

THE REPORTER

Journal of the Central Indiana Section • IEEE



Fig 1. Attendees listen to presentations at the section conference in Indianapolis, IN

Central Indiana Section Conference

The Central Indiana Section, in conjunction with the Fort Wayne Section, held the first of an annually planned section conference. The conference contained excellent presentations from a majority of the technical societies and affinity groups within the Central Indiana Section. Continuing education units were also made available to the attendees. Technical presentations occurred on Friday and Saturday. Professional/membership development activities also occurred on Saturday. The following is a list of speakers and presentations.

Computer Society

Paul Lin/Sayed Nayab Hassan, Professor Department of Electrical, Computer, and Information Technology College of Engineering, Technology, and Computer Science Indiana University-Purdue University Fort Wayne,

Design Issues for Electronics Health Record Using Cloud Computing Technologies

Paul Lin/MengWei Li

Design of a Reliable Communication System using Cloud-Based Technologies for Corrosion Monitoring System

Signal Processing Society

Edward Delp, Video and Image Processing Laboratory, School of Electrical and Computer Engineering, School of Biomedical Engineering, Purdue University

That Thing In Your Pocket Is Really A Computer! The Future of Mobile Computing

Mimi Boutin, Professor Purdue University, Chair Signal Processing Society

The "Inverse Recipe" problem: how to figure out the amount of each ingredient used to prepare a food from its label

Communications Society

Gongjun Yan, Ph.D., Assistant Professor of Informatics, School of Science, Indiana University-Kokomo

Towards Providing Scalable and Robust Privacy in Vehicular Networks

Power Engineering Society

David Koehler, Manager Laboratory Services-Doble Engineering Company. Central Indiana Section-IEEE Chair, IEEE-Region 4 East Area Chair, IEEE-Region 4 Strategic Planning Committee.

Condition Assessment of transformers through analytical testing of insulating fluids.

Kevin VanZuilen: Chair IEEE- Fort Wayne Section

Failure Analysis of Electronic Components

Consultants Network

Matt Schantz, Intellectual Property Lawyer, Frost Brown Todd, LLC

Patent Basics for Engineers

John E. Layden, President, Time Compression Strategies

Disruptive technology: The coming revolution in software development

Professional Activities Committees for Engineers

Don Bramlett, IEEE Region 4 Advisor

Leadership Skills

Women in Engineering

Angelina Rodriguez, Manager Cummins

Workforce diversity

Kathy Bradley, LHP Software, President of Software or Hardware division

Being women, engineer and manager!

Graduates of Last Decade

Jennifer Williams, Director, Office of Career Services and Professional Development, Purdue School of Engineering and Technology, IUPUI

Interview, resume building, and job seeking skills necessary for today's business environment.

Dr. Razban, Indiana University-Purdue University Indianapolis

The process and importance of acquiring FE/PE licensing

Please plan on attending next year's section conference. Our section website (www.cis-ieee.org) and subsequent issues of *The Reporter* will have detailed information on the 2014 conference after all details are finalized.

Call for Volunteers**The Central Indiana Section is recruiting volunteers for 2014!**

Executive Committee positions available include:

Secretary

Finance Committee Chair

Student Branch Chairs

If you would like to receive additional information on the above positions or are interested in volunteering, please contact David Koehler (David.Koehler@ieee.org) and/or Earl Hill (eshill.loma@gmail.com).

Power & Energy / Industry Applications / Power Electronics Society News

**Earl Hill, Chair, PES/IAS/PELS
Ben Huckaba, Vice-Chair, PES/IAS/PELS**

The PES/IAS/PELS has been very active, beginning with its September meeting on Load Testing for facilities such as Data Centers and Utility Substations. Speakers from ComRent® International and Distregen, LLC addressed the benefits, economics, industry trends, innovations, and lessons learned of using load banks to test and commission electrical and thermal systems. During October the section held a four week short course on Circuit Breakers taught by industry vendors and testing professionals, with topics ranging from the history to the modern design and testing of circuit breakers. In November Dr. Ram Adapa of EPRI presented the Role of Power Electronics in Future Electric SMART Grid, addressing how power electronics are reducing energy use, enhancing the power system, allowing renewable energy sources to be integrated into the main utility grid.

