineering from the University of Moratuwa, Sri Lanka in 1984, and the Ph.D in Computer Engineering from Wayne State University in 1995. From 1984 -1986 he worked in collaboration with the Dept of Telecomm and Alcatel-Thompson, France on the installation of the first fully digital telephone exchange in Sri Lanka. From 1987-1989, he worked with Saudi Telephone in Riyadh, Saudi Arabia. His Ph.D. work was supported by a research grant from Ford Motor Co, and a teaching assistantship from Wayne State, and received the outstanding teaching assistant award in 1994. He has 4 US patents awarded (patent # 6525918 - Adaptive arc fault detection and Smart fusing system), and has over 20 technical publications. He has numerous outstanding contribution awards and customer driven quality awards from Ford Motor Co. He was a member of the Grand Prize Winning team: Popular Science 2003 - Best of What's New - Fiber Optic headlamp with selectable beam patterns.

Chapter IV - Antennas & Propagation, Electron DeVice s, Microwave Theory & Techniques

"State-Of-The-Art on Military Antenna System Design and Analysis, and How It Could be Adapted in Auto Industry"
Dr. Tayfun Ozdemir, President, Virtual EM Inc.

The talk will review state-of-the-art approaches on military antenna system analysis and design. Because of the similarities with designing antennas on automobiles, the talk will also address automobile applications. As always the case, military systems demand a much tougher standard of performance than their civilian counterparts due to high performance and survivability requirements. Therefore, the antenna system geometry is very complicated. Conventional design approach, i.e., trial-and-error in the lab, does not work for it often requires costly in-flight measurements for design refinement. Computer Aided Design (CAD) software, today commonplace in mechanical design, are slowly gaining popularity. However, the CAD software for Computation Electromagnetics (CEM) currently on the market fall short of providing reliable design alternatives. Often, a customized CEM-CAD software has to be developed for a class of antennas. Virtual EM's latest product, VirAntennTM, is one such CAD software funded by Navy's Air Command for specifically designing the antennas that will be deployed on the modernized version of the P-3C surveillance aircraft. The most notable features of the software are (1) unprecedented efficiency in analyzing electrically large struc-

tures, (2) ability to account for the effect of the aircraft body on the antenna performance, and (3) optimization of the design. Many simulation examples will be presented including applications specific to antennas on automobiles. Also presented is the current research and development on optimization of the signal processing algorithms, which process the data collected by these antennas. The goal is to develop a signal processing back-end to optimize antenna system performance in the presence of jamming and clutter, which is crucial to the success of the military missions. Again, the adaptation of the military technology to civilian (auto) industry within the framework of "Intelligent Vehicle Highway Systems" (IVHS), which require deployment of "smart" antennas on automobiles, will be discussed.

Dr. Tayfun Özdemir is a co-founder and President of Virtual EM Inc. He is responsible for overseeing R&D projects, product development, commercialization and new business development. Dr. Özdemir is currently carrying out research on numerical solutions to radiation and scattering problems using the Finite Element Method (FEM) and training of adaptive/smart antennas using simulated data. Dr. Özdemir received his Ph.D. degree from the University of Michigan (Ann Arbor, Michigan) in 1998, M.S.E. degree from the University of Pennsylvania (Philadelphia, Pennsylvania) in 1989 and B.Sc. degree from Karadeniz Üniversity (Trabzon, Turkey) in 1984, all in Electrical Engineering. Dr. Özdemir has thirteen years of experience in developing electromagnetic modeling software as well as antenna design and prototyping. He has been the Principal Investigator on numerous Department of Defense funded R&D projects. From August 2002 to April 2003, Dr. Özdemir worked as a Senior Research Fellow at the University of Michigan carrying out research involving optimization techniques. For this work, he, together with the co-authors, received the Best Symposium Paper award in 2003. Prior to founding Virtual EM in August 2002, Dr. Özdemir served as the director of the software development group at EMAG Technologies, Inc., where his responsibilities included managing R&D work involving antenna and microwave circuit modeling. Prior to becoming a director, Dr. Özdemir worked as a Senior Research Engineer at EMAG Technologies carrying out research on antenna design and prototyping for Cellular and GPS applications. Dr. Özdemir is also the co-inventor on a patent on integrated antenna design. From 1992-1998, Dr. Özdemir was a Graduate Student Research Assistant at the Radiation Laboratory of the University of Michigan, where he developed numerical models of radiation and scattering from complex platforms. His PhD thesis was titled "Finite Element Analysis of Conformal Antennas." As part of his thesis, he also developed analytical solutions to oblique incidence scattering from thick metal-dielectric joins. Dr. Özdemir has co-written six journal papers, two book Chapters, and made over thirty conference presentations in the field of antenna design and analysis, and electromagnetic scattering.

