



## IEEE/SEM Fall '99 Section Meeting Program

**Date:** Wednesday, October 27, 1999

**Location:** Fairlane Training & Development Center, 19000 Hubbard Drive in Dearborn, MI.

**Program:**

- 5:30 pm: Registration & Check-in opens at FT&DC North Entrance
- 5:45 pm: Concurrent technical meetings (locations will be posted)
- 6:30 pm: Social period in FT&DC Ford Credit Lounge with cash bar, University Showcases and Vendor Exhibits on display in North Entrance
- 7:15 pm: Check-in closes & Dinner in dining room B
- 7:55 pm: Featured speaker:  
Capt. Al Haynes, United Airlines Ret.
- 9:15 pm: The meeting will conclude

**How to Register:**

Mail in the registration form on page 11 by October 15. Late registrations will be accepted by phone or express mail until 5:00 pm on Monday, October 25, 1999. There is no fee for attending the technical sessions only, but registration is requested to aid in room assignments. Dinner is not guaranteed to attendees registering after October 25.

**Student Registration:**

Students must register through their student branch to receive the discounted rates. Student branch signup procedures are posted on the section's web page, or by contacting Edzko Smid, director of student activities, IEEE/SEM, [smid@oakland.edu](mailto:smid@oakland.edu).

**Contact: John M. Miller 313-322-7486**

*The meeting will end at approximately 9:00 p.m.*

### Fall Section Meeting Featured Speaker October 27<sup>th</sup> 1999

*by John Miller, IEEE/SEM Vice Chair*



The IEEE/Southeastern Michigan Section fall 1999 meeting will be held the evening of October 27<sup>th</sup> at the Fairlane Training & Development Center North Building in Dearborn. Parking is adjacent to the north building entrance. We are planning several technical

sessions plus a student track session for this meeting. Details on the topics and presenters is available in this issue of Wavelengths. As always, advance registration is encouraged and to make this easier for our membership this year we will offer registration by major credit card. Please see the attached registration form for details.

Following the concurrent technical sessions hosted by the various chapters, attendees will have an opportunity

to visit various University Showcase booths, Vendor Displays and Student Branch exhibits. All displays and exhibits will be set up in the FT&DC north entrance near the Ford Credit Lounge break area. This is also the location of the social gathering and registration desk. At the door registration will close immediately after the social break. Please register to obtain entrance to the dining room for dinner and the keynote speaker presentation.

The *featured speaker* for the fall section meeting will be **Captain Al Haynes, United Airlines, retired**. His topic of discussion will be the flight of UA flight 232. Readers may recall that almost exactly ten years ago Capt. Haynes experienced the unexpected and improbable triple systems failure, a 10<sup>-9</sup> event, resulting in what would have technically been non-survivable. That 184 people survived the crash landing can be credited to five main factors: luck, communications, preparation, execution and cooperation.

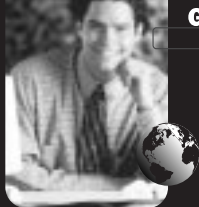
*Continued on page 2*

#### TABLE OF CONTENTS

Fall '99 Section Meeting Program .. 1	Meeting Technical Sessions ..... 4-7	Meeting Professional Activities ..... 10
Fall Meeting Speaker ..... 1,2	Local Connection to the World ..... 8	Meeting Registration Form ..... 11
Career Fair ..... 2	1999 Intel IEEE Judging Team ..... 9	Directions to Meeting ..... 11
Calendar of Events ..... 3	Value of IEEE Membership ..... 10	Computer Chapter Seminar ..... 12

**KAPLANCAREERS.COM**

GET YOUR CAREER ONLINE



Check out our  
Virtual Event  
continuing October 18  
through November 8

# Come to Our TECH Career Fair

Monday & Tuesday,  
October 25 & 26  
3-8pm both days

Embassy Suites Hotel  
19525 Victor Parkway  
Livonia, MI

## NO COST • NO OBLIGATION PRIVATE INTERVIEWS

For Engineering, IT/IS, & Software  
professionals with 2+ years experience.  
Send your resume now. Get the inside track.

See our ad in the  
*Detroit News and Free Press*  
Job Fair section on  
Sunday, October 24.

Send your resume online at:  
[www.kaplancareers.com](http://www.kaplancareers.com)  
or fax it to 757-437-2243  
or mail it to:

**KAPLAN**  
CAREER SERVICES

Kaplan Career Services  
Keycode: 10DET-IEEE,  
1081 19th St, Ste 100  
Virginia Beach, VA 23451

To participate, companies  
call 800-288-2890  
Candidates with questions  
call 888-765-4473

## Fall Section Meeting Featured Speaker October 27<sup>th</sup> 1999

*Continued from page 1*

*Luck* involved the facts that the airplane remained flyable, the weather was good, the location of the disaster was accessible and it happened in the day. Prompt and total response of Air Traffic Control, Intensive training of cockpit and cabin crew, Intensive intra-communications training of the ground units and proper use of available facilities contributed to the *Communications factor*. Live disaster simulations and drills by the air and ground personnel together prepared everyone for this seemingly impossible disaster as these drills lead to improvements and better planning. This contributed to the *Preparedness factor*. Everyone responded as their training dictated and exerted a total team effort coupled with complete cooperation from every agency involved as well as the general population. This contributed to the Execution & Cooperation factors.

All these factors allowed what at first appeared to be a non-survivable accident to become one in which most of those aboard survived. On July 19, 1989 United Airlines flight 232 departed Denver at 2:09 PM and climbed to a cruise altitude of 37,000 feet. At approximately 3:16 PM the flight notified Minneapolis Air Traffic Control Center that the Number Two Engine had failed and the aircraft was marginally controllable. Please join us on October 27, 1999 to hear the rest of the story. Please help us manage this meeting more effectively by registering early. You may contact John M. Miller for further relevant information, to volunteer, or to communicate suggestions. [jmille24@ford.com](mailto:jmille24@ford.com), 313-322-7486

**Biography:** Captain Al Haynes was born in Paris, TX and raised in Dallas. He attended Texas A&M College before joining the Naval Aviation Cadet Training Program in August of 1952.

He was commissioned a Second Lieutenant in the U.S. Marine Corps in November, 1953. After a tour in an operating squadron, he taught instrument flying in Kingsville, TX until his release from the service in March of 1956. He joined United Airlines as a flight engineer in August of that year and served in that capacity until his promotion to first officer in 1963. He flew the DC-6, DC-7, DC-8, Boeing 727 and DC-10 until his promotion to Captain in 1985. He flew Boeing 727's and DC-10's up to his retirement on August 31, 1991, accumulating over 27,000 hours of flight time.





