



# ION Saint Louis



Winter 2011

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## From the editor:

I would like to thank everyone that contributed to this, as well as, to the previous editions of the St. Louis Section newsletters. I am hoping that this newsletter will be informative in highlighting the achievements and news around our section and its members. As usual, this edition has a number interesting articles including a Section history: *Early years of IRE* by Dr. Hardy Pottinger.

As your new Section Secretary for 2012, I will continue serving you as the newsletter editor. Please keep sending me your articles of any planned and past events, yours and other IEEE colleagues achievements, and any other interesting bits of information.

Please visit <http://ewh.ieee.org/r5/stlouis> to view past issues of newsletter

I would like to wish everyone a lovely holiday season. Merry Christmas!

**Prakash B Shahi**

**Nidec Motor Corporation**

## Chair's Column

### Saint Louis Section of IEEE Chair's Column, December 2011

Reflecting back on the year as Chair, I would like to enumerate several accomplishments that are noteworthy. A report card on progress, if you will, of the past year.

A reduction in time spent for planning and governance related events were rolled into a quarterly "planning" meeting. This left more time for membership related programs, many of which were joint meeting with our local Chapter.

Through Dr. Kyle Mitchell's initiative, a Section Robotics Competition was held in the spring. The event was used to bring all the Student Chapters together in the form of a friendly competition. The winner would represent the Section at the Regional competition in April. This year's winner of the Section Competition was Missouri University of Science & Technology.

Issue Continuing Education Units (CEU or PDH) for membership meetings to assist those members that are Professional Engineers and require continuous education credit for license renewal. Program variety included joint presentations with the COMSOC Chapter, two plant tours with the PES Chapter and an Intellectual Property presentation.

Greater participation by our members is reflected by the number of positions filled by our Executive Committee. We had over 3 dozen members and student members involved on an ongoing basis to help make the year success. Many of them are involved for the first time in IEEE.

Through fiscal discipline, the Section has passed along a small increase into the checking account at the end of the year. It is important that as Officers, good stewardship of our membership's money is practiced.

The Section is one step closer to forming a new Joint Chapter that includes the Microwave Theory and Techniques (MTT) Chapter. Dr. Barry Spielman (WU) has begun to put some relevant programs on the calendar and will begin the administrative process of petitioning IEEE for the formation. The MTT Chapter was active several years and then was dissolved. Dr. Spielman and Dr. Greg Triplett (MU) felt that interest has reemerged and have been working together to rejuvenate.

I want to thank the entire membership for assisting in achieving some of these results for a successful year and especially the Officers: Jessica du Maine, Paul Min, Dinesh Hiripitiyage, Paul Min and Prakash Shahi.

\*\*\*\*\*

I want to thank David Kreher's Awards Committee for selecting me as the Outstanding Saint Louis Section member. I am very humbled to have followed in the foot steps of last year's winner of Jim Leonard, IEEE Fellow. The entire Winter Social and Award's Presentation was a large success and drew more than 80 members and their family. Thank you to the Student Chapter of Washington University and Dr. Min for helping arrange the Social.

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## Chair's Column Continued

The Section and Audit Committee put its seal on the year by performing a full, comprehensive audit of the Treasurer's records. This is an important step re-introduced this year in order to correct errors in accounting records and provide the next Treasurer, Dr. Min, with a clean set of "books". Dr. Corzine, Dr. Mallik and Dr. Roobik Gharabag led the Audit and Dinesh Hiripitiyage, Treasurer, supported the Committee. Dinesh has performed a stupendous job as Treasurer this year. Not only taking over as both Officer and Treasurer a quarter of the way into the year, Dinesh has instilled several new processes to improve our recordkeeping.

\*\*\*\*\*

Congratulations to University of Missouri's Dr. Wenjun Zeng for becoming IEEE Fellow from the Saint Louis Section.