To start 2014, the January meeting is scheduled to be GIS Integrated Analytics for Preventive Maintenance and Storm Response, where John Lauletta of Exacter, Inc. will explain the role of GIS for utilities in the future. The February meeting will be Recent Advances in Power Electronics Semiconductors, presented by Dave Peter of Tri-Cordinnovations. For March, an all-day short course is planned at IP&L on Smart Grid: Concepts, Solutions, Standards, Policy, Recent Deployments and Lessons Learned. The April meeting is tentatively planned to be annual Student Awards Banquet. Finally, the May meeting will be a tour of the Battery Innovation Center located outside the Crane Naval Base. Further details and registration for all planned activities are available at the CIS-IEEE homepage.

2013 marked the first full year for the PELS as a joint society with the PES and IAS in the Central Indiana Section. In addition to the activities above, the PELS also toured the Purdue University Smart Grid facilities in April. The PELS is considering separating from the PES and IAS to stand alone, but would need officers to do so. Anyone interested in serving in a leadership position for the PELS should contact one of the Section officers.

New Senior Members

The CIS-IEEE has always looked to facilitate members advancing to higher levels of membership.
Congratulations to our newest senior members!

**Matthew Gadlage
Pedro Irazoqui
David Koehler
Phi Hung Pham**

Biographies of new senior members are below when available.
Please submit additional biographies to mcnallyh@purdue.edu

Pedro Irazoqui

Dr. Irazoqui received his B.Sc. and M.Sc. degrees in Electrical Engineering from the University of New Hampshire, Durham in 1997 and 1999 respectively, and the Ph.D. in Neuroengineering from the University of California at Los Angeles in 2003 for work on the design, manufacture, and packaging, of implantable integrated-circuits for wireless neural recording.

He is director of Purdue's Center for Implantable Devices, associate head for research and associate professor in the Weldon School of Biomedical Engineering, and associate professor of electrical and computer engineering. His group develops wireless implantable devices for various potential applications including monitoring and suppression of epileptic seizures; prosthesis control for injured military personnel; modulation of cardiac arrhythmias; treatment of depression, and gastroparesis, a partial paralysis of the stomach; and monitoring and therapeutic modulation of intraocular pressure for glaucoma.

He has been named Showalter Faculty Scholar, and Purdue University Faculty Scholar, both in 2013. He has received the Best Teacher Award from the Weldon School of Biomedical Engineering (2006 & 2009), the Early Career Award from the Wallace H. Coulter Foundation (2007 & Phase II in 2009), the Marion B. Scott Excellence in Teaching Award from Tau Beta Pi (2008), and the Outstanding Faculty Member Award from the Weldon School of Biomedical Engineering (2009), as well as the Excellence in Research Award from Purdue in 2010, 2012 and 2013. He has been serving as Associate Editor of IEEE Transactions on Biomedical Engineering since late 2006.

David Koehler

David received his Bachelor's Degree in Chemistry from Indiana University and his M.B.A. from Indiana Wesleyan University. He has over 15 years of experience in the testing of insulating fluids and management of analytical laboratories. He has provided numerous technical presentations at various power industry conferences. David has the following industry affiliations: Chair IEEE-Central Indiana Section, IEEE Region 4 East Area Chair, IEEE Region 4 Strategic Planning Committee, ASTM D-27 Technical Committee on Electrical Insulating Liquids and Gases, and in 2011 was an Executive Committee Member of the Indiana American Chemical Society and remains active within ACS.

Phi-Hung Pham

Phi-Hung Pham (S'06-M'10-SM'13) received B.Tech with honors and M.S. degrees from Vietnam National University, Hanoi, in 1999 and 2003, respectively, and Ph.D. degree from Korea University in 2010. All the degrees are in Electrical Engineering.

He is a Postdoctoral Research Associate in Biomedical Engineering, Purdue University. Prior to joining Purdue, he participated in postdoctoral training at Yale University. From 2000 to 2010, he held several research positions at Korea University, Parma University (Italy), and was appointed as Lecturer in Vietnam National University, Hanoi.

Dr. Pham's research interest includes System-on-Chip design, Networks-on-Chip, Dynamically Reconfigurable Computing, and Embedded Bio-inspired Vision.