## IEEE Southeastern Michigan Section Executive Committee

### Officers

Chair	James Woodyard	313-577-3758
Vice Chair	John Miller	313-322-7486
Secretary	Donald Silversmith	313-577-0248
Treasurer	Mohamed Zohdy	248-370-2234

### Administrative Activities

Past Chair	Sandy Hunter	248-524-0645
Section Advisor	Don Bramlett	313-235-7549
Student Activities	Edzko Smid	248-370-2082
Professional Activities	Tarek Lahdhiri	248-685-5634
Technical Activities	Anthony Will	810-986-9557
Educational Activities	Ece Yaprak	313-577-8075
Membership	Maurice Snyder	734-973-1300

### IEEE/SEM Chapters

#### I Circuits & Signal Processing: Acoustics, Speech &

Signal Processing (ASSP-01), Circuits & Systems (CAS-04),

Information Theory (IT-12) and Control Systems (CS-23)

#### II Vehicular Technology: Vehicular Technology (VT-06)

#### III Comm. & Aero. Electronics: Aerospace & Electronics

Systems (AES-10) and Communications (COM-19)

#### IV Trident: Electron Devices (ED-15), Microwave Theory &

Techniques (MTT-17) and Antennas & Propagation (AP-03)

#### V Computer: Computer (C-16)

#### VI Geoscience & Remote Sensing: Geoscience &

Remote Sensing (GRS-29)

#### VII Power Eng. & Ind. Apps.: Power Engineering (PE-31)

and Industrial Applications (IA-34)

#### VIII EMC: Electromagnetic Compatibility (EMC-27)

#### IX Power & Ind. Electronics: Power Electronics (PEL-35)

and Industrial Electronics (IE-13)

#### X Engineering Management: Eng. Management (EM-14)

### EDITORS

Anita Malhotra	Cindy Witkor
O: 313-845-2409	O: 734-930-7500
H: 810-268-0249	H: 734-513-7390
amalhot1@ford.com	cjw@adventengineering.com

Mark Hunter (Consultant)  
O: (734-453-0800) m.hunter@linkeng.com

### PRINTER

Progressive Printing  
1326 Goldsmith  
Plymouth, Michigan 48170  
734-459-2960



**COPY DEADLINE:** News items are due the first day of the month for the following month's issue, e.g. April 1 is the deadline for the May issue.

### ADVERTISING RATES CIRCULATION OVER 4000

Ad Size	Annual Rate (8 issues)	Single Issue Rate
1/8 page	\$525	\$85
1/4 page	\$1000	\$160
1/2 page	\$1900	\$300
1 page	\$4000	\$650

(Second color, other sizes & special placement quotes available upon request)

### POSTMASTER Send address changes to:

IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854.  
Phone: 732-981-0060x150. USPS 878-660

### POSTAL INFORMATION NOTICE

The newsletter of the Southeastern Michigan Section of IEEE, "Wavelengths", (USPS 878-660), is published monthly 8 times per year except June, July, August & December by the Institute of Electrical and Electronics Engineers, Inc. Headquarters: 345 East 47<sup>th</sup> Street, New York, NY 10017-2394. \$1.00 per member, per year (included in annual dues) is designated for each member of the Southeastern Michigan Section.

Periodicals Postage Paid at New York, NY and at additional mailing offices.

### Visit the following IEEE World Wide Web sites:

Section: [www.ieee.org/regional/section/se\\_michigan](http://www.ieee.org/regional/section/se_michigan)

IEEE: [www.ieee.org](http://www.ieee.org)

IEEE Region 4: [www.ieee.org/regional/r4/](http://www.ieee.org/regional/r4/)



## Calendar of Events

October 1-3	Event:	<b>The 3rd Annual IEEE Conference on Intelligent Transportation System</b>
	Location:	The Ritz-Carlton Hotel, Dearborn, MI
	Sponsor:	IEEE Intelligent Transportation System Council
	Contact:	Prof. Ka C Cheok, 248-370-2232
Tuesday October 5	Event:	<b>Executive Committee Meeting</b>
	Time:	Dinner at 6 p.m., meeting 6:30 p.m.
	Location:	EATON Corp., 26201 Northwestern Highway, Southfield
	Sponsor:	IEEE/SEM
	Contact:	Kimball Williams, 248-354-2845
Thursday October 14	Event:	<b>Computer Society Seminar</b>
	Title:	Fault Injection as a Tool for Fault-Tolerant Process Controller Design
	Speaker:	Prof. Jan Hlavicka, Czech Tech. Univ. in Prague
	Time:	6:00 p.m.
	Location:	University of Detroit Mercy, Engineering Building, Rm E237, 4001 W. McNichols Rd., McNichols & Livernois
	Sponsor:	IEEE/SEM Computer Chapter
	Contact:	Dr. Nizar Al-Holou, 313-993-3384, alholoun@udmercy.edu
	Comment:	See page 12 for more information.
October 15	Event:	<b>Deadline to register for Fall Section Meeting</b>
October 25-26	Event:	<b>Career Fair - See information on page 2.</b>
Wednesday October 27	Event:	<b>IEEE/SEM Fall Section Meeting</b>
	Time:	Check in begins at 5:30 p.m.
	Location:	Fairlane Training & Development Center, 19000 Hubbard Drive in Dearborn, MI.
	Contact:	John Miller, (313)-322-7486, jmille24@ford.com
	Comment:	Be sure to register using the form on page 11.
November 1-2	Event:	<b>Workshop - Dependability Practices and Strategies for Road Vehicle Electronics: Global Issues, Practical Solutions - TOPTEC®</b>
	Location:	Novi Hilton Hotel, Novi, Michigan
	Sponsor:	SAE International
	Web Address:	<a href="http://www.sae.org/calendar/depagend.htm">www.sae.org/calendar/depagend.htm</a>
	Comment:	See page 12 and the web for more information.
November 3	Event:	<b>Environmental Test Tutorial: Overview of Environmental Reliability Testing</b>
	Time:	8:30 am - 4:30 pm
	Location:	Novi Hilton Hotel, Novi, Michigan
	Sponsor:	SAE International
	Comment:	This is a special post workshop tutorial in conjunction with the November 1-2 event above. See page 12 and the web for more information.