Chapter V - Computer
"IT for Quality"
Beena Anand , Principal Consultant, General Information Systems and Technology, LLC (GISTL)

Information Technology plays a very significant and strategic role in the Quality field.

Continuous process and product improvements require analysis of data and statistical calculations. IT helps with the analysis and interpretations of the data making improvements happen! IT in the journey towards zero defects…

- The strategic importance of IT in Quality in the last 20 years
- R.O.I. on IT investments in Quality
- What is Cost of Quality How can IT help identify Cost of Quality
- IT and Six Sigma
- IT for DMAIC
- How IT helps with Analytical tools like SPC, DOE
- IT and Lean Manufacturing
- Use of IT for Kaizen events
- IT for Quality – The opportunities for deploying IT in the field of Quality

Beena Anand is a Principal Consultant for General Information Systems and Technology, LLC (GISTL). She leads the Quality training and consulting serVice s division of GISTL, www.gistl.com. With 11 years experience, Beena has consulted in the field of Quality for all verticals of the industry including Automotive, Chemical, and Packaging. She has developed training courses on Lean Manufacturing, Six Sigma, Cost of Quality, Label Error Proofing, 8D problem solving. She specializes in the design of training courses that are easy to understand and focus on practical application of the tools.

Chapter VII - Power Engineering & Industrial Applications
"Impact of New Technologies on Power System Protection"
Mohindar S. Sachdev, Ph.D., D.Sc., Life Fellow IEEE

The impact of new technologies on the design and applications of protection systems will be discussed in this presentation. The specific technologies considered will be the microprocessor and digital signal processor, electronic transducers and communication technologies. The change of application practices for protecting generators, transformers and, transmission and distribution lines with the use of these technologies will be discussed as well.

Mohindar S. Sachdev is a power system engineer with more than fifty years experience. Presently, he is the Canadian Representative on the CIGRÉ Study Committee B5 - Protection and Automation. He is also Convenor of Advisory Group 2, The Protection of Main Plant and Circuits, and Convenor of Working Group B5-05, Modern Techniques for Protecting, Monitoring and Controlling Power Transformers of CIGRÉ Study Committee B5.

Dr. Sachdev has a B.Sc. degree from the Benares Hindu University, a M.Sc. degree from the Panjab University and M.Sc. and Ph.D. degrees from the University of Saskatchewan. In recognition of his contributions to the area of computer-based protection techniques, the University of Saskatchewan bestowed on

him an earned degree of Doctor of Science in May 1994. He is a Life Fellow of the IEEE and a Life Fellow of the Institution of Engineers (India), a Fellow of the IEE (UK) and a Fellow of the Engineering Institute of Canada. He is a Chartered Engineer in UK and a Professional Engineer in the Province of Saskatchewan, Canada. He has consulted for electric power utilities in India and North America, and for relay manufacturers in Europe and North America.

Chapter VIII - EMC

"The role of symmetry in minimizing common-mode emissions" Dr. Thomas Jerse, Associate Professor of Electrical Engineering, The Citadel and Associate Technical Fellow, Boeing Company

Common-mode currents are often the dominant source of radiated emissions from an electronic product. Unlike differential-mode currents, conventional circuit analysis programs do not predict common-mode currents, and the mechanisms that excite them are more difficult to visualize and quantify. The generation of common-mode currents by "ground noise" has been widely discussed, but another unexpected source is lack of layout symmetry. This talk will explain, demonstrate, and quantify how asymmetric structures excite common-mode currents.

Thomas Jerse holds a double appointment as an Associate Professor of Electrical Engineering at The Citadel in Charleston, SC, and as an Associate Technical Fellow of The Boeing Company, working as an EMC analyst. He earned a PhD in EMC at the University of Kentucky and has spent over 25 years designing compliant products and solving EMI problems with Hewlett-Packard and Boeing. He has written several comprehensive courses in EMC which he has taught to engineers around the world.