**National Engineers Day at
The Children's Museum of Indianapolis
Saturday, February 22, 2014**



National Engineers Week will be celebrated February 16-22, 2014. Once again, The IEEE Central Indiana Section is teaming up with The Children's Museum of Indianapolis, to increase public awareness about Engineering and to help young students consider Engineering as a career option.

Our program will be held at The Children's Museum on Saturday, February 22nd, from 10:00 - 3:00. We are looking for volunteers to help with our program. Our program consists of engineers being stationed near several exhibits throughout the museum. Each station will tie an engineering discipline in with that exhibit. There will be "hands on" items at our stations as well. Volunteers will be there to talk with visitors, answer any questions about engineering, hand out materials and to validate visitor's cards. Visitors to the museum will be given a "schematic" upon entering the museum, and after successfully visiting all of our engineering stations, and turning in their cards, they'll be eligible for prizes to be given away through a drawing at 3:00 pm that day.

Please visit <http://www.cis-ieee.org/eweek/> to fill out a volunteer form even if you can participate for only part of the day. Contact Bob Evanich (b.evanich@ieee.org, 317-838-2268) if you have any questions or if you have an idea for an activity and would like to sponsor it.

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ADVERTISEMENT**For Immediate Release****Latest EMC Book Soon Available*****Design Techniques for Controlling Radiated Emissions, 3rd Edition*****By Michel Mardigian****Contributed to and Edited by Donald L. Sweeney****with Worldwide Standards Updated**

Design Techniques for Controlling Radiated Emissions has been considered by Donald Sweeney to be the ideal textbook for his *EMC By Your Design Seminars* ever since 1992, when it was first published. He is now excited to announce he will be using Michel Mardigian's new 3rd Edition in his April 8-10, 2014 seminar. All 13 chapters have been revised and updated addressing the newer technologies that have come along, especially the updating of clock speeds and the examples worked out in the book. Don has contributed to many parts of the book, including updating the Worldwide Standards and many of the graphics, as well as editing the entire book. A special feature of the book will be a link to a continuous update of world standards and requirements as they change.

Those who have previously attended a D.L.S. Seminar using the 1st or 2nd edition of the book, and who would like to take a refresher course using the new book, will be given a 50% discount from the April 2014 seminar price.

D.L.S. is also proud to announce that Tim Lusha is joining our team of seminar instructors. Tim has been with D.L.S. for the past 17 years. He has four iNARTE certifications: EMC Engineer, EMC Laboratory Engineer, EMC and ESD Technician. He is a current member of RTCA/DO-160, IEEE and ESDA. Tim has worked at D.L.S.'s Wisconsin facility involved in FCC, EC and VCCI commercial requirements as well as measurement uncertainty, transmitters and calibrations. He is presently at our Wheeling location immersed in MIL STD 461 and DO-160 topics, custom test setups, software programs and networks for lightning and related testing. Tim is a graduate of the Milwaukee School of Engineering (MSOE) Milwaukee, WI in addition to graduate coursework in engineering and other courses in mechanical design.

EMC by Your Design**An EMC Practical Applications Seminar and Workshop****Tues. April 8 – Thurs April 10, 2014****Northbrook, IL**

For more information, click on www.dlsemc.com/emcdesignseminar or call 847-537-6400

IEEE STANDARDS ASSOCIATION AND SAE INTERNATIONAL AGREE TO COLLABORATE ON SMART GRID AND VEHICLE-ELECTRIFICATION STANDARDS**Contributed by: Stavan Dholakia**

New memorandum of understanding calls for each organization to share draft standards related to the Smart Grid and vehicle electrification

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Shawn Andreassi of SAE International 1-724-772-8522, pr@sae.org

IEEE Standards Association (IEEE-SA) and SAE International have signed a memorandum of understanding (MOU) to establish a strategic partnership in vehicular technology related to the Smart Grid. In doing so, IEEE-SA and SAE International are striving to create a more efficient and collaborative standards-development environment for the industry participants that they serve.

IEEE-SA is a natural partner for SAE in this area because of its leadership position in Smart Grid standards development. Closer collaboration between SAE International and IEEE-SA will benefit industry by accelerating more meaningful standards that drive greater improvements in market access, cost reductions and technological innovation.