Wenjun "Kevin" Zeng is a professor in the Computer Science Department at the University of Missouri. Zeng is an associate editor for "IEEE Transactions on Information Forensics and Security", "IEEE Transactions on Circuits & Systems for Video Technologies" and "IEEE Multimedia Magazine", and a past associate editor for "IEEE Transactions on Multimedia". Zeng came to MU with industrial experience at PacketVideo Corp. and Sharp Labs of America. His research has been funded by the National Science Foundation, Department of Defense, Department of Education, National Natural Science Foundation of China, Microsoft Research, Huawei Technologies, Thomson Labs, the University of Missouri Research Board and the Mizzou Advantage program.

Information taken from Dr. Zeng's website <<http://engineering.missouri.edu/person/zengw/>> .

\*\*\*\*\*

I want to end by wishing everyone a healthy and safe Merry Christmas and Happy New Year. Good luck to next year's Chair and Officers:

Chair – Jessica du Maine  
Vice Chair – Dinesh Hiripitiyage  
Treasurer – Dr. Paul Min  
Secretary – Prakash Shahi

Respectfully submitted,  
Bob Becnel, P.E.  
Chair, Saint Louis Section  
Email: [bob@becnel.com](mailto:bob@becnel.com)

\*\*\*\*\*

## SECTION NEWS

### Annual Black Box Competition 2011

By Kyle Mitchell

On Saturday November 5, the Saint Louis Section of the IEEE held its annual black box competition at Washington University. The Contest was well attended with 9 teams from Missouri University of Science and Technology, Washington University and Saint Louis University.

In the black box competition, teams of two students, are given a box containing an unknown circuit. The unknown circuit can contain up to 6 discrete components, two of which may be 2 or 3 pin non-linear devices. The boxes contain 4 taps into the circuit. The students are given 3 hours to apply any tests using a DC supply, waveform generator, DMM and Oscilloscope to the box taps in an attempt to reverse engineer the unknown circuit.

The students were judged based on testing methodology, conclusions drawn from testing, documentation of methodology and conclusions, and building a circuit from the knowledge gained.

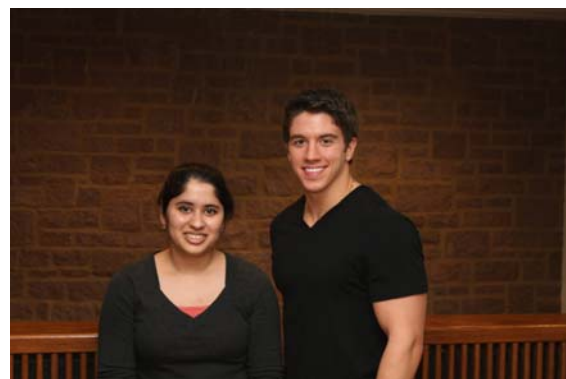
Alex Gu and Percy Fang from Washington University took the first place in this year's competition. The team of James Harrang & Chuck Holmes, also, from Washington University, took second place. The team of Anthony Manno and Gauri Nijsure from Saint Louis University were placed third. Please look forward to this contest being held again at Washington University in early November 2012.



1st place winners: Alex Gu and Percy Fang



2nd place: James Harrang & Chuck Holmes



3rd place: Anthony Manno & Gauri Nijsure

Additional photos from the contest can be found at : <http://csss.slu.edu/~mitchekk/work/ieee/BB2011/index.html>

The competition judges for this year were:

Kyle Mitchell, Saint Louis University

Maciej Zawodniok, Missouri University of Science and Technology

Paul S Min, Washington University in St. Louis

Abdiel Louis, Greenville College

Prakash Shahi, Nidec Motor Corporation

## Section News

### Pre-college Event with Dr. Sandra Magnus

By Steve Watkins

IEEE St. Louis Section and IEEE Region 5 sponsored a pre-college event through the PACE program at Missouri S&T. Twenty-four middle-school students and teachers from Rolla-area schools including Rolla 31, St. Patrick School, St. James R-1, Salem R-80, and Dent-Phelps R-3 attended a pre-college reception and question session with a visiting shuttle astronaut. Dr. Sandra Magnus, S&T alumnus and NASA shuttle astronaut, met with the pre-college participants and answered their questions about her shuttle flights. Afterwards, the pre-college participants attended the IEEE-HKN ECE honor society initiation banquet and meet the ECE college students and faculty. Dr. Magnus was the banquet speaker and was a new professional initiate into IEEE-HKN (Eta Kappa Nu – the electrical and computer engineering honor society). One of the teachers commented, “The pre-college event opened the eyes of my students about the possibilities available for their futures. Just attending an event on the campus of a major university made them feel special.” Another said, “As a teacher I found it hugely impressive for them (his students) to see the college students, to interact with them and to get a view of future education and career choices. Thank you for including us in this event.”

Dr. Sandra Magnus, native of Belleville, IL, earned a bachelor's degree in physics from S&T in 1986 and a master's degree in electrical engineering from the campus in 1990. She earned a Ph.D. from Georgia Institute of Technology in 1996. Selected by NASA in 1996, she completed her first space flight in 2002 aboard the *Atlantis*. Her second flight took her to the International Space Station, where she lived for more than four months, between November 2008 and March 2009. She was a member of the *Atlantis* crew, which made the 135th and final mission of NASA's space shuttle program. During the initiation, she presented the S&T ECE Department with an HKN Medallion that was flown July 8-21, 2011 during this final mission of the Space Shuttle *Atlantis*, STS-135.



Photo: Dr. Sandra Magnus and Pre-college Participants ( Photograph

Courtesy of Avalon Photography)



## Section News

### PES Tour of Callaway Nuclear Energy Center

By Christine Grunbaum, P. E.

IEEE-PES St Louis Chapter offered a tour of Ameren's Callaway Nuclear Energy Center to members on September 28 and October 4, 2011. Two dates were offered to accommodate the huge interest in this event. After passing through security, visitors heard a presentation about the history and operation of the plant and the future of nuclear power in Missouri. The tour included the turbine building where electricity is generated from steam, great views from the roof of the fuel storage building, some of the security features, and the grounds outside the reactor containment structure and cooling tower. Participants were treated to lunch catered by Panera.



## Section News

### Outstanding Awards

St. Louis Section is proud to announce the outstanding awards to the following for 2011.

Outstanding Branch Counselor:	Jessica du Maine
Outstanding Educator:	Theresa M. Swift
Outstanding Section Member:	Bob Becnel
Outstanding Student Branch:	Washington University
Outstanding Student Member:	Ravi Arvapally
Outstanding Young Engineer:	Dinesh Hiripitiyage

Congratulations to all the awardees!

### MU Engineering Professor Named IEEE Fellow

Wenjun Zeng, a University of Missouri computer Science professor, has recently been named a Fellow of the Institute of Electrical and Electronics Engineers (IEEE) for the recognition of his professional achievements.

Professor Zeng's research emphasis is in the areas of multimedia security and digital watermarking. An active participant of IEEE, he serves as an associate editor for two of IEEE's transactions publications and for the institute's "Multimedia" magazine.

From the IEEE website, the following describes the IEEE Fellow program:

*"IEEE Fellow is a distinction reserved for select IEEE members whose extraordinary accomplishments in any of the IEEE fields of interest are deemed fitting of this prestigious grade elevation."*

*"The IEEE Fellow is conferred by the Board of Directors upon a person with an extraordinary record of accomplishments in any of the IEEE fields of interest. The total number selected in any one year does not exceed one-tenth of one percent of the total voting Institute membership."*



**Congratulations Professor Zeng!**

## Section History

### Section History: Early years of IRE

**By Dr. Hardy J Pottinger**

In the last issue of Ion (Fall 2011) this series was introduced with a few words about the first chairman of one of our parent organizations, the American Institute of Electrical Engineers, AIEE. This time I'll introduce the 'other parent' of IEEE, namely the Institute of Radio Engineers, IRE. As more is learned about the early history of our section, I intend to publish that material here, as well as at the Global History Network site ([www.ieeeahn.org/wiki/index.php/IEEE\\_Saint\\_Louis\\_Section\\_History](http://www.ieeeahn.org/wiki/index.php/IEEE_Saint_Louis_Section_History)).

