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IEEE

THE SUNCOAST SIGNAL

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

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2019 E-Week Banquet

This year's E-Week banquet will be held on February 21, 2019 at TPepin's Hospitality Centre. The keynote speaker will be Jason Cutliffe, Director - Power Quality & Reliability with Duke Energy Florida of Duke Energy. The topic will be "Restoration after Hurricanes—What is involved?" See <http://www.tbewb.com/> for details and reservations.



DISCOVER



ENGINEERS WEEK

FEBRUARY 17–23, 2019

Computer Society Presents:

Are You Ready For Cloud-Based Software Containers?

So let's talk about software for just a moment. Software can be very difficult to create. In fact, if you want to create a software system that does anything, you're going to have to tie together a bunch of different pieces of software. Each piece will do part of the task and then will have to communicate with other pieces of the software in order to get anything done. Just to make things even more complicated each piece of software may be made up of a bunch of different add-ins and libraries that all have to be there when the software runs. How complicated is this!

It turns out that it's really, really complicated. Just in case all of that wasn't complicated enough, now instead of running all of this complicated software on a computer that sits on your desk and you can touch, now everyone wants to run their software in "the cloud". If we're not careful, this is all going to get out of hand very quickly and nothing is going to work correctly.

I've got some good news for you – there is a solution to all of this madness. A little company called Docker came up with a really smart idea called "containers". The basic idea is that if you shove all of your software into a container then you can move it around, run it anywhere, and it will always work.

Software containers are the wave of the future. Currently they are cutting edge stuff that people are only starting to understand. Your chance to get a look at containers, understand how they can be used, realize what their limitations are, and even get a peek at the really fancy ways that people are starting to deal with managing containers is going to happen at this IEEE Computer Society meeting.

Just in case you didn't understand how big of deal containers are, IBM agreed to buy the company Red Hat for \$34 billion because Red Hat is very good at dealing with containers. Now do I have your attention?

Sign up online at: <https://events.vtools.ieee.org/m/187012>

Join us on Wednesday evening, February 13th at 6:00pm. We'll be meeting at TECO Hall which is located at TECO Plaza, 702 N. Franklin St., Tampa. If you have any questions, feel free to contact the meeting organizer, Jim Anderson at jim.anderson@ieee.org. I'll see you there!

Reminder: PE License Renewal Date:

February 28, 2019

Upcoming Meetings

EXCOM Meeting

Tuesday, February 5, 2019 5:30PM at TECO Plaza

Register online at <http://time2meet.com/fwcs-excom/index.html>

Open to all FWCS Members

Cloud-Based Software Containers

Wednesday, February 13, 2019 6:00PM

Register online at <https://events.vtools.ieee.org/m/187012>

Substation Engineering Seminar

Friday, February 15, 2019 9:00AM—2:00PM

Register online at <http://time2meet.com/fwcs-pes2/index.html>

Machine Learning Meeting

Tuesday, February 26, 2019 6:00PM—8:00PM

Register: Jim Stosic (JStosic@GeniumInc.com)

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All material for THE SUNCOAST SIGNAL is due in electronic form by 1st Sunday after the 1st Tuesday of the month preceding the issue month.

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Home Phone: (813) 876-1748 E-mail: amberdon3133@gmail.com**The Signal, Copyright © 2018****Useful links:**<http://www.ieee.org/benefits> Global Benefits Finder<http://www.ieee.org/discounts> Discounts Page**PE Corner**

Art Nordlinger, PE, Senior Member

NCEES Licensee Services

According to their website, the National Council of Examiners for Engineering and Surveying® (NCEES) “is a national nonprofit organization dedicated to advancing professional licensure for engineers and surveyors. It develops, administers, and scores the examinations used for engineering and surveying licensure in the United States”. For many of us, once we are past the engineering exams required for licensure, NCEES is in our rearview mirror. What many engineers don’t realize is that NCEES provides several services useful to practicing engineers; particularly those who practice, or intend to practice, in multiple jurisdictions.

To take advantage of these services an engineer must first establish a free MyNCEES account; <https://ncees.org/supplemental/launch-login/>. If you took an NCEES exam after October 2010 you already have a MyNCEES account. Two of the services available at MyNCEES that may be useful to practicing engineers are the NCEES Records program and the Continuing Professional Competency (CPC) tracking program. Note that CPC is essentially equivalent to a Continuing Education Requirement.