Chapter I: Circuits & Signal Processing

**Speaker:** Dr Robert L Ewing

**Affiliation:** Air Force Research Laboratory / Information Directorate & Air Force Institute of Technology Department of Electrical Engineering Wright Patterson Air Force Base, Ohio

**Title of Presentation:**

“Pioneering Technology Leadership-Make Your Designs Fly”

**Abstract:** The art of technology leadership, is one of digital temperance and analog prudence. Industry’s approach of *make haste quickly* for digital designers is parallel by the analog *designer’s make haste slowly*. Truly, the courage of our early 1940’s electronics design engineers, can give the next millennium the fortitude of meeting the challenge of revenging robust technology by the specific blending of the digital and analog design domains. The next century will see the incorporation of information mechatronics into every avenue of technology design, simply by the industrial economical need and concept of multifunctional sensing and data collection. The thought of one integrated chip design that has a million different configurations has much the same ring as powered flight did in the beginning of the 1900s. The saying, *Make your Designs Fly*, describes the new breed of design engineers that this talk is addressing.

**Biography:** Dr. Ewing began his career in the Propulsion Laboratory at Wright Patterson AFB during the early 1970’s with the development of jet engine control systems and initial control system used on the F-15. In the mid 70’s, he worked with Univ. of Cincinnati’s Medical School in the area of electronic control & regeneration of peripheral (sciatic) nerves used in walking, and continued this study at the Univ. of Edinburgh, Scotland. From 1977 to 1982, he was a medical research scientist at the Aerospace Medical Research Laboratory, in the Biodynamic Effects Division (where the word, “Bionics”, historically originated from). He worked to develop the pilot’s analog & digital flight control systems and aircraft ejection systems for low-level, high-speed flight. Also, during this time, he consulted with Wright State Univ.’s Medical Research & Engineering Department, to start its bionics & bioengineering area. In 1982, he became an instructor, for the Army, at the Air Force Institute of Technology (AFIT) & an adjunct instructor at Wright State Univ. During his work at the *AFIT*, he developed short courses and classes in Robotics, Digital Control, Artificial Intelligence, Neural Nets, Database Systems, Low Observables (Radar), Navigation & Guidance Systems, Microprocessor Design and Microelectromechanical Devices (MEMS). In 1993, he started working at Wright Laboratory’s Solid State Electronic Devices Directorate in the area of hardware description language (*VHDL*) for VLSI synthesis. Currently, he is directing the Computer Engineering Research Consortium (*CERC*) of local universities in the area of mixed-signal design. He is working towards the development and use of hardware description language for mixed-signal design and synthesis (*VHDL-AMS*). He holds engineering degrees, with BSEE (Univ. of Cincinnati) & Ph.D. in Electrical Engineering (Univ. of Dayton), and a physics degree, with MS (Univ. of Cincinnati). He has been a registered Professional Engineer (PE) with the State of Ohio since 1984, and is currently an adjunct professor at *AFIT*.

Chapter II: Vehicular Technology

**Speaker:** Dr. Dimitar Filev, E-mail:dfilev@ford.com

**Affiliation:** Ford Motor Company

**Title of Presentation:**

“Fuzzy Systems as Tools for Intelligent Control”



**Abstract:** Practical aspects of the essential ideas and tools for constructing useful fuzzy systems for the purposes of modeling and control of industrial systems will be examined. Main classes of fuzzy systems and the basic methods for their development will be introduced. Next, a general view of the fuzzy logic control area will be explored with special

attention given to properties, advantages, and drawbacks as they relate to intelligent and conventional control. Some current trends and benchmarks in intelligent control will be discussed. Several areas of applications of intelligent systems that are targeted to automotive manufacturing will be reviewed.

**Biography:** Dimitar P. Filev is a Staff Technical Specialist with Advanced Manufacturing Technology Development, Ford Motor Company specializing in industrial intelligent systems and technologies for control, diagnostics and decision making. Prior to joining Ford, Dr. Filev was Professor of Information Systems and Senior Research Associate at the Machine Intelligence Institute, Iona College. He is conducting research in control theory and applications, modeling of complex systems, intelligent modeling and control and he has published 3 books and over 150 articles in refereed journals and conference proceedings. Dr. Filev is a recipient of the '95 Award for Excellence of MCB University Press and the '96 Henry Ford Technology Award. He is a Senior Member of IEEE and Associate Editor of IEEE Trans. on Fuzzy Systems. Dr. Filev received his Ph.D. degree in Electrical Engineering from the Czech Technical Univ. in 1979.

Chapter III: Comm. & Aero. Electronics

Chapter V: Computers

**Speakers:** Dr. Subra Ganesan & Dr. Maurice Synder

.....

**Speaker:** Dr. Subra Ganesan

**Affiliation:** Professor, Computer Science and Engineering Dept. Associate Director, Product Development and manufacturing center Oakland Univ., Rochester, MI 48309, U.S.A.

**Title of presentation :** “Auto-PC in-vehicle computing”

**Abstract:** Auto PC with emerging communication technology, voice recognition technology, text-to-speech conversion software etc will make driving time more productive, more fun and safer for the drivers and other occupants. Merging of cellular communication, internet access, productivity software, open system based navigation aids, car diagnostics in real time and other advanced features are possible with the Auto PC.

In this talk we will look at the evolving hardware architecture, interface requirement, role of real time operating system, application software and desirable features of the overall system. The audience will be able to share there expertise and views.

**Biography :** Dr. Subra Ganesan is a Professor in the department of Computer Science and Engineering and Associate Director of Product Development and Manufacturing center, Oakland University, Rochester, MI. He worked at WMU, Kalamazoo, Concordia University, Canada, Ruhr University, Germany, and National Aerospace Laboratory, India before joining Oakland University. He worked at Texas Instruments, DSP group while on sabbatical leave from OU. He has designed many embedded real time system for Industry. He has given many one day tutorials on “ DSP applications” and “ On-board diagnostics”.



He is a senior member of IEEE, member of ACM, ISPE. More information is on the web: [www.secs.oakland.edu/~ganesan](http://www.secs.oakland.edu/~ganesan).

.....

**Speaker:** Dr. Maurice Snyder

**Affiliation:** Director, Asia Operations, Applied Dynamics International

**Title of presentation:**  
“Laboratory Design & Testing of Vehicle Intelligent Controllers”

**Abstract:** The talk on Laboratory Design And Testing of Vehicle Intelligent Controllers will cover two topics: 1. Recent advances in real-time dynamic system computer simulation with real-time I/O, called computer simulation with real-time I/O, called Hardware-in-the-Loop. 2) Generation and testing of safe and efficient code for intelligent controllers. What do we mean by “safe” code and “efficient” code? Why is automatic generation of test vectors important ?