St. Louis was a relative latecomer to the other half of IEEE: the Institute of Radio Engineers (IRE). The war years changed that and the St. Louis section of IRE was established, shortly after Pearl Harbor, in either late 1941 or early 1942. Although the IRE normally included a brief notice when new sections were formed, there does not seem to be one in our case. Prior to 1942 it was the practice of IRE to put summaries of Section meetings which occurred in each issue of the Proceedings. Unfortunately this practice was abandoned in 1942 at the request of the members, who wanted 'more space devoted to papers'. The first mention of the St. Louis Section found to date is in the Proceedings of the IRE, January 1942 which lists an R. L. Glasgow as 'temporary chairman' with an address of Washington University, St. Louis. He is listed as such through the May 1942 issue as well. In the June 1942 issue, the St. Louis Section is listed with an H D Seielstad as 'temporary secretary'. There is no mention of Mr Glasgow in the June issue although an R. S. Glasgow is listed as 'Institute Representative in College' for Washington University in April 1942. The Institute Representative, a new program started by IRE President Fred Terman in 1940-1941, was apparently a precursor to today's Student Branch Counselor. It is likely that these two Glasgows are one and the same person and that IRE made a typographical error. The section had a meeting on 5 March 1942 with a presentation by W. Todd titled "Generalized Description of Ship to Shore Radiotelephone Service". Todd was an engineer with Radiomarine Corp of America.

Nothing more is known about Mr Glasgow at present, however the situation may be a bit different with his secretary Mr Seielstad. An H. D. Seielstad appears later in IRE publications as the secretary of the Cleveland Ohio section in 1948. There is also mention of a Harold D Seielstad in the University of Wisconsin's *The Wisconsin Engineer*, April 1931, who graduated in 1930 and was with the Cadillac Motor Car Company in Detroit. The note mentions after having had some experience with Michigan registration of engineers he states: "After some thought I realized that the registration of engineers is a good thing and I hope that Wisconsin soon has a similar system." Harold was apparently an officer in the U.S. Coast Guard, eventually retiring as a Captain. He died in California in 1986. The presentation topic by Todd during Seielstad's tenure is at least consistent with a section officer serving in the USCG.

Three other IRE Section officers in the 1940's include Stanley H Van Wambeek, Nicholas J Zehr, and Robert L Coe. Wambeek was an instructor in EE at Washington University's Army Specialized Training Program during the war years. Zehr was chief engineer of station KWK in the Hotel Chase. At the ripe old age of 19, Coe co-founded station KSD, located in the Post Dispatch building, in 1921. Through his hobby of amateur radio and his association with the newspaper, Mr Coe became the first to transmit a daily newspaper via facsimile in 1938. He was a Lt Colonel in the U.S. Army Air Corp during World War II during which he developed a communications network for the China-Burma-India theatre of war.

The relatively short 20 year history of the St. Louis Section of IRE before it merged with AIEE to become today's IEEE parallels the early history of St. Louis area radio and television as well as the heyday of amateur radio. It's not surprising that our first IRE members were heavily involved in the history of both. Uncovering this history is a work in progress. If you would like to contribute in any way, please contact me at [h.pottinger@ieee.org](mailto:h.pottinger@ieee.org). I would also encourage you to visit the IEEE Global History Network.