Both SAE International and IEEE-SA already have made significant contributions in standards in areas such as plug-in electric vehicles (PEVs), vehicle-to-grid (V2G) communications and power and the Smart Grid. SAE International Ground Vehicle Standards Technical Committees are leading the vehicle transportation industry in the development of standards to provide safer processes and practices for effective implementation of hybrid/electric vehicles. A total of 24 SAE International Ground Vehicle electrification committees with over 780 members have developed 46 standards and

are currently working on over 30 new standards in process.

IEEE, the world's largest professional association advancing technology for humanity, has more than 100 standards and standards in development relevant to the Smart Grid, including more than 20 named in the U.S. National Institute of Standards and Technology (NIST) Framework and Roadmap for Smart Grid Interoperability Standards. Under terms of the MOU signed by IEEE-SA and SAE International, each organization will share its draft standards related to the Smart Grid and vehicle electrification for input from the other.

About SAE International SAE International is a global association of more than 128,000 engineers and related technical experts in the aerospace, automotive and commercial-vehicle industries. SAE International's core competencies are life-long learning and voluntary consensus standards development. SAE International's charitable arm is the SAE Foundation, which supports many programs, including A World In Motion® and the Collegiate Design Series. Learn more at [SAE International website](http://www.sae.org) (www.sae.org)

About the IEEE Standards Association The IEEE Standards Association, a globally recognized standards-setting body within IEEE, develops consensus standards through an open process that engages industry and brings together a broad stakeholder community. IEEE standards set specifications and best practices based on current scientific and technological knowledge. The IEEE-SA has a portfolio of over 900 active standards and more than 500 standards under development. For more information see the [IEEE-SA website](http://standards.ieee.org) (<http://standards.ieee.org>)

H-1B Increase on Congress' Agenda

Contributed by: IEEE-USA

This article is provided for information purposes and is not necessarily the opinion of the Central Indiana Section

Legislation has passed the U.S. Senate and is pending in the U.S. House of Representatives that would roughly double the size of the H-1B temporary visa program. If an immigration reform bill passes this year, the H-1B increase will almost certainly be part of the bill unless legislators hear from their voters soon.

The bills are part of Congress' on-going efforts to pass comprehensive immigration reform. While most media attention has focused on issues like amnesty and border security, the legislation would also profoundly change high-skill immigration into the United States.

At the moment, both the House and Senate are supporting legislation that will increase the H-1B visa cap from its current 65,000 visas to around 180,000 visas annually. Along with new and existing exemptions from this cap, the total number of H-1B visas available each year would likely be around 250,000, up from 130,000 now.

The Senate bill (S. 744, which is the big comprehensive immigration bill) also includes a number of useful reforms to the H-1b program. While these don't undo the damage done by a cap increase, they will help. The reforms include:

- Improving the formula for calculating the prevailing wage, so that H-1B wages will be closer, although still less than, American wages
- Requiring most companies to hire American workers before turning to the H-1B
- A ban on most companies using the H-1b to outsource jobs
- Limiting companies to having only 50% of their total U.S. workforce on an H-1B

The House bill (H.R. 2131) includes none of these protections.

Between 2001 and 2012, the United States created, on average, 58,000 new STEM jobs each year. A recent analysis by IEEE Spectrum estimated that there are a total of 277,000 new STEM job vacancies each year, which includes retirees and individuals leaving the STEM workforce.

IEEE-USA opposes any attempt to raise the H-1B visa cap, and supports efforts to protect American and foreign workers from the unintended consequences of this visa program. At the same time, IEEE-USA recognizes that there are many highly skilled and innovative people around the world who were not born in the United States. It is in our country's interest to let some of these people live and work here – but they must be allowed to live and work here as American citizens, not merely temporary workers.

The Senate bill includes a large expansion of the EB green card program, which IEEE-USA supports. The bill would create a new green card for every international student who earns a Masters or PhD in a STEM field in the United States. The House bill includes a more limited, but still very useful, version of this provision.

Problems with the H-1B program have been well documented. The most damning problem with the program is that more than half of the visas last year were used to replace American workers with lower-cost foreign workers. Outsourcing companies received around 55% of the visas. These companies employ tens of thousands of workers in the United States, almost none of whom are Americans.