**Biography:** Dr. Maurice Snyder has a PhD in Electrical Engineering and has been in the real-time simulation business for over 25 years. He currently is responsible for international marketing and sales in Asia for Applied Dynamics International (ADI), Ann Arbor, Michigan. ADI is the leader in real-time dynamic simulation systems for laboratory design and testing of sophisticated controllers for automotive and aerospace markets. Primary products include the AD RTS for real-time dynamic simulation of the systems being controlled and, BEACON, a code development and testing tool set for embedded controllers.



**Chapter IV: Trident**

**Speaker:** Mr. Gregory H Foster

**Affiliation:** Project Director – Electric Choice Risk Management; Detroit Edison Company

**Title of Presentation:**  
“Detroit Edison’s Electric Choice Program”

**Abstract:** Michigan’s electric utility industry is changing and soon customers will have choices regarding their electric service. Beginning in 1999, a limited number of business and residential customers will have the option to choose their electric generation supplier. On January 1, 2002 all customers will have the option to choose.

What is Electric Choice?

Electric Choice is a statewide initiative giving customers the option to choose the company that generates their electricity. Supplying electricity includes three separate activities—all of which utilities like Detroit Edison have historically performed.

- Generation – is the production of electricity at a power plant
- Transmission – is the movement of high voltage electricity from a power plant to the local distribution system near the customer (consists of large wires on tall steel towers.)
- Distribution – is the delivery of power to homes, businesses and factories and includes the poles, wires and substations (known as the local distribution system.)

Mr. Foster will provide an introduction to the Electric Choice Program and discuss what is changing as well as what is not changing with respect to electric service in Michigan.

**Biography:** Mr. Gregory H Foster is currently the Project Director of risk management for Electric Choice, Mr. Foster has worked for Detroit Edison for twenty years. In his current capacity, Mr. Foster is responsible for the identification, analysis and mitigation of risk issues and concerns with potential to impact the development and implementation of the Company’s Electric Choice program, which is expected to cost \$100 million and requires new business processes and systems to be developed. Prior to this position, Greg held positions of increasing responsibility in Regulatory Affairs, Corporate Strategy and spent almost ten years at Detroit Edison’s Fermi 2 nuclear plant.

A lifelong Midwesterner, Mr. Foster is a native of Ames, Iowa and grew up in West Lafayette, Indiana. Greg attended the University of Michigan, and earned a Bachelor of Science degree in Industrial Engineering (BSIE). He also holds a Master of Business Administration degree (MBA) from the University of Detroit. He and his wife, Judy, live in Plymouth and have two sons.

**Chapter VI: Geoscience & Remote Sensing**

**No Technical Session**

**FOR YOUR COMPETITIVE EDGE**

Get on track with Lawrence Tech’s graduate engineering programs! Lawrence Tech’s Master of Automotive Engineering, Engineering in Manufacturing Systems, Civil Engineering and Computer Engineering programs emphasize the vital interplay between manufacturing, engineering, research, suppliers and management. Most feature cross-disciplinary programs, part of the University’s commitment to enhance the growth of today’s working professionals.

- Evening classes designed for practicing engineers
- Outstanding faculty with top academic credentials and professional experience
- Classes begin January, May and August
- Graduate in two years attending classes twice per week
- Full service campus



21000 West Ten Mile Road  
Southfield, MI 48075-1058  
1-800-CALL-LTU, ext. 1  
TDD (248) 204-4117  
[www.ltu.edu](http://www.ltu.edu)

**Speakers:** Mr. Ken Jones & Mr. Roger Cooper

**Affiliations:**

Mr. Ken Jones, Manager, Applications Engineering; Collmer Semiconductor, Inc. ; Dallas, TX

Mr. Roger Cooper Sales Manager, Central Region, Collmer Semiconductor, Inc. ; Dallas, TX

**Title of Presentation:** "IGBT Technology Overview"

**Abstract:**In the world of power semiconductors the chase is on for lower losses, lower costs and easier operation. Power semiconductor manufacturers progressions to meet the needs of an everchanging IGBT market will be presented.

**Biographies:**

Mr. Ken Jones is a 1991 graduate of The DeVry Institute of Technology with an Associates in Electronics Engineering. He began his career in electronics 11 years ago, working with pulsed power lasers for welding aluminum window spacers. Nine years ago, he came to the Electronic Products Division of Collmer Semiconductor. During that time he has been a Product Engineer, designing and overseeing the manufacturing of high voltage, off-line switch mode power supplies. Two years ago, he accepted a position in the applications group at Collmer Semiconductor and has since been promoted to manager of that department. He travels frequently to Fuji Electric in Japan for the latest technology and information on new products including MOSFETs, IGBTs and IPMs.



Mr. Roger Cooper is the Central Region Sales Manager for Collmer Semiconductor. He has responsibility for sales to power semiconductor users in the central part of the U.S. and eastern Canada. He holds a BSEET degree from Texas A&M University . He has been in power semiconductor sales for five years. Prior to his entry into the sales profession, he held design engineering positions with International Power Machines and Continental Electronics Corporation. As a design engineer he was responsible for the design of high power inverters for UPS systems and high voltage, high energy power converters used in high power RF, RADAR and high energy sources for plasma research.



**ENGEL KLAES** 32540 Schoolcraft Road, #130 Livonia, MI 48150  
For Technical Information:  
(P) 734/513-0330 (F) 734/513-0335  
e-mail: ekco@compuserve.com

**Power Equipment Sales for the following Products:**  
ADALET HV Cable Accessories, C&D Stationary Batteries,  
DELTA-UNIBUS Isophase Bus, DOBLE Test Equipment,  
FISHER-PIERCE Photo Electric Controls, MEHTA-TECH  
Fault Recorders, GE MULTILIN Protective Relays, JOSLYN  
HV Vacuum Switches, OLSUN Cast Coil & Dry Transformers,  
PAUWELS Liquid Filled Transformers, POWELL Switchgear,  
PRINGLE High Current Switches, SANTANA Insulators,  
SOLIDSTATE CONTROLS UPS Systems, SOUTHERN  
STATES HV Switches, UNIBUS Bus Duct Systems.