The NCEES website states, “The NCEES Records program is designed for currently licensed engineers and surveyors who are looking for an easier and faster way to complete the licensure process in multiple jurisdictions, including all 50 states, the District of Columbia, Guam, Puerto Rico, Northern Mariana Islands, and the U.S. Virgin Islands. An established NCEES Record will include most—if not all—of the materials you need to apply for comity licensure in additional states and territories.” This could include your college transcripts, exam results, employment verifications and professional references. “If you are already licensed and want to apply for licensure in an additional U.S. state or territory, apply for an NCEES Record. NCEES will review your materials and, after your Record is established, electronically submit them directly to the licensing board on your behalf. This saves time and simplifies the application process when you need to practice in multiple states and territories.” There is no charge to complete the application process and there is no annual renewal fee. Fees are charged each time you transmit your Record to a state licensing board; \$175 for the first transmittal, \$75 for all subsequent transmittals.

The CPC Tracking program allows you to track and report your CPC requirements for free. The engineer identifies the state licensing boards for which they would like to track CPC requirements. They can then add the course information and corresponding Continuing Education Hours (CEHs) for each course completed. Supporting documentation can be uploaded to the account and the CEHs will be applied to the appropriate states. The program allows you to track your progress with a side-by-side comparison of the state’s requirements and the licensee’s completed CEHs. If required by a state board, the program allows the licensee to transmit their transcript electronically.

Additional information on these NCEES programs and others is available on their website; <https://ncees.org/>

Whether you are a PE looking to attain required CEHs, or an engineer looking to learn something new or keep current with the latest trend in the profession, IEEE has seminars that will meet your needs. If you haven’t renewed your license, don’t forget that February 28 is the deadline to renew.

Leader's Center **Concurrent Engineering—The Core of CE**

Paul Schnitzler, Ph.D—Life Senior Member

Last time I described traditional Sequential Engineering and its issues. This article addresses the second part, the process of Concurrent Engineering. Here is how it works and how it helps correct the Sequential Engineering problems.

Let's apply Concurrent Engineering to the same example as described last month. Again it begins with a Marketing suggestion to develop a new product. That group has studied possible customers and created a detailed description of what is desired in the new product—the customer's specification. This will tell how the product will be used and what it will do. It will contain a physical description of the product and as well as the desired size and weight. Again, this will be from the customer's viewpoint. Top management agrees to *consider* the new product.

This time we will use Concurrent Engineering (CE). First create a list of all functions which may be called on during the product lifecycle—Marketing, Engineering, Manufacturing, Facilities, Purchasing, Finance, Sales, possibly, a key Customer, and more. A Design Committee meeting is called and people from *all* of these functions are to attend (although probably only a single person from most).

Marketing will present their recommendation and proposed customer's specification. The engineers will ask questions about some of the performance details. Manufacturing will be thinking about how they might build the proposed product. Purchasing will think about some of the parts which may be needed. The Customer will be thinking about how well this proposed product will suit its needs. All will be thinking "How can my area work with this product?"

Of course, not all issues will be uncovered but every one that is, can be addressed before it can cause problems. Some possible events: Manufacturing points out that the proposed product is too large the current facilities; Engineering suggests

a smaller version; Marketing points out why the smaller version will not be usable by the Customer; Manufacturing offers to re-equip their facility to build the product in its original size; Finance considers the possible availability of needed funds.

All of this happens before any significant design effort begins; it reduces much of the many back-and-forth handoffs between functions and the resultant rework.

The design committee meets regularly—with a change in attendees as appropriate—to review the same questions but as suits the relevant point in the product lifecycle. The representatives of each function flag possible problems and the relevant group addresses them. For example, as things start to come together, the customer may realize that it had overlooked an important need. At various stages the key participants change but, always, all functions are represented.

I have described this process from the point of view of a large enterprise and it was used that way early on. A major example of this approach was the development of the Boeing 777.* Can this be used in small projects or part of larger ones? Next month you will see how CE works in a portion of a project.

For more on leadership go to <http://leadchangewithoutfear.com/> and check the tab "Successful Real Change" for more ideas.

* K. J. Sharma, B. Bowonder, "The making of Boeing 777: a case study in concurrent engineering." January 2004, International Journal of Manufacturing Technology and Management 6(3/4):254-264

Jim C. Robertson, "Integrated Product & Process Development" INCOSE Sys Eng Handbook, Section 6.

Aging Infrastructure Seminar Well Received

On January 18, a group of FWCS members met to discuss the challenges brought forward when dealing with an aging power delivery infrastructure. The challenges of properly managing the old equipment is just the tip of the iceberg. Virtually every aspect of engineering from planning through operating methods need to address the fact that the system design, not just the equipment making up the system, is getting older. Several attendees with first-hand experience in this area contributed valuable input to the seminar. Seminars such as this one are offered throughout the year. Watch the *Signal* for details on future seminars.