Chapter IX - Power and Industrial Electronics

"Comprehensive Time and Frequency Domain Modeling of Automotive Electronic Components" Dr. Randy C. Stevenson, Powertrain CAE, Visteon Corporation

The talk will present a comprehensive method for modeling the time domain (transient) and frequency domain behavior of automotive electronic components. With present software and computer capability, we believe that the most effective way to obtain the transient behavior is to represent the ignition coil as a system of equivalent circuit elements. These elements are in the form of (non-linear) inductor and capacitor matrices, as well as resistive elements, which include an effective core loss element. This systems model might be thought of as an elaborate version of the classic circuit model for transformers. To create these equivalent circuit elements, we employed Ansoft's Maxwell electromagnetic FEA software. We then exported these equivalent circuits to Ansoft's Simplorer, a systems modeling package, which allows one to quickly build the equivalent circuit system, with associated driver and load circuits. To validate the faithfulness of the model, we compared simulations in Simplorer, in both the time and frequency domains, with corresponding data. The simulations agree very well with the data. What is important to note is the coil model has essentially no adjustable parameters.

The agreement of simulation and data, as well as the need for no adjustable parameters, arises, in part, because of the detailed FEA models used to construct equivalent circuits for the various elements. The ignition coil is not simply a primary and a secondary coil wrapped around iron laminations. The secondary coil, which wound to (on the order of) 10,000 turns of very thin wire, typically develops 20 to 40 kV; it is partitioned into several bays to limit voltage differences across nearby turns of wire. One then has, in effect, a secondary coil comprised to several inductors. These secondary inductors interact with each other, with the primary coil, and with the laminations, through a relatively complex set of mutual inductances and capacitances, set in a 3D geometry. This detailed modeling is necessary to explain the data of the frequency domian impedance scan, as well as to match the simulated transient response with the data.

Randy C. Stevenson received the B.S. and Ph.D degrees in physics, from the University of Michigan, Ann Arbor, MI, in 1974 and 1982, respectively. He presently works for Visteon Corporation, in Dearborn, MI, in the Powertrain Division, where he develops electromagnetic FEA and system models for ignition system components. While at Visteon, Dr. Stevenson has also worked on the development of a molten solder dispensing system, as well as electromagnetic retarder braking systems, and an electric motor all-wheel drive system.

He previously worked for Bell Laboratories, in North Andover, MA, on nuclear- generated High-Altitude EMP threats to the telephone system, and the design and development of Surface Acoustic Wave devices for retiming for optical fiber transmission. Dr. Stevenson has also worked for KMS Fusion, formally of Ann Arbor, MI, on the optical characterization of laser fusion targets, and for Ford Research Labs, Dearborn, MI, on engine misfire detection, and the application of fuzzy logic to the car-following problem. He has been an Adjunct Professor at the University of Michigan, Dearborn, where he has taught graduate course in control theory, and undergraduate course in physics.

Chapter X - Engineering Management
"PLM Tools Are Necessary But Not Sufficient"
Dr. Eugene Greenstein — Adjunct Professor, Industrial and Manufacturing Systems Engineering

This presentation discusses the challenge of changing the way organizations do work such that the business can get the full economic benefit from its investment in PLM tools. The paper discusses collaboration and organizational change based on presenting a compelling case and using the concept of dialogue to achieve buy in. The dialogue construct is used to achieve the development of an upfront collaborative process between Manufacturing and Design Engineering by facilitating learning and ownership. Expertise is the other key ingredient that needs to be nurtured and in place in addition to understanding the clicks required to use the tools.

   Dr. Eugene Greenstein is an Adjunct Professor in IMSE. He retired from Ford/Visteon after 27 years of service at the end of March 2005. His last position was that of Director of Engineering/IT Integration. Over the course of his career he was responsible globally for Computer Aided Design (CAD) and Computer Aided Engineering (CAE) and the building of Knowledge Based Engineering Tools in Ford/Visteon global operations. He developed the first Virtual Factory at Visteon and was the promoter of a global collaborative infrastructure for simultaneous engineering, which, resulted in Visteon's Product Lifecycle Management (PLM) initiative. He successfully implemented a Learning Organization Environment within Visteon's global CAD/CAE Operations. He was responsible for Global Test Operations in the Automotive Components Division. Prior to that, he was an Executive Engineer responsible for the development of the Electronics Division's Product Development Process. He also had experience managing Supplier Quality Assurance, Electronics Components Engineering and Advance Manufacturing for Electronics. Prior to joining Ford he was a Senior Research Engineer at General Motor Research Laboratories doing semiconductor R&D. He was one of the founders of the Dual Ladder Program at Ford and was actively involved with its management for 17 years. He received the AIAG Outstanding achievement award in 2004 for his efforts as Chairman of the Collaborative Engineering and Product Data Steering Committee. Greenstein has a BSEE /MSEE Case Institute of Technology. PH.D Case Western Reserve University and an MBA (Finance) from Wayne State University.