**Speaker:** Mr. Robert Dockey

**Affiliation:** Hewlett Packard Corp. (EMC Group Manager )

**Title of Presentation:** "New Techniques for Reducing Printed Circuit Board Common-Mode Radiation"

**Abstract:** Have you ever had the experience of believing that you had done everything possible to reduce radiated emissions from an unshielded printed circuit assembly but still measure unacceptable margins? This session could help explain why. Even when all of the common emission suppression measures have been utilized, there is still one dominant coupling mechanism remaining which can be manipulated to improve the margin. Unfortunately it may also set a lower limit on the possible emission level which can be obtained from a specific design. This mechanism is referred to as "New Techniques for Reducing Printed Circuit Board Common-Mode Radiation"



A multi-layer printed circuit board with a "good ground plane" can produce common-mode radiation similar to a dipole antenna. This ground plane is commonly thought of as a low impedance path for returning currents and one which is of constant potential across its area. In fact, these currents give rise to voltage gradients in the plane which act as sources of common-mode current. Most RF current flowing along a signal trace on a multi-layer printed circuit board (PCB) returns on the ground plane directly beneath the signal trace. However, a small portion of the ground-plane current can also return via indirect paths causing common-mode radiation similar to a dipole antenna. New techniques to reduce these emissions on two-sided or multi-layer PCBs will be presented.

Previous independent work by German, Ott and Paul experimentally investigated radiated emissions from a PCB. They demonstrated that if this two-wire transmission-line is slightly unbalanced, it will radiate as an asymmetric dipole antenna producing common-mode radiation at much greater levels than the differential-mode radiation from the current loop. A direct prediction of this radiation was later performed by Hardin, Paul and Naishadham.

In 1993, Dockey discovered that a relatively small PCB with a solid ground-plane could also produce common-mode radiation. The majority of the signal-trace current returns on the ground plane beneath the signal trace. However, this current encounters the finite inductance of the ground plane and produces a voltage gradient, commonly called the ground-noise voltage. This causes a small portion of the signal-trace current to flow through the distributed stray capacitance of the ground plane.

This presentation will elaborate on these findings and propose methods which can be used to mitigate the radiation mechanisms.

**Biography:** Bob is the EMC Engineering Group manager at the Hewlett Packard division in Vancouver Washington. He has a BSEE from the Univ. of Missouri, Rolla and is certified as an EMC engineer by the National Association of Radio and Television Engineers. He is the author of three technical papers on various EMC subjects and is a member and Distinguished Lecturer of the IEEE EMC Society. Bob has been with HP for 13 years as both an EMC engineer and engineering manager. Previously, he spent 13 years as a TEMPEST engineering manager for TRW in Colorado Springs, CO.



**Speaker:** Mr. Dennis Virag, PMC

**Affiliation:** President, The Automotive Consulting Group, Inc.

**Title of Presentation:**

“Driving Business Performance Through Product Development”

**Abstract:** Best-in-class companies gain competitive advantage and achieve superior business performance through a process of differentiation. While most companies attempt to differentiate themselves in one area or another, high performing companies differentiate themselves on multiple fronts.

This presentation will present the high performance business model used by the most successful automotive OEMs and suppliers, and it will focus on product development as one of the key components of this high performance model. Learn how the best-in-class manage product development and how they link product development to business performance.

**Biography:** Mr. Virag is an avid automotive enthusiast and a student of the industry. Since 1967, he has been managing and consulting with organizations in the automotive industry. He served in industrial engineering, business planning and general management positions with several Fortune 500 firms before entering the consulting profession. His industry credentials include three operational turn-arounds and four new product launches.

He founded AutoTech Strategies, Inc., an industry focused management consulting firm serving domestic and international clients in the automotive industry in 1979. In this position, he became recognized as a knowledgeable strategist in an era of uncertainty for the North American automotive industry. His clients during this period included General Motors, Hyundai, A.T. Kearney Management Consultants, and the Boston Consulting Group. He was later recruited by Ward’s Automotive Research, an automotive forecasting and market research company, where he served as Vice President and General Manager.

Mr. Virag co-founded The Automotive Consulting Group, Inc. in 1986 along with Dr. David E. Cole of the University of Michigan. He served as Managing Director and, most recently, as President of ACG. Over the years, he has managed or participated in over 200 consulting assignments involving strategic business, market and technology planning issues for a variety of domestic and international clients. Mr. Virag holds a Bachelor’s Degree in Industrial Engineering from the University of Dayton and attended Golden Gate University, Graduate School of Business. He is a member of the Society of Automotive Engineers (SAE), served as Chairman of EnV93 and Midwest Region Vice President of the Society of Automotive Analysts (SAA), and is an Honored Member of Who’s Who in U.S. Executives. He has published numerous automotive industry related articles and is frequently a guest speaker before government, professional and corporate groups. He has been quoted in a variety of publications, including The Wall Street Journal, Fortune, Business Week, Automotive News, Automotive Engineering, Automotive Industries, Ward’s Auto World, and Auto Dealer Magazine.

**Speaker:** M A Zohdy

**Affiliation:** Oakland University

**Title of Presentation:**

“Artificial Genetic optimization”

**Abstract:** Recently the area of soft computing has grown to encompass neural, fuzzy, and statistical approaches. Genetic optimization is based mostly on organized random search tailored to solve uncertain global optimization problems in engineering. When complemented with neural and fuzzy framework genetic optimization holds promise to solve outstanding applications.

**Biography:** Dr. M A Zohdy is Prof. of engineering and computer science at Oakland University, Rochester, Michigan. He teaches graduate and undergraduate classes in the areas of systems, control, and simulation. His research interests are in linear and nonlinear control, pattern information processing, neural and fuzzy systems, and advanced simulation and visualization. He has been consultant to major automotive companies, General Dynamics, EATON and received research funding from NSF, State of Michigan, US Agency for Development, and World Bank.



## Electromagnetic Test, Analysis & Consulting

The Eaton Detroit Center provides OEMs and suppliers worldwide with full-service test and analysis capability in more than 50 vehicle technologies, including the following electromagnetic test, analysis and consulting services:

- **New Product Test, Evaluation, Problem Resolution, Validation, and Standards Certification**
- **Evaluation of Materials Shielding**
- **Customer-Site Problem Analysis and Resolution**
- **In-Plant Power Quality Analysis**
- **NVLAP/NARTE Certified**
- **Consulting on EMC and Power Quality Issues**
  - **New Product Concepts**
  - **Existing Product**
  - **Specifications**
  - **Revisions**
  - **Test Plans**
  - **Re-Designs**

Eaton has earned more customer quality awards than any peer, and the first-ever *SAE Henry Ford II Distinguished Award For Excellence In Engineering* ... Find out why! For more information on laboratory hours and how we can support your test and developments programs, call **Scott Lytle at 800-341-4892**.