Electric Power Substations Engineering

Last Chance to Earn Your CEHs for this Renewing Period

- Date:** Friday, February 15, 2019
- Time:** Registration & Light Breakfast: 8:30AM - 9:00AM
Seminar: 9:00AM - 2:00PM
- Speaker:** John McDonald, - Smart Grid Business Development Leader,
- Location:** FRCC 3000 Bayport Drive., #600, Tampa, FL 33607
Parking: Use parking lot for Hyatt (North side only).
- Cost:** \$150 Members, \$250 Non-Members, \$80 Students. Includes Light Breakfast, Lunch and a
Hard Copy of "Electric Power Substation Engineering" worth \$129 is also included
- CEH Credits:** 4 Professional Development Hours will be awarded. Be sure to enter your name and PE number on the signup website as it appears on your license.
- RSVP:** Online at <http://time2meet.com/fwcs-pes2/index.html> (Select Reservations)
Make checks payable to: IEEE FWCS
Send checks to: Jim Howard, IEEE FWCS Treasurer
3133 W. Paris Street
Tampa, FL 33614-5964
- Questions:** Serge Beuzile at serge.beuzile@ieee.org

How a Substation Happens. Gas-Insulated Substations. Air-Insulated Substations— Bus/Switching Configurations. High-Voltage Switching Equipment. High-Voltage Power Electronic Substations. Interface between Automation and the Substation. Substation Integration and Automation. Oil Containment. Community Considerations. Animal Deterrents/Security. Substation Grounding. Direct Lightning Stroke Shielding of Substations. Seismic Considerations. Substation Fire Protection. Substation Communications. Physical Security of Substations. Cyber Security of Substation Control and Diagnostic Systems. Gas- Insulated Transmission Line. Substation Asset Management. Station Commissioning and Project Closeout. Energy Storage. Role of Substations in Smart Grid.

Last Chance to Earn Your CEH's for this Renewing Period



Speaker Bio



John D. McDonald, P.E., is Smart Grid Business Development Leader for GE Power's Grid Solutions business. John has 44 years of experience in the electric utility industry. John joined GE on December 3, 2007 as General Manager, Marketing for GE Energy's Transmission and Distribution business. In 2010 John accepted the new role of Director, Technical Strategy and Policy Development for GE Digital Energy. In January 2016 John assumed his present role with the integration of Alstom Grid and GE Digital Energy to form GE Grid Solutions.

He is a sought-after industry leader, technical expert, educator, and speaker. John was elected to the Board of Governors of the IEEE-SA (Standards Association), focusing on long term IEEE Smart Grid standards strategy. John was the Chair of the Smart Grid Interoperability Panel (SGIP) Governing Board for 2010-2015 (end of 1Q) coordinating Smart Grid standards development in the US and global harmonization of the standards. John is a member of the NIST Smart Grid Advisory Committee.

John is Past President of the IEEE Power & Energy Society (PES), Past Chair of the Smart Energy Consumer Collaborative (SECC) Board, the VP for Technical Activities for the US National Committee (USNC) of CIGRE, and the Past Chair of the IEEE PES Substations Committee. He was on the IEEE Board of Directors as the IEEE Division VII Director. John is a member of the Advisory Committee for the annual Distrib-uTECH Conference, on the Board of Directors of the GridWise Alliance and Chair of its Technical Committee, Vice Chair of the Texas A&M University Smart Grid Center Advisory Board, and member of the Purdue University Strategic Research Advisory Council. John received the 2009 Outstanding Electrical and Computer Engineer Award from Purdue University.

John teaches a Smart Grid course at the Georgia Institute of Technology, a Smart Grid course for GE, and substation automation, distribution SCADA and communications courses for various IEEE PES local chapters as an IEEE PES Distinguished Lecturer. John has published 80 papers and articles in the areas of SCADA, SCADA/EMS, SCADA/DMS and communications, and is a registered Professional Engineer (Electrical) in California, Pennsylvania and Georgia.

John received his B.S.E.E. and M.S.E.E. (Power Engineering) degrees from Purdue University, and an M.B.A. (Finance) degree from the University of California-Berkeley. John is a member of Eta Kappa Nu (Electrical Engineering Honorary) and Tau Beta Pi (Engineering Honorary), a Life Fellow of IEEE (member for 47 years), and was awarded the IEEE Millennium Medal in 2000, the IEEE PES Excellence in Power Distribution Engineering Award in 2002, the IEEE PES Substations Committee Distinguished Service Award in 2003, the IEEE PES Meritorious Service Award in 2015, the 2015 CIGRE Distinguished Member Award and the 2015 CIGRE USNC Attwood Associate Award.