Chapter XII - Control Systems
"Optimization of Advanced Automotive Engines"
Dr Mrdjan Jankovic, Technical Leader, Powertrain Controls Department Ford Motor Company

To improve vehicle emissions, fuel economy, and performance, designers are adding multiple auxiliary devices to automotive engines. Each of these devices increases complexity, which makes the control system's task of realizing expected benefit more difficult.

The aim of this talk is to present engine control system in a broader context and analyze to what extent is its structure imposed by the very control objectives for the added devices. One of the points worth emphasizing is that optimization, as a design objective for an actuator, requires a very different approach than the one traditionally used for set point regulation. Thus, the current control structure is dominated by the feedforward component in which the controller relies on look-up tables to determine desired settings for each engine optimization variable. These tables are populated through an elaborate process that includes mapping, optimization, and calibration. The talk will describe methods to reduce optimization effort and real time complexity, while preserving scheduling accuracy. The problem and proposed solutions are illustrated by simulations and experiments.

   Mrdjan Jankovic received a bachelor degree from the University of Belgrade in 1986, and masters and doctoral degrees from Washington University in St. Louis in 1989 and 1992. He held postdoctoral teaching and research positions with Washington University and UC Santa Barbara. He has joined Ford Research Laboratory in 1995 where he is currently a Technical Leader in the Powertrain Controls department.

   Dr. Jankovic research interests include automotive engine control, nonlinear control, and time-delay systems. He has coauthored one book (Constructive Nonlinear Control, Springer-Verlag, 1997) and holds over twenty US patents.
Dr. Jankovic received Ford Research Technical Achievement Award, IEEE TCST Outstanding Paper Award, and has been elected IEEE Fellow. He has served on the Editorial Board of IEEE Transactions on Control Systems Technology since 1997.

Special Topics - Ham Radio
"Amateur Radio: More Fun Now Than Ever Before"
Dan Romanchik KB6NU, Wavelengths Editor and long-time ham radio operator

Amateur radio often gets a bad rap as ancient technology, but modern radios feature exciting new features and new digital modes have been developed which are attracting many operators. The result is that ham radio is now more fun than ever. Come hear about these new developments and about how to get your amateur radio license.

Ballot Instructions

1. Download either the PDF version of the ballot (http://www.ieee-sem.org/admin/forms/2006ballot.pdf) or the Word version (http://www.ieee-sem.org/admin/forms/2006ballot.pdf) and print.
2. Enter your name and membership number on the ballot.
3. Review Voting Eligibility Requirements for restrictions applying to Part I and Part 2.
4. After voting, sign the ballot at the bottom of the page
5. Fold ballot on dotted lines with the ballot names inside and return address on the outside, tape the flap to seal the ballot.
6. Place stamp and mail before November 18, 2005 to have your vote counted.

Voting Eligibility Requirements

- Student and associate members are NOT eligible to vote. Only IEEE/SEM Full Section Members for 2005 are eligible.
- All voting members may vote for Section Officers and Section Directors presented in Part I of the ballot.
- You MUST be a member of at least one of a chapter's societies to vote for that chapter's officers in Part 2 of the ballot.
- Vote for a candidate by checking the box to the left of the candidate's name. You may vote for only one candidate/office.

Section Officers and Directors

Chair: Mark Ciechanowski, David Turnquist Jie Chen
Vice Chair: Chris Mi
Secretary: Liang Downey
Treasurer: David Laurent

Directors
(elected to two-year terms 1/1/2006 to 12/31/2007)

Membership Activities: Mohamad Berri
Professional Activities: Adel Marzougui, Ramas Ramaswamis
Technical Activities: Subra Ganesan

Directors not up for election this time
(in office until 12/31/06)

Educational Activities: Chris Mi
Student Activities: Imad Makki

Chapter Officers
(Only Chapter members may vote for these positions)

Chapter I (SP001) Signals (CAS004) Circuits & Systems, (CS023) Control Systems and (IT012) Information Theory
Chair: Hoda Abdel-Aty Zohdy
Vice Chair-Membership: Asaad Makki
Vice Chair: Jacob Allen
Vice Chair: M. Ahmadi
Vice Chair : Luay Istanbuli
Secretary/Treasurer: Sam Barada

Chapter II (VT006) Vehicular Technology
Chair: Arman Moein
Vice Chair: Srini Naidu
Secretary/Treasurer: Freeman Gates

Chapter III (AES010) Aerospace & Electronic Systems and (COM019) Communications
Chair: Robert Desoff
Vice Chair: vacant
Secretary/Treasurer: vacant

Chapter IV Trident (AP003) Antennas (ED015) Electron Dev. and (MTT017) Microwave Theory & Techniques
Chair: Lisa Anneberg
Vice Chair: Hossein Mosallaei
Secretary: Joe Burns, Thersea Thimm
Treasurer: Richard Johnston