Eaton Corporation  
Corporate Research & Development  
26201 Northwestern Highway  
Southfield, MI 48037



## The IEEE/SEM Section

### “Your Local IEEE Connection to Networking with the World “

By Don C. Bramlett, PE, Section Advisor

The *new theme* of the IEEE is “*Networking the World.*” You will see this short phrase on all of the literature and correspondence from the IEEE. As alluded to in the new membership application information, the IEEE offers a sense of community worldwide by providing opportunities for engineers to share mutual professional, technical and personal interests with others who enjoy similar interests around the world.



The leadership of the IEEE Southeastern Michigan Section (IEEE/SEM), your local Section, wants to successfully fulfill this role as much as reasonably possible. The section consists of 50+ actively involved Section and Chapter officers, who volunteer to provide the needed services, programs and benefits to the IEEE members in Southeastern Michigan and Essex County, Ontario, Canada.

When you become a member of the IEEE, you automatically become a member of your local IEEE Section; one of nearly 300 local Sections in the 10 geographical IEEE Regions around the world. It has been said by some that the local Section is the IEEE for many if not most IEEE members; and I believe that is the case. The local Section provides the best opportunity for IEEE members to see a face that represents the IEEE; not just words on a page in a magazine or on an e-mail message, or a distant voice on the phone.

The section consists of *ten* local entities (Chapters of IEEE Technical Societies). These ten chapters represent the interest of members of 18 out of the 37 Technical Societies in IEEE. The Section tries to also adequately represent the interests of the members of the remaining 19 Technical Societies, as well as support the broader professional growth of its members.

The IEEE/SEM Section newsletter, *WAVELENGTHS*, and information on the IEEE/SEM Section *website* at [www.ieee.org/regional/section/se\\_michigan](http://www.ieee.org/regional/section/se_michigan) are the two main methods used to publicize the programs, activities and meetings within the Section.

The Section leadership wants all of the IEEE/SEM Section members to feel welcome to attend Section and Chapter programs. We would like to see all of the nearly 4000 IEEE/SEM members, whether in industry, academia or IEEE Student Branch, attend a meeting for their technical and professional development.

We encourage and call on all section members to come to an activity, and possibly return for other programs. That will give us a sense that we are meeting the needs of the local IEEE members. You too will be glad that you took this first step in *networking with the world.*

You are also welcome to volunteer to help with the operation of the Section and its Chapters. You can help at a meeting, spend a morning as a judge at the Science Fair or Future City Competition, run for an office, or serve as a member of a committee of interest to you. You will be glad to be a part of this dynamic team.

If you have questions or suggestions pertaining to the Section, its Chapters, programs or activities, I invite you to contact me.

*My office phone number is 313-235-7549*

*My e-mail address is [d.bramlett@ieee.org](mailto:d.bramlett@ieee.org)*



47523 Clipper Street  
Plymouth MI 48170  
Tel: 734-455-8200

#### Our latest EMC test laboratory offers the following automotive engineering services:

- European road vehicle type approval - 'e' and 'E' marking
- European EMC Directive certification - 'CE' marking
- Component and system testing to Ford, GM, and Daimler-Chrysler requirements.
- EMC testing for suppliers of components and systems to car, truck, bus, agricultural, forestry, construction, industrial vehicles and related industries.
- Radio interference suppression (audio systems development).
- World-wide radio approval testing and certification.

Backed up by over 200 man years of automotive electrical engineering experience and EMC expertise.

If you sell your products into Europe we have the specialist knowledge you need. Visit our Web Page:

[www.MIRANorthAmerica.com](http://www.MIRANorthAmerica.com)

**Contact:** Tim Droege, Account Manager, MIRA North America.



## 1999 Intel ISEF IEEE Judging Team

*By Don C. Bramlett, PE, IEEE/SEM Advisor*

The 1999 Intel International Science and Engineering Fair (ISEF), held in Philadelphia, PA from May 2-8, 1999, was the first time that IEEE, as an international organization, has presented an award at this renown event. As you may have read in the July 1999 issue of the IEEE publication "The Institute" and seen on the IEEE website, the newly instituted IEEE Presidents' Scholarship of \$10,000 was presented by IEEE President Ken Laker to Michael Belshaw, a high school senior from Hamilton, Ontario, Canada for his project entitled, "Robotic Revolution."

I had the honor of representing the IEEE/SEM Section and serving as the lead judge on the IEEE team of judges for the IEEE Presidents' Scholarship at the 1999 ISEF. IEEE requested that our Section provide a representative to serve as a member of the judging team this year, and to act as liaison with IEEE to coordinate the judging activities for the same IEEE award at the 2000 ISEF at Cobo Hall in Detroit next May. I had the pleasure of serving on the judging team with two other IEEE Senior members, Mr. Barney Adler with PECO Energy and a member of the Philadelphia Section, and Mr. Peter Mauzey with Bell Labs and a member of the New York Section. It was also a distinct pleasure to work with Ms. Christy Bouziotis, the prime contact from the IEEE Educational Activities Department (EAD), who was responsible for the overall coordination of the IEEE judging and award activity.

Being the first year for the award of the IEEE Presidents' Scholarship, there was much email and telephone communication between the IEEE EAD and the judges. An evaluation form to be used by the judges was developed using the published evaluation criteria from the ISEF organization and the checklist the IEEE/SEM Section team of judges use at the Science and Engineering Fair of Metropolitan Detroit (SEFMD).

I flew into Philadelphia on Tuesday morning, May 4 and was met at the airport by fellow judge Barney Adler. After checking in at the Marriot, Mr. Adler, Mr. Mauzey and myself met at the adjacent Pennsylvania Convention in downtown Philadelphia to pick up our registration packages and credentials as special awards judges. We were able to view the projects on the convention floor that afternoon and evening, and we attended an orientation meeting for general category and special awards judges that evening.

On Wednesday morning we were able to again view the projects on the convention floor and read abstracts assembled in books in the isolated judges assembly area. In the afternoon after lunch, we were able to briefly interview the students for those projects we deemed worthy of further evaluation for the IEEE award. We were also able to meet with and compare notes with the judges for the IEEE Computer Society and the IEEE Philadelphia Section, both of whom also gave awards to student projects at the ISEF. There were a number of outstanding projects in the area of electrical, electronics, and computer engineering, which made the evaluation and selection process quite intense and involved. We made our selection and turned that information into the ISEF officials Wednesday evening in preparation for the Special Awards Convocation on Thursday evening, the next day. We shared our findings with the judges from the Philadelphia Section and Computer Society, in confidence, that evening and we were not surprised to see that the Philadelphia Section also was awarding young Mr. Belshaw its highest technical award.

