

# THE REPORTER

Journal of the Central Indiana Section • IEEE

## IEEE hosts National Engineer's Day at the Children's Museum

by: Jonah Crespo

The snow accumulated quickly in Indianapolis but that did not stop visiting families and the engineers of IEEE and SWE from converging on the Children's Museum for Engineer's Day. A yearly tradition, Engineer's Day is an event that introduces kids, teenagers, and parents to the life of an engineer. Children were guided on a tour to "Complete the Circuit" which led them to a handful of activities. Some of the activities included building a flashlight, comparing the energy used in light bulbs with a hand motor, building a bridge, creating a robo-wheel, and playing engineering related games. After each activity, an electrical component sticker was rewarded. Once all the components were collected, the circuit was completed and a yo-yo was awarded! Additionally, the families were entered into a drawing to win one of many engineering related toys such as a Kenex set or a children's chemistry set. Overall, Engineer's Day was a great success. Kids were introduced to science and engineering in a fun way and the engineers and students of IEEE and SWE were able to give back to the community.



# Aerial Robotics Team at Purdue IEEE Student Branch

by: Darius Pang

The Purdue University chapter of the IEEE is a student organization devoted to technical achievements and social events with a lot of history. The chapter is split into several committees, one of which being Aerial Robotics. This year's Aerial Robotics team is competing in the Seafarer Chapter of the Association for Unmanned Vehicle Systems International's 13th Annual Student Unmanned Aerial System Competition. The goal of the competition is to spark interest in unmanned system technologies and careers. This year's challenge is to create an aircraft suited for a search and rescue mission for firefighters during a forest fire.

First, Purdue's Aerial Robotics team split up into the Aero-Mechanical and Electrical sub-teams. Together, the sub-teams are using engineering steps to analyze, design, fabricate, and demonstrate the system's ability of completing autonomous aerial operations under given specified mission and time constraints.

There is a finalized design (See Figure 1) for our UAV and it is now a matter of putting the vehicle together. This is where funding from the Central Indiana Section IEEE is much appreciated. Manufacturing of the fuselage and wings along with the basic flight test algorithm, ground station software, and writing drivers for the GPS and airspeed sensor are on track to be completed this month, giving us the first prototype. Below, Figures 2 and 3 display a life size model of the UAV and a printed circuit board with some sensors the teams have designed and fabricated.

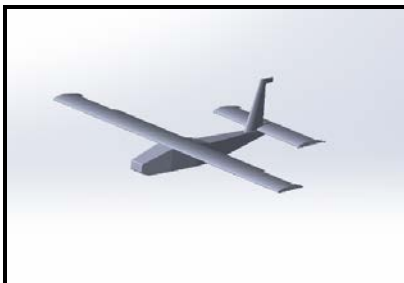


Fig1: CAD Design of UAV



Fig2: Physical Model of UAV

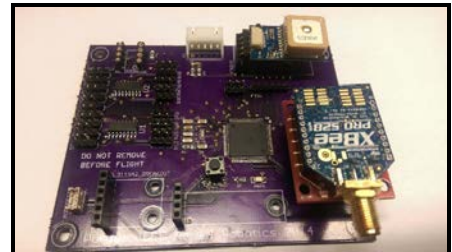


Fig3: Printed Circuit Board w/ Sensors

The competition will be held June 17-21, 2015 at Webster Field in St. Inigoes, Maryland, where Purdue's Aerial Robotics Team will be competing against other universities.

For more information about Purdue IEEE and the Aerial Robotics Team visit [purdueieee.org](http://purdueieee.org). More information about the competition can be found at <http://www.auvsi-seafarer.org/>.

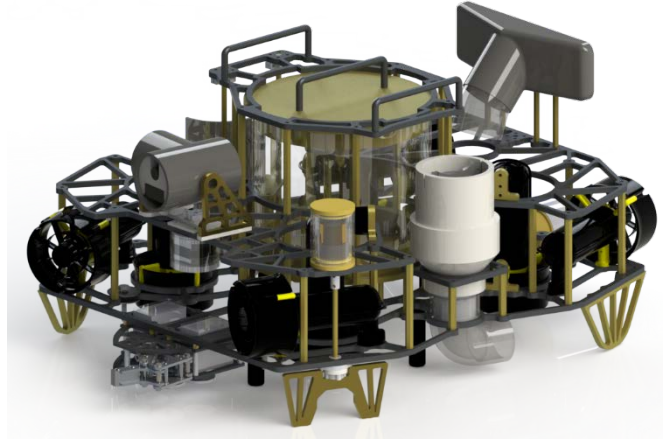
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# Purdue IEEE Student Branch

## Remotely Operated Underwater Vehicle Prepares for Competition

by: Sophia Strong and Kyle Rakos

The Purdue IEEE ROV team is making preparations to compete for the seventh year in the MATE (Marine Advanced Technology Education) Center's International ROV (Remotely Operated Vehicle) Competition. The ROV team is composed of students from Purdue University, mostly in various facets of the engineering department, who design, build, and control this remotely operated vehicle.