Chapter V (C016) Computers
Chair: Subra Ganesan
Vice Chair: MarkCiechanowski
Vice Chair: Venkat Alladi
Vice Chair: Pat Dessert
Secretary: Walter Schilling
Treasurer: John Wei

Chapter VI (GRS029) Geoscience and Remote Sensing
Chair: Robert G. Onstott
Vice Chair: Ahalapitiya Jayatissa
Secretary/Treasurer: vacant

Chapter VII (PE031) Power Engineering and (AS0034) Industrial Applications
Chair Ramas Ramaswami
Vice Chair Asish Gollapalli, Tom Powell
Secretary/Treasurer: Kevin Taylor

Chapter VIII (EMC027) Electromagnetic Compatibility
Chair: Scott Lytle
Vice Chair-Member Services: Rob Kado
Vice Chair-Professional Services: Bill Gilmore
Vice Chair-Technical Services: Mark Steffka
Vice Chair-Meetings: Candace Soriano
Vice Chair-Communications: Scott Lytle
Vice Chair-Membership: Makoto Torigoe
Treasurer: Matt Feusse
Secretary: Kimball Williams

Chapter IX (PEL-035) Power Electronics and (IE013) Indl. Electronics
Chair: Shao Liang
Vice Chair: Xiaolei He
Secretary/Treasurer: vacant

Chapter X Engineering Mangement (EMS)
Chair: Mark Ciechanowski, Luay Istanbuli
Vice Chair: Marty Biancalana
Vice Chair: Liang Downey
Vice Chair: Kathleen Giesting
Vice Chair: Jim Morgenstern
Secretary/Treasurer: Dennis Siemiet

Chapter XI Engineering in Medicine & Biology (EMBS)
Chair: Darrin Hanna
Vice Chair: Dr Barbara Oakley
Secretary/Treasurer: vacant

Chapter XII Controls Systems
Co-Chair: Sam Barada
Co-Chair: Mohamad Berri
Vice Chair: Farad Bolourchi
Vice Chair: Imad Makki
Vice Chair-Technical Services: Hanlong Yang
Vice Chair-Professional Services: Rami Debouk
Secretary Treasurer: Wei Zhan Hafiz Khafagy

Chapter V (Computer) Keeps Busy

Dr. Subra Ganesan, Oakland University

The activities during the year 2004-2005 kept the committee members and chapter members busy. The programs were interesting and challenging. The Spring 2005 and Fall 2004 section conferences attracted good crowds. The audience's interests in these topics were evident from the questions and discussion during and after the meetings. The Spring Conference topic was "Achieving Data Persistence for business objects". The Fall conference topic was "Legacy modernization case study". In addition to the Spring and Fall meetings Chapter V co-sponsored 8 technical seminars. Some of the seminar titles were: "Making the Web more Semantic", "XML Query Processing and optimization", "Bio and Medical Informatics"

During the coming months, we plan to hold a one day Workshop on "DSP processors and Applications". I am sure that this workshop will be of interest to IEEE SEM CS members. The date will be announced soon.

The Chapter V committee members regularly meet and discuss via email on various issues to make the chapter activities more interesting to all the members. If you have any suggestion for new topics or would like to give a seminar, do feel free to contact me by email: ganesan@oakland.edu. I look forward to meeting all of you at Fall 2005 conference on November 9. We are also in the process of creating a web site for Chapter V where you will be able to find interesting technical articles, and links to other sites of interest to our members.

Robotics Chapter Forming

By Robert Sealy

We are trying to start a local chapter of the Robots and Automation society here in Southeastern Michigan. I have been searching for a forum in which to explore ideas and opportunities in the robotics field but have not been doing well. So as a member of the IEEE and the Robots and Automation Chapter, I decided to start a local chapter of R & A in the South East Michigan area. I am hopeful that this group will be successful in:

- Organizing robotics and automation competitions for adult members that attend College, University and Graduate Studies or have entered the work force.
- Providing a forum for the industries members to discuss ideas and possible future technologies (a "think tank" type of atmosphere).
- Providing a concentration of expertise and talent approachable by the industry at large.
- The design and construction prototype robotic systems, which may revolutionize the field.

To get started I need 12 IEEE members to sign a petition which will be sent to the R & A Society. Once this we are recognized, we can begin planning events and meetings. Anyone interested in signing the petition, being a member of the Executive Committee or just in there being a local chapter of R & A, please contact me anytime at (248) 894-2364 or at robotpatrj@yahoo.com.