Thursday morning I had a opportunity to view the projects and talk with the students in a more relaxed manner on the first day that viewing was open to the general public. That afternoon I met with Ms. Christy Bouziotis and IEEE President Ken Laker to brief them on the judging experience and provide them the information on the winner of the IEEE Presidents' Scholarship. Unfortunately, I had to fly out of Philadelphia on Thursday around the time of the Special Awards Convocation, so I missed the actual announcement of the winner and the presentation of the award to Mr. Belshaw. He was such a pleasant young man to speak with, and I am sure that he and his parents were happy to be awarded the IEEE scholarship, the largest scholarship awarded by any technical organization or society at the ISEF.

You can anticipate in an upcoming issue of Wavelengths to see a call for judges from the IEEE/SEM Section for both the SEFMD and the ISEF. Judging of the SEFMD will be earlier than normal this year, on Saturday, March 14. Judging for the ISEF will be on Tuesday and Wednesday, May 9 and 10. If you have any questions, contact Don Bramlett at 313-235-7549 or at [d.bramlett@ieee.org](mailto:d.bramlett@ieee.org).

## The Importance and Value of IEEE Membership

Maurice F. Snyder, SM

This is a second installment of services and benefits to IEEE members. Please access the IEEE web site [www.ieee.org](http://www.ieee.org) for details of all IEEE services including on-line membership application.

### IEEE Email Alias

The IEEE email alias is an email forwarding service, free to IEEE members. The service is not an email server and does not store emails for you. It forwards emails sent to it to whatever other email address you specify to IEEE. The value of this is if you change jobs or move, you simply notify one place (IEEE) of your new email server address which could be your business email or personal home email address. You never need to change the IEEE email address. Email sent to the IEEE email simply gets forwarded to the new address.

### Free Virus Scanning of Emails

Our virus scanning feature helps prevent you from receiving viruses in the first place. Attachments within your e-mail that are sent to your IEEE email alias will be scanned for viruses. If a virus is found, the attachment will be deleted. An alert is then sent to both the sender and recipient.

While the IEEE cannot guarantee that every virus will be found, the virus scanning software is updated weekly with a current virus recognition file. A service like this typically costs \$30 per year, but as an IEEE member, it is yours FREE of charge.

For more details of the IEEE email alias service, please check the web site [www.ieee.org](http://www.ieee.org).

### IEEE Home Mortgage Program

Get the loan you need with our affordable, flexible mortgage program. IEEE offers a complete line of competitive mortgage products and services through Chase Manhattan Mortgage. Terms are flexible and rates are competitive. Loan options include fixed and adjustable rate loans, balloon loans and zero-point loans. For more information on home mortgages call 1-800-438-4333 or check out the web site.

The IEEE Home Equity Loan Program provides no closing cost options, competitive fixed and adjustable rates, simple application with no fees, and a credit decision or conditional approval within 24 hours. For more information on Home Equity Loans call 1-800-997-8467 or visit our web site.

The IEEE Moving Service plan can save members 43% to 58% on moving costs. North American Van Lines professionals provide quality and worry-free service at discounted rates to IEEE members. If you're moving interstate, USA to Canada, or within the Canadian provinces call 1-800-825-0939 for more information or a free estimate.

## Fall '99 Meeting: Professional Activities Program

by Tarek Lahdhiri

The IEEE/SEM Section will hold its Fall semi-annual meeting on Wednesday, October 27, 1999, at the Fairlane Training and Development Center, Ford Motor Company.

We anticipate attendance of over 50 student members and 100 regular members representing all levels of electrical and computer engineering profession. Attendees will include representatives from the big three automakers and other high tech businesses. Within this region, the IEEE Section sponsors ten student branches at universities and few technical schools, all with electrical engineering programs.

The section offers a Professional Activity program which will provide your representatives a superb opportunity for your company/university to meet future electrical and computer technology and engineering degree recipients, publicize your products and services, talk about engineering employment challenges with your company and begin an effective recruitment process.

*All companies and universities are invited to join us and participate in the Section's Professional Activities Program, which includes the following:*

### Student Table Sponsorship

A sit-down banquet at a table with seating for eight persons during dinner. We will reserve seven places for students, with an eighth place for a representative from your company to interact with the students. The fee for student-table sponsorship is \$200 USD.

### Vendor Exhibits

An exhibit on a table, which will be set in the social period area. This setting will provide you with an opportunity to publicize your products and services. The fee for vendor-exhibit table is \$50 USD.

### University Showcase

An exhibit on a table to lay out material for advertising your graduate and undergraduate programs, meet prospective electrical engineering students, talk about your programs, and begin effective recruitment process. The fee for the university showcase exhibit is \$50 USD.

### Contact

Tarek Lahdhiri  
Phone: 248-685-5634, Fax: 248-676-1266  
or e-mail: [TL007@ieee.org](mailto:TL007@ieee.org)

### Mail:

P. O. Box 71275  
Madison Heights, MI 48071



## IEEE/SEM 1999 Fall Section Meeting Registration Form

Complete and mail form with an early registration fee of \$30 per person. The registration fee includes technical session attendance and dinner. If this form is for multiple people, you must provide full contact information for one person plus Name, Technical Session Preference, and Meal Selection for each additional registrant. *Please make check payable to IEEE/SEM and forward along with a completed registration form to: Dr Ece Yaprak, Wayne State Univ., College of Engineering, 4855 Fourth Street, Rm.1152 Detroit, MI. 48202.*

There will be express check in for registered attendees.

**Please type or print:**

Name: \_\_\_\_\_  
 Company: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 City/State/Zip: \_\_\_\_\_  
 Phone #: \_\_\_\_\_ [ ] H [ ] W

Technical Session # \_\_\_\_\_ (\* Select from list at right, 0 for none)

Meal Selection: [ ] None, [ ] Chicken, [ ] Vegetarian

**Total amount enclosed: \$\_\_\_\_\_ Registration ( \$30 per person )**

[ ] Check enclosed in US dollars [ ] Visa [ ] Master Card

Credit Card Number \_\_\_\_\_

Expiration Date \_\_\_\_\_

Signature \_\_\_\_\_

Credit card registrations are non-refundable after Oct. 25

<b>Fees:</b>	<b>Amount</b>	<b>Deadline</b>
<b>Registration:</b>	\$30 US	Received by mail before October 15
<b>Late registration:</b>	\$35 US	Received by 5:00pm October 25
<b>Contact:</b>	Ece Yaprak, (313)-577-8075, yaprak@eng.wayne.edu	
<b>Student branch:</b>	\$15 US	Register and pay through student branch by October 15
<b>Contact:</b>	Edzko Smid, 248-370-2082, smid@oakland.edu	