*ROV X7 modeled in SolidWorks*

Last semester brought in the largest influx of new members in the team's history. Initial meetings, led by new captain Kyle Rakos along with new team leads Josh Berg, Matt Molo, and Evan Widloski, saw sizes of over 35 potential members. As members committed, there were still large numbers of students, primarily freshmen, who began learning the process of building a ROV from the ground up. In order to train new members as well as provide a practice vehicle for use before the competition, the team began work on a prototype ROV.

This prototype used a modular frame to allow attachment of new tools in order to facilitate testing before the final vehicle is assembled. Additionally, it was designed to utilize old electronics combined with new electronics for testing purposes. This vehicle has been immeasurably helpful in training new and old members alike. This prototype vehicle should see its first full pool test within the following weeks.

In the midst of the prototype development, the mission rules were released. This year the mission will take place in St. John's in Newfoundland and Labrador, Canada from June 25-27, 2015. There will be three separate tasks at various locations. The various tasks provide a much greater level of difficulty, something the team feels prepared to accomplish. Therefore, in parallel with the development of the prototype vehicle, design work has been done on ROV X7. The mechanical design is nearing completion and large parts have already been sent out for machining. Final electronic design work has commenced and software is continuously being refined.

The ROV team is looking forward to the regional competition at the end of the semester and is even more excited to go to Canada during the summer. We would like to thank our sponsors for all of their support. Additionally, we would like to thank all of those who have spent time providing technical and administrative knowledge to the team. With their help, the ROV Team is planning for the most advanced and capable vehicle yet!

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**Save the Date!**  
**Friday and Saturday, November 6 – 7, 2015**  
**2015 Central Indiana Section EnCON**



In addition to the popular Professional Development Career workshop, the Professional Engineer's Ethics and Indiana Law Continuing Education Units, and the emerging technology talks given by innovation leaders, we are planning on adding several half and full day workshop tracks on topics such as Electric Vehicle Technology, Mobile Application Development, Smart Grid, and Software Engineering. In addition, we are planning a Student Poster session to allow local Graduate and Undergraduate students opportunities to show off their research. This will be a good opportunity for you to brush up on your skills, learn about emerging technologies, and will provide many opportunities to network with local professionals and industry leaders. Mark these dates in your calendar now!

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**Save the Date!**  
**Sunday July 26<sup>th</sup>**  
**Annual Central Indiana Section Baseball Outing**



Enough cold and snow, think of a beautiful summer afternoon enjoying food, family, friends, and even a cold brew on the warm but breezy 1<sup>st</sup> base terrace of Victory Field watching the Indianapolis Indian's take on the Louisville Bats. Mark your calendar now!

# 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 is off to an active 2015, beginning with its February meeting on Transformer Design and Manufacturer presented by Ronnie Minhaz, PE of Transformer Consulting Services. The section plans to hold a four week spring short course on Solar Integration taught by industry vendors and utility representatives. Topics include the solar integration overview and financials, the customer perspective, the utility perspective, and system analysis for impacted utility distribution circuits. The meetings will be four consecutive Tuesdays, beginning March 10, 2015 and take place at Indianapolis Power and Light's Morris Street location. The short course will be free of charge, but advanced registration is requested.

Also planned for March is the annual Electric League of Indiana Exposition to be held on March 12, 2015 at the Crane Bay Event Center in Indianapolis. The Expo is a great opportunity to network with other folks in the electrical industry and to see many of the great new products in the industry. On April 14, 2015, a tour of the Indianapolis Airport solar farm is tentatively scheduled, with specific details forthcoming at the Section website. Finally, on April 16, 2015, Dr. David Crandell of Indiana University's School of Informatics and Computing will present Place Recognition in Diverse Social Image Collections at the Hoosier Energy Headquarters building located in Bloomington, IN. This presentation will describe the speaker's recent work in visual place recognition, where the definition of "place" can depend on the task at hand. Detailed event information and advanced registration for all events are available at [www.cis-ieee.org](http://www.cis-ieee.org).