## Announcements

### **IEEE Engineering in Medicine and Biology Seminar: "High Resolution Polarization Imaging Sensors"**

Monday, January 30, 2012 at 4 PM, WUSTL, Danforth Campus, Brauer Hall Room 012

Traditional CMOS and CCD imaging sensor capture two of the three fundamental properties of light: color and intensity. The third fundamental property of light, polarization, has been largely ignored by the imaging industry and research community in part by the human inability to "see" polarization properties. Nevertheless polarization-contrast imaging has proven to be very useful in gaining additional visual information in optically scattering environments, such as target contrast enhancement in hazy/foggy conditions, depth map of the scene in underwater imaging, and in normal environmental conditions, such as non-contact fingerprint detection among others. Polarization imaging tends to provide information that is largely uncorrelated with spectral and intensity images.

In this talk, I will present our latest research efforts in developing an imaging sensor capable of recording polarization properties of light in high resolution and in real-time. This sensor monolithically combines aluminum nanowires with CCD/CMOS imaging elements in order to create a 1 Mega pixel polarization imaging sensor. I will cover both nanofabrication techniques as well as image processing algorithms that are mandated for this new type of sensor. I will conclude with examples of applications for this sensor in both medicine and biology.

Viktor Gruev

Department of Computer Science and Engineering, WUSTL

Biography: Viktor Gruev received his B.S. in electrical engineering with distinction from Southern Illinois University in 1997. He completed his M.S. and PhD. in electrical engineering from Johns Hopkins University in 2000 and 2004 respectively. Dr. Gruev was a post doctoral researcher at the University of Pennsylvania before he joined the Computer Science and Engineering faculty at Washington University in 2008. His current research interests are in: polarization imaging and integrating nano-fabrication techniques with CMOS technology, camera-on-a-chip, polarization image sensors, mixed signal VLSI systems, 3-D image sensors, VLSI systems for adaptive optics and computer vision.

For further information, please contact:

Dennis Barbour, MD, PhD

Assistant Professor of Biomedical Engineering, WUSTL

email: [dbarbour @ biomed.wustl.edu](mailto:dbarbour@biomed.wustl.edu)

314-935-7548 (office) 314-935-7448 (fax)

### **Collegiate Aerial Robotics Demonstration (CARD)**

Collegiate Aerial Robotics Demonstration (CARD) Planning Committee is working to design an event to capture the spirit of FIRST at the college level. If you are interested in learning more about CARD and the planned events, please visit <http://collegiateaerialrobotics.org>.

You can also contact the Chairpersons directly:

Christopher Jones and Karina Powell

Co-Chairpersons, Collegiate Aerial Robotics

Email: [CollegiateAerialRobotics@gmail.com](mailto:CollegiateAerialRobotics@gmail.com)

## Announcements

### Professional Engineer Refresher Course Spring 2012

#### Professional Engineer Refresher Course

These review courses are geared toward helping participants pass the Professional Engineer (P.E.) license exam. Spring classes will be held in the fields of: Civil- Water Resources, GEO Technical, Transportation, Construction, Structural; Mechanical-Mechanical Systems/Materials, Hydraulics & Fluids, Energy & Power Systems, HVAC/Refrigeration; and Electrical-Power

Course fee includes a three-ring binder, lecture notes, certificate of completion, and CEU's.

Participants should purchase course reference materials *prior* to the first class. Discounted reference material can be obtained by going to the following website:

[http://ppi2pass.com/ppi/PPIShop\\_psp\\_SX330](http://ppi2pass.com/ppi/PPIShop_psp_SX330)



#### 2012 Spring Schedule

Classes are scheduled to meet the following eight Saturday mornings from 8:00 a.m. – noon:

Feb. 11

Feb. 18

Feb. 25

Mar. 3

Mar. 10

Mar. 17

Mar. 24

Mar. 31

Report to Room 216 of the Humanities Building (HUM) on the campus of St. Charles Community College. Park in the Yellow Lot.

#### Registration Fee

MSPE & SAME Members .....\$450

ASCE, ASME, ASHRAE, & IEEE.....\$500

Non-Members .....\$550

Proceeds of the course go toward the MSPE Scholarship Fund.