IEEE at the Scout Jamboree

By Don C. Bramlett, P.E.
SM, IEEE; IEEE-SEM Section Advisor

The Boy Scouts of America conducts the National Scout Jamboree, usually, every four years. The first National Jamboree was held in 1937 at the base of the Washington Monument in Washington D.C. After being held in several locations in subsequent years, it found a more permanent home in 1981 at Fort A.P. Hill, a U.S. Army installation in Virginia between Washington D.C. and Richmond. This year, the National Jamboree was held from July 25 to August 3. The organizers planned to accommodate approximately 32,000 Scouts, 4000 associated Adult Scout Leaders, and nearly 8,000 volunteer adult leaders. About 1,800 Army soldiers assisted with the event and nearly 270,000 others visited.

In October 2004, I became aware of the fact that IEEE was sponsoring the Electronics Merit Badge at the 2005 National Scout Jamboree. As an active adult Scout Leader (Scouter); Assistant Scoutmaster, Venture Crew Leader and Unit Commissioner; and an active IEEE volunteer, Southeastern Michigan Section Advisor and Region 4 Treasurer, I jumped at the chance to volunteer to be an instructor for the Electronics Merit Badge on the Merit Badge Midway at the National Jamboree. I contacted the IEEE emeritbadges Project Director, Ralph Russell, an engineer with Dominion Virginia Power, and an IEEE Senior Member and a Scouter as myself, and the rest is history.

I left Detroit on Sunday, July17. Not having been to Washington D.C. since IEEE Sections Congress in 2002, I played tourist for a couple days in the nation's capital before the start of the Jamboree. I visited the recently-opened National Museum of the American Indian, the last Smithsonian Museum to open on the Mall, the National World War II Memorial, the National Building Museum and many other familiar sites, such as the Lincoln Memorial, the Washington Monument, the Thomas Jefferson Memorial, the Vietnam Veterans Memorial, the Korean War Veterans Memorial, the Capitol, the White House, etc. I hiked for over 9 miles in one day and ran into a few other Scouters also playing tourist.

I arrived at Fort A.P Hill on Wednesday, July 20 prior to the start of the Jamboree. I was assigned along with most of the Merit Badge counselors to stay in barrack at Wilcox Camp, a short three-mile bus ride to the 3,000-acre Jamboree site. I shared the accommodations with a wide variety of Merit Badge Counselors, especially those for the Metal Working and Railroading Merit Badges.

We ate breakfast and dinner at Wilcox Dining (Mess) Hall. I tried at many meals to sit with someone I had not previously met in order to share information on where we were from, why we decided to volunteer, and various experiences in Scouting. We ate bagged lunches at the Jamboree site.

What a relaxing vacation and luxurious accommodations; spending two weeks teaching classes in a tent, enduring hot temperatures and humid weather, sleeping in bunks in an army barrack. Having hot showers most of the time (cold showers at other times), and eating the delicious cafeteria cuisine at a mess

hall. Actually I had a really great time, and I have already volunteered to work again at the IEEE sponsored Merit Badge booth in 5 years when the 2010 National Scout Jamboree will be held to celebrate the 100th anniversary of the Boy Scouts of America.

Our Merit Badge booth started off as a partitioned 20-ft. x 80-ft. portion of a large tent with a grass floor, 6 duplex outlets tie-wrapped to poles around the perimeter of the tent area, and a sufficient supply of tables and chairs. Over the next three days we worked on the booth interior, building a complete 2X6 sub-floor framework with a particle board decking, a registration area, partial walls between the classroom areas, white-board/screens for overhead projects, a fan-based ventilation system, and a separate computer area. A number of us had brought our toolboxes to help accomplish this task. Other sponsors included: Dominion Virginia Power, who provided some funding AccuWeather, who provided a web-based weather kiosk, and STARBAND supplied a satellite dish so we could provide WIFI and VOIP internet communications.

Approximately 6000 Scouts and Scouters arrived a day early on Sunday, July 24 to set up camp. The remaining 30,000 Scouts and Scouters arrived on the first official day of the National Jamboree, Monday, July 25. That afternoon we started holding Electronics Merit Badge classes for the Scouts.

An IEEE volunteer teaches an electronics class at the 2005 National Scout Jamboree.

The transition of the Jamboree area from 3000 acres of open fields mixed with wooded zones to a sea of tents was a sight to behold. 883 Jamboree Scout Troops camped in tents in 20 distinct sub-camps spread through four general regional camping areas. Troops constructed fancy gateway entrances to their campsites to help identify where they were from around the country.