IEEE-USA encourages everyone who is concerned about expanding the H-1B visa program to send an e-mail to their legislators as soon as possible. This can be done at IEEE-USA's Legislative Action Center (www.ieeeusa.org/policy, look in the upper right.) or at www.house.gov and www.senate.gov.

2013 Meeting Calendar

Date	Host	Subject	Location
Monthly	CIS	Executive Committee Meetings	Internet/Phone Bridge
... Check the Section web page for details and current information. 			

ADVERTISER EVENT

April 8–10, 2014	DLS http://dlsemc.com/	See Advertisements on Pages 5&6	Northbrook, IL
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Central Indiana Engineering Web Links

ACEC	American Council of Engineering Companies, Indiana	acecindiana.org
ASCE	American Society of Civil Engineers	inasce.org
ASME	American Society of Mechanical Engineers	sections.asme.org/central_indiana
ASM-INDY	American Society for Metals - Indianapolis	asm-indy.org
CIECN	Central Indiana Engineering Consultants' Network	indy-engineer.dnsalias.com
CINLUG	Central Indiana Linux Users Group	cinlug.org
IBEN	Indiana Biomedical Entrepreneur Network	indianabionetwork.org
IHIF	Indiana Health Industry Forum	ihif.org
INCOSE	International Council on Systems Engineering	incose-coa.org
INDSPE	Indiana Society of Professional Engineers	indspe.org
INDYASHRAE	American Society of Heating, Refrigeration, and Air Conditioning Engineers	indyashrae.org
NSBE-IAE	National Society of Black Engineers - Indianapolis Alumni Extension	nsbe-iae.org
PIMCIC	Project Management Institute - Central Indiana Chapter	pmicic.org
SAE	Society of Automotive Engineers, Indianapolis	indianasae.org
Scientech	Scientech Club in Indianapolis	scientechclub.org
SIM	Indianapolis Chapter of Society for Information Management (SIM)	SimNet.org
SWE-CI	Society of Women Engineers - Central Indiana Section	swe-ci.com
Techpoint	A diverse collection of technology-based Indiana industries.	Techpoint.org

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Distribution: The Reporter is made available electronically to the approximately 1800 IEEE members within the Central Indiana Section including student members and faculty of Purdue, IUPUI, Rose-Hulman Institute of Technology and ITT Technical Institute.

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Editorial Policies

Each issue of The Reporter typically references three months - the month in which it is published and the following two months. The Reporter is typically published in March, June, September, and December.

Material to be included should be submitted mid-month prior to the month it is to be published. For example, material intended for the September issue should be submitted to the Editor by August 15. The Editor will send a reminder to all IEEE Central Indiana Section entities by the 15th of the month to submit their updates.

Copy should be submitted electronically. Photographs are desirable. Advertisements are welcome. Contact the editor for layout sizes and rates.

How Do You Communicate??

Want to know what is happening in Central Indiana Section? Don't know where to look? Already inundated with E-Notices? Need to ask a question? Want to find an expert? Got a meeting idea?

Here are some of many communication channels available in Central Indiana Section



Find the Central Indiana Engineering Consultants' Network and the Central Indiana Section Communications Society, as well as several other IEEE related organizations on LinkedIn.



Student Branch members are encouraged to join "CIS-IEEE Student Branches" group on Facebook. Several opportunities for students and student branches have been posted there. The Facebook group also provides an opportunity for CIS student members to interact or to make contact with student members outside of Central Indiana. There is no substitute for a good network, but be aware that some hiring managers are also checking these sites.

Communications Society members can find "COMSOC – Central Indiana Section" on Facebook.

CIS Home Pages

Start with the main site. (www.cis-ieee.org) Check out the calendar of events, or link to the many IEEE groups in Central Indiana Section, including all of the Student Branches.

Not getting E-Notices? E-Notices are not only a resource for keeping in touch with the activities throughout CIS, but you will also receive information on topics of interest throughout IEEE

E-Notices

Login to myIEEE from the IEEE Home Page (www.ieee.org) and sign-up! at the main site. (www.cis-ieee.org) Check out the calendar of events,