**DEADLINE:**  
**February 8, 2012**

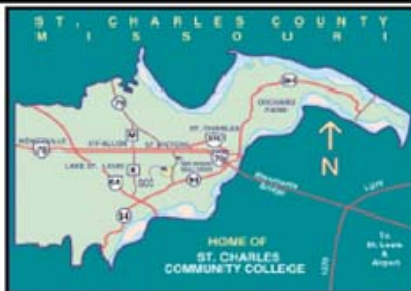
Register by mail, fax, or phone  
(See back of this panel for details.)

Course content inquiries should be directed to

**Richard G. Wischmann, P.E.**

(314) 206-4228 or  
[wischmann@pbworld.com](mailto:wischmann@pbworld.com)

#### HOW TO LOCATE THE COLLEGE & CAMPUS BUILDINGS



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To register online, please visit  
<http://www.stchas.edu/learnforlife>



# Electronics, Engineering, Electrical & Manufacturing Show 2012

Wednesday, April 4<sup>th</sup>, 2012 9:00a.m. – 5:00p.m.

Saint Charles Convention Center

One Convention Center Plaza, St. Charles, MO 63303

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For more information please contact:

Brian Main

Tel: (636)561-3543

Fax : (636)561-3543

Email: b3main330@aol.com

**2012 SPRING MISSOURI CONFERENCE WORKSHOP****25th ANNUAL MOCON****WEDNESDAY, 28 March 2012**

Electrical OverCurrent Protection by Mr. Paul Friemel, PE (Bussmann)

Systems Engineering Workshop by Lou Pape & Dale Waldo (UMSL)

**Thursday, 29 March 2012**

Blue Tooth Fundamentals (1/2 Day) by Bill K. Drake (UMSL)

Arc Flash Analysis (1/2 Day) by Mr. Edwin Scherry (UMSL)

5. Intro to GPU Computing & Scientific Cmpgt by Ramesh Agarwal (UMSL)

6. Advanced Electrical OverCurrent Protection by Mr. Paul Friemel, PE(Bussmann)

7.

**Friday, 30 March 2012**

7. National Electrical Code 2012 Update by Michael W. Smith (UMSL)

UMSL = Univ. of MO at St. Louis Campus

Bussmann = Bussmann HQ, STL County

Savvis = Savvis Communications, 1 Savvis Parkway, Town & Country, MO 63017

Visit our website for maps and more!

<http://www.moconstl.com>

Advanced registration for the 2012 Spring Missouri Conference (MoCon) Workshop is now open. Advanced registration fees are \$550.00 for a full day tutorial and \$275 for a ½ day tutorial. Advanced registration will close on Friday, March 17, 2012. After that, the fees will be \$600 for a full day tutorial and the fees for a ½ day tutorial will be \$300.00. IEEE Student Members and Retirees pay 25% Fees. Non-IEEE Students pay 50% Fees. You may use this form to register or you may register online at the MoCon Workshop web site: [www.moconstl.com](http://www.moconstl.com). Classes start at 8:30 am and end at 5:30 pm. Lunch is provided 12:30-1:30 pm. Lunch is also provided for those taking two ½ day tutorials on the same day.

**IEEE Members receive a 20% discount.**

**PDHs and CEUs awarded.**

Name\_\_\_\_\_Tutorial #\_\_\_\_\_Amt Enclosed\$\_\_\_\_\_  
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3. On this page, you can browse alphabetically by book title, or if you prefer, browse by keyword, such as "software".
4. If the title is included in the IEEE eBook Classics, you will see an orange "FREE" icon to the right of the book's title, and individual chapters will have live links.

### IEEE memberNet– The IEEE Member Directory Online

IEEE memberNet is an online search and networking tool that allows members to connect with technical and engineering experts worldwide. This tool can be utilized by members seeking peers who share a common technical interest, membership, or affinity.

- Exclusive benefit of IEEE membership, at no additional cost.
- Only online directory that connects all IEEE members.
- Enables networking by technical and geographic affiliations, affinities, and more.
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