Unfortunately it was also on that opening day, Monday, July 25 that tragedy hit. Late in the afternoon some Adult Leaders from a contingent troop in Alaska were assisting a contractor set-up a large dining tent in their camp area. A long metal tent pole came in contact with an overhead power line and four of the Adult Leaders from Alaska were electrocuted. Three other adults were sent to the hospital for treatment of injuries. It was definitely an avoidable fatal accident.

On a typical day we had seven one-hour class periods for the Electronics Merit Badge Program. The successful completion of

the Electronics Merit Badge program by a Scout took about 5-1/2 hours. The normal group size for each class was designed to be about 12 Scouts. The program was composed of several elements:

- Electrical and Electronics Careers Class
- AC and DC Power. This class covered AC and DC power sources, and discussed voltage, current, resistance and power. The Scouts built various working DC light, buzzer and switch circuits. As a result of the fatal electrocution accident on the first day of the Jamboree, we enhanced the class material on electric safety and shock. I was one of the instructors for Class 1.
- Electronic Components. This class covered Ohms Law, transistor logic and IC logic. It included a practical exercise.
- Binary Logic. This class included a practical exercise on binary and hexadecimal logic. It also addressed some LED circuit design.
- Soldering theory and practice. This practical exercise gave Scouts the opportunity to build an LED kit that the Scouts could take home with them. The logic chip provided with the kit was programmed with four different flashing light patterns.
- A Written Test completed the course

383 Scouts successfully earned the Electronics Merit Badge and got to keep the kit they built.

Some IEEE officers were able to visit the Electronics Merit Badge booth during the Jamboree. IEEE President Cleon Anderson, himself an Eagle Scout and a Scouter, spent a good part of one day at the Jamboree. He even took the IEEE volunteers to dinner that evening-a real relief from mess hall food. Other IEEE visitors included Marc Apter, Vice President of Regional Activities and a Scouter, and Thomas Tullia, Region 2 Director.

There were lots of things to see while hiking around the Jamboree grounds and lot of fun things to do for the Scouts, and Scouters too. The Scouts indulged in a fair amount of traditional patch trading, and spent a lot of time networking and talking with Scouts from other parts of the country. Meeting and talking

with new people, experiencing new adventures, and learning new skills can be thrilling. At the Merit Badge Midway, where I spent a fair amount of time, they offered nearly 80 different Merit Badge programs for the Scouts.

There were three large Activity Centers located around the Jamboree area where the Scouts could participate in enjoyable endeavors such as wall climbing, rappelling, air rifle shooting, shotgun shooting, archery, BMX bike racing, fishing, sailing, canoeing, kayaking, snorkeling and scuba diving. The Army had a large Activity Area where the Scouts could learn about the different types of functional Army units, view many different Army vehicles, aircraft and pieces of equipment, and participate in some thrilling activities. The other branches of the armed forces also had displays and activities.

There were three Trading Posts spread around the Jamboree grounds, where you could spend untold amounts of money on any type of Jamboree souvenir or gift you can imagine. There was plenty of food to be bought by all the roaming hungry Scouts, Scouters and visitors. For safety reasons the primary modes of transportation in the congested Jamboree area was by foot or bus. "Drink Lots of Water." was the operative phrase of the hot and humid days at the Jamboree.

Traditionally there is an Opening show and a Closing show in an amphitheater type outdoor arena. The Opening Show was scheduled for Wednesday, July 27. It was probably the hottest day of the Jamboree at 100+ degrees F. Because President Bush was to attend, the Secret Service was there in full force with about a dozen metal detectors for about 60,000 people to pass through. Due to the length of time people were out in the hot sun, despite the presence of lots of bottled water, there were increasing problems with treatment of people for heat stress and heat exhaustion. There was also an impending rain and thunder storm. Therefore the Opening Show was cancelled about one hour prior to its scheduled start-time.

The Closing Show was held as scheduled on Sunday, July 31 in the arena, with 75,000 people in attendance. Highlights of the evening included a visit and talk by President Bush and a program that included many well-known names from the Explorers Club of New York City such as astronaut James Lovell, naturalist Jim Fowler (previously of Wild Kingdom), and astronaut Scott Carpenter. It was a very pleasant evening with a good program, some pleasurable entertainment and a fantastic aerial laser light show. It was a bit of a late night, which made it a little hard to get up the next morning.

With the end of the last classes on Tuesday morning, August 2, the IEEE volunteers disassembled the internals of the Merit Badge booth, we had just assembled a week and a half earlier. The wood was donated to Habitat for Humanity.

I woke early on Wednesday morning, August 3 and drove away from the barracks, passing through a huge parking lot with buses ready to take all the Scouts home. Overall, the experience was quite memorable, and I can hardly wait to do it again in 2010!!