**Technical Sessions:** (Indicate selection by #):

- 1. **Chapter I** Circuits & Signal Processing  
"Pioneering Technology Leadership-Make Your Designs Fly"
- 2. **Chapter II** Vehicular Technology  
"Fuzzy Systems as Tools for Intelligent Control"
- 3. **Chapter III** Comm. & Aero. Engineering
- Chapter V** Computers  
Auto-PC In-vehicle Computing" &  
"Laboratory Design and Testing of Vehicle Intelligent Controls"
- 4. **Chapter IV** Trident  
"Detroit Edison's Electric Choice Program"
- 7. **Chapter VII** Power Eng & Ind. Appl.
- Chapter IX** Power & Ind. Electronics  
"IGBT Technology Review"
- 8. **Chapter VIII** EMC  
"New Techniques for Reducing Printed Circuit Board Common-Mode Radiation"
- 10. **Chapter X** Engineering Management  
"Driving Business Performance Through Product Development"
- 11. **Student Track** "Artificial Genetic Optimization"

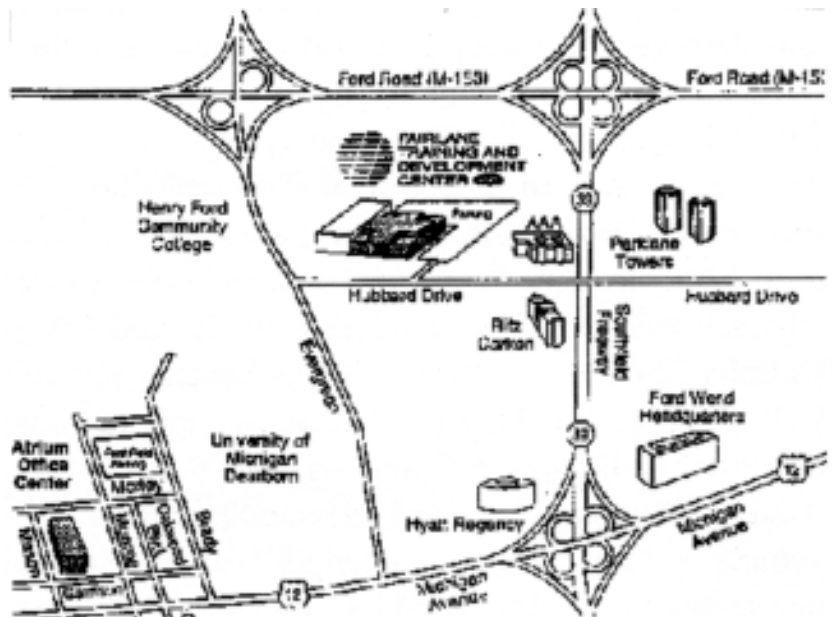
Additional Registrants (Non-Students Only) Name	Company	* Tech. Session #	Meal Selection (one only)			Fee \$30
			None	Chicken	Vegetarian	

### Directions to Fairlane Training & Development Center Located on Ford Motor Company

If traveling from the north, exit the Southfield Freeway at Ford Road, Exit 7. Follow the Southfield Service Drive to Hubbard Drive and turn right. The Fairlane Training and Development Center is located on the north side of Hubbard.

If traveling from the south, exit the Southfield Freeway at Michigan Avenue, Exit 6. Follow the Southfield Service Drive to Hubbard Drive and turn left. The Fairlane Training and Development Center is located on the north side of Hubbard.

Enter the Fairlane Training and Development Center and follow the IEEE signs to the north side of the building. Park and follow the IEEE signs to the north entrance.







**IEEE**

*Networking  
the World™*

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

PERIODICAL POSTAGE PAID  
AT PLYMOUTH, MICHIGAN

**IEEE/SEM Computer Chapter Seminar  
Thursday, Oct 14, 1999 at 6:00PM**

***Fault Injection as a Tool  
for Fault-Tolerant Process Controller Design***

**Speaker:** Prof. Jan Hlavicka, Czech Tech. Univ. in Prague

**Location:** University Of Detroit Mercy  
Engineering Building, RM: E23  
4001 W. McNichols Rd, McNichols & Livernois Rds.

**Information and Reservations:**

Dr. Nizar Al-Holou 313-993-3384, [alholoun@udmercy.edu](mailto:alholoun@udmercy.edu)

**Abstract:** The talk presents a comparative study of several alternatives of a FT process controller design evaluated with the aid of software fault injection. We compare controller architectures based on hardware redundancy with those using time redundancy. The system behavior is evaluated by means of a process-oriented simulation model enabling the software injection of faults. As an overall measure of controller design quality (which includes both performance and reliability) we use the numerical error of the output. The results obtained on the model show that the selection of an optimal system configuration depends among other on the relative speed of computation and on the rate of faults damaging the data.

**Biography:** Born 1942 in Prague, graduated 1964 in electrical engineering, 1987 obtained doctor of sciences degree in computer science, both at the Czech Technical University in Prague. For 20 years he was with Research Institute for Mathematical Machines in Prague, working in computer diagnostics. Since 1984 he has been with the Czech Technical University in Prague. 1990-94 Dean of the Faculty of Electrical Engineering, 1994-1997 Vice-Rector for international relations. Presently professor and deputy head of the Department of computer science and engineering. Chair of Czechoslovakia section of IEEE, Fellow of IEE, member of ACM, member of New York Academy of Sciences.

**Dependability Practices  
and Strategies for Road  
Vehicle Electronics:**

**Global Issues, Practical Solutions TOPTEC®**

November 1-2, 1999 • Novi Hilton Hotel • Novi, Michigan

A two-day TOPical, TEChnical workshop presenting the latest developments in automotive electronics systems reliability practices, including:

- Reliability Programs
- Environmental Considerations
- Reliability Assessment
- Data Analysis
- Testing and Simulation

*For more information,  
contact SAE Professional  
Development at  
724-772-7148 or via  
e-mail at [profdev@sae.org](mailto:profdev@sae.org).*

*To review the agenda, visit  
us on-line at [www.sae.org](http://www.sae.org)*

**SAE**  
**INTERNATIONAL**®

Hank Caruso, Author, G's and Degrees™  
Wednesday, November 3, 1999 • 8:30 am - 4:30 pm

PDADW

**Special Feature...**  
An Exceptional Post-TOPTEC  
Environmental Test Tutorial  
Overview of  
**Environmental  
Reliability Testing**  
Instructed by:

***See the Calendar of Events on page 3 of  
each Wavelengths for information on  
additional activities and opportunities.***