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## ADVERTISEMENT

### Latest EMC Book

*Design Techniques for Controlling Radiated Emissions, 3rd Edition  
contributed to and edited by Donald L. Sweeney,  
including the latest digital technology, published 2014*

### EMC by Your Design

#### An EMC Practical Applications Seminar and Workshop

using the most recent EMC Design Book  
plus take home proprietary computer program,  
expanded section on filter design, signal integrity,  
and signal return currents on PCB's  
and a free 45 min. individual product design evaluation

April 14 - 16, 2015 (Tues. - Thurs.)  
Hilton Hotel, Northbrook, IL



**\$300 discount if you register by March 24, 2015.**  
We are also offering a special 50% discount on the April seminar to attendees of previous D.L.S. seminars who used the 1st or 2nd edition.

Classes fill quickly so register early  
email [cgorowski@dlsemc.com](mailto:cgorowski@dlsemc.com) or call 847-537-6400  
[www.dlsemc.com/emcdesignseminar](http://www.dlsemc.com/emcdesignseminar)

# Learn to Design EMC for Your Product



## **EMC by Your Design**

### **An EMC Practical Applications Seminar and Workshop**

by Donald L. Sweeney, Roger Swanberg & Tim Lusha

*Using Latest EMC Textbook*

**Controlling Radiated Emissions by Design**

*published in 2014 by Michel Mardiguian*

*contributed to and edited by Donald L. Sweeney*

#### **Textbook Includes:**

Updated Worldwide Standards, Updated Graphics, Updated Clock Speeds and Updated Examples - all addressing the Latest Technologies

Link to a Continuous Update of World Standards and Requirements as they change.

#### *Also Using:*

- ♦ Lecture, Discussion and Video Clips to demonstrate concepts
- ♦ A large workbook of slides
- ♦ EMC principles applied to actual products through hands-on calculations
- ♦ Take-home proprietary EMC design software
- ♦ Free optional design evaluation of your product



***Tues. April 14 – Thurs. April 16, 2015***

***Hilton Hotel, Northbrook, IL***

**847-537-6400**

**[www.dlsemc.com/seminar](http://www.dlsemc.com/seminar)**

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# PLAIN TALK

The IEEE Power & Energy Society's Practical Education Courses for Industry Professionals.



## Electric Power Education for Industry Professionals!

- Are you a professional working in or with the Power Industry who would like to learn more about the Electric Power System?
- Would you like to learn more about the technical aspects of the industry in a format that is geared to non-technical professionals?
- Are you an engineer new to the industry, or working in another industry who would like to transition to the Power Industry?

If you answered YES to any of these questions, register NOW for "Plain Talk about the Electric Power Industry." These courses will provide you with the practical knowledge you need to help you understand the electric power system and enable you to apply that knowledge to your job so you can work more effectively.

For Course Brochures and To Register:  
Visit [www.ieee-pes.org/plaintalk](http://www.ieee-pes.org/plaintalk)

Contact LaToya Gourdine, Education Administrator, IEEE Power & Energy Society  
at (732) 981-2876 or via email [l.gourdine@ieee.org](mailto:l.gourdine@ieee.org)

## SAVE THE DATE FOR ONE OF OUR 2015 EVENTS:

Knoxville, TN  
March 24-26

Little Rock, AR  
June 2-4

Denver, CO  
July 28-30

Boise, ID  
Sept 2-4

Pittsburgh, PA  
Oct 6-8

Charlotte, NC  
Nov 10-12

## 2015 Meeting Calendar

Date	Host	Subject	Location
Monthly	CIS	Executive Committee Meetings	Internet/Phone Bridge
6&7 Nov. 2015	CIS	Section Conference	Indianapolis Marriott North
26 July 2015	CIS	Annual Baseball Outing	Victory Field

... Check the [Section web page](#) for details and current information.

## ADVERTISER EVENT

14-16 April 2015	DLS <a href="http://dlsemc.com">dlsemc.com</a>	See Advertisement on Page 5	Northbrook, IL
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## Central Indiana Engineering Web Links

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

**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 25th 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 at [mcnallyh@purdue.edu](mailto:mcnallyh@purdue.edu).

## ***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](http://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.

### **E-Notices**

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

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