Tuttle Touts Intelligent Networks at Chapter VII Meeting

By Kevin Taylor, Chapter VII Vice Chair

At the Chapter VII meeting on Sept 22 2005, Larry Tuttle of IBM noted that the The utility information systems architectures of the past are proving to be inadequate to meet the demands of the modern electric utility environment. Instead, he says, modern software middleware architectures, already well proven in other critical real time applications, can consolidate data flows, decouple applications from devices, and provide efficient distribution of data to multiple destinations inside and outside the utility.

The next generation intelligent network encompasses software and networking technology, all the way from the embedded sensors/actuators and gateways to the enterprise information bus. It enables the real-time monitoring and control of the field devices via industry standard communication protocols such as Ethernet and TCP/IP. It allows the utility business to be able to sense and respond to demand, avoid problems, dispatch crews more efficiently when problem occurs and ultimately become a self-healing system that can repair itself.

Tuttle spoke of four problems that can upset the balanced flow of power thru an electrical grid:
- Growing Peak Demand
- Aging Assets
- Outages, such as the major 2003 blackout.
- Direct Generation by Customers for input of power back into the Grid

For example, there is little measurement of conditions on the grid, most "measured" parameters are assumptions based on "normal" operating conditions. When there is a power outage in a area, the electric company cannot analytically determine where the problem is. What happens is the electric company gets hundreds of calls, and based on the location of isolated pockets of complaint calls, then narrows the problem down to several possibilities, limited number of substations and/ or power lines, and then dispatches field crews to go find the problem.

On the other hand with the use of smart sensors, wireless networks (WLAN and WiMax), reliable messaging to link applications/devices to enterprise business, and eSCADA or IP enabled SCADA, an electric company can be continually making measurements. If they interpret the data properly, they can correct a problem before an outage occurs. Tuttle went on to cite three studies: GridWise (DoE), Intelligrid, and GridStad to show that this approach is practical.

There were 21 attendees, 11 were IEEE-SEM members, others were from ISA-SEM, and SEM-Power Plant Engineers Society (SEMPPES).

Events

Fri, Oct 28th
PE Exam day
See http://ww2.esd.org/EDUCATION/PE.htm

Tue, Nov 1st, 5:45 pm
Section Conference Planning Committee Meeting
UofM-Dearborn PEC Building
All members interested in helping plan Fall Section Conference are welcome to attend.

Tue, Nov 1st, 6:00 pm
Executive Committee (XCOM) Meeting
Univ. of Michigan, Dearborn Professional Education Center Bldg
All are invited to attend. 6:00pm - Dinner, 6:30pm - Meeting.
Contact: Suleiman Barada, 313-565-8438, 313-550-0525, sbarada@ieee.org

Wed, Nov 9th, 5:30 pm
Fall 2005 Section Conference and Dinner
University of Michigan Dearborn Fairlane Center, 19000 Hubbard Drive, Dearborn
Contact: Mark Ciechanowski, 248-755-4477, mark.ciechanowski@ieee.org

Wed, Nov 16th, 5:30 pm
ESD Affiliate Council Meeting
ESD, Southfield

Mon, Dec 5th, 6:00 pm
Executive Committee (XCOM) Meeting
Univ. of Michigan, Dearborn Professional Education Center (PEC) Bldg
All are invited to attend. 6:00pm - Dinner, 6:30pm - Meeting.
Contact: Suleiman Barada, 313-565-8438, 313-550-0525, sbarada@ieee.org

Tue, Dec 6th, 6:30 pm
Engineering Management Society Seminar
(to be determined)
Contact: Mark Ciechanowski, 248-755-4477, mark.ciechanowski@ieee.org

Wed, Dec 21st, 5:30 pm
ESD Affiliate Council Meeting
ESD, Southfield

Tue, Jan 3rd, 6:30 pm
Executive Committee (XCOM) Meeting
Univ. of Michigan, Dearborn Professional Education Center (PEC) Bldg

Wed, Jan 18th, 5:30 pm
ESD Affiliate Council Meeting
ESD, Southfield

Mon, Feb 6th. 6:30 pm
Executive Committee (XCOM) Meeting
Univ. of Michigan, Dearborn Professional Education Center (PEC) Bldg

Wed, Feb 22nd, 6:00 pm
ESD Affiliate Council Gold Award Banquet
Dearborn Inn
Contact: Mark Ciechanowski, 248-755-4477, mark.ciechanowski@ieee.org

Want to have your event listed here? Fill out and submit the Event Submission Form at

http://www.ieee-sem.org/?q=eventform.html.

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