John has co-authored five books: Automating a Distribution Cooperative from A to Z: A Primer on Employing Technology (National Rural Electric Cooperative Association – 1999); Electric Power Substations Engineering (Third Edition) (CRC Press – 2012); Power System SCADA and Smart Grids (CRC Press – 2015); Big Data Application in Power Systems (Elsevier - 2017); and Smart Grids: Advanced Technologies and Solutions (Second Edition) (CRC Press – 2018).

John has one US Patent (9,853,448) on Systems and Methods for Coordinating Electrical Network Optimization (December 26, 2017).



**IEEE/FWCS CONSULTANTS
NETWORK AFFINITY GROUP**

What is Machine Learning? Is It the Solve-all Silver Bullet?

Title: What is Machine Learning? Is It the Solve-all Silver Bullet?

Date: Tuesday, February 26, 2019

Time: 6:00 PM to 8:00 PM

Speaker: Dr. Stephen "Steve" Skrzypkowiak

Location:

St. Petersburg Yacht Club
11 Central Avenue
St Petersburg, FL 33701
Ask for the Regatta Room

Cost: \$15, includes Pizza dinner and non-alcoholic refreshments

Pay online via the forthcoming vTools announcement in your email or with cash at the meeting.

Didn't get a vTools announcement by February 1st? Contact us at the email listed below.

RSVP: Jim Stosic email: JStosic@GeniumInc.com Attendance is limited to 30.

Questions: Jim Stosic email: JStosic@GeniumInc.com

Machine Learning (ML), Deep Learning (DL), and Artificial Intelligence (AI) are the current hot topics (and buzzwords) in science and engineering and will be a big part of future technologies. This has been made possible with the reduction of hardware cost over the years and the development of scripting languages and Software Development Kits (SDKs).

Machine Learning (continued)

This presentation will concentrate on ML and its' applications. Today ML is being used for everything from threat automatic target recognition (ATR), Facebook News Feeds, and to present related items on your Amazon page to purchase when you login. Billions of dollars are being invested by the US government, industry (Amazon, Microsoft, Google, Apple, etc.) and universities (CMI, MIT, Standard, etc.) to arrive at the best and most accurate algorithms, methods, and applications.

The first part of this presentation will provide an overview of ML, the types of different ML algorithms, their application and how they are being implemented generally. The second part will be the aspects which must be considered when applying ML to a problem. For example, should supervised, unsupervised, reinforcement, or deep learning ML be used for the application?

Along with the selected learning technique, the determination of the variables and features the ML model should analyze to make its decisions will be discussed. Examples will be provided using an ATR application in image analysis for object identification and confirmation. Equally important, the shortcomings and recent issues that have been discovered in the application of ML in the real-world will be addressed.

Speaker:

Stephen "Steve" Skrzypkowiak is a Subject Matter Expert (SME) in the areas of X-ray physics, Image and Signal Processing, Detection Theory and Algorithms, Material Decomposition, and Machine Learning. Since 2002 Steve has been a domain expert lead in various capacities to the Department of Homeland Security (DHS), the Transportation Security Administration (TSA), the Transportation Security Laboratory (TSL) and various National Laboratories. He supports various US government agencies in the technical review of various threat detection systems, revising the explosive certification standards, and developing various detection and procurement specifications. He also provides technical support for various research projects including Differential Phase Contrast (DPC) Imaging. He is the Co-Chairman of the DICOS (Digital Imaging and Communications in Security) version 02A and 03 committees. He developed three image quality test objects which became part of the IEEE N42.45 Explosive Detection Standard (EDS) imaging standard. He has developed various Computed Tomography (CT) image evaluation phantoms for the TSA, including the CT Image Quality (CTIQ). Prior to 2002, Steve was the L-3 Technologies Project Engineer for the eXaminer 3DX6000 EDS (the first 3-D imaging baggage system) that successfully passed the TSL certification operational readiness test.

Steve earned his Ph.D. in Electrical Engineer from the University of South Florida, where he also held various staff and research positions. He has published papers in the areas of Digital Signal Processing (DSP) algorithm implementation, neural networks, and video coding algorithms. He is a Senior Member of the Institute of Electrical and Electronics Engineers (IEEE), a member of the International Society for Optical Engineering (SPIE) and a Florida Professional Engineer.

CNAG Chairman's Note:

Dr. Skrzypkowiak works as a full-time consultant and is an active member of our Consultant's Group. Nonetheless, the Machine Learning topic crosses all disciplines of the IEEE technical societies and goes far beyond into all aspects of society. All students and faculty, those working in industry, commerce, and government, and anyone just plain interested are invited to this important talk.



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February Calendar of Events (For more information see P. 1) in this Signal...

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4	5 EXCOM Meeting TECO Plaza 5:30pm	6	7	8	9
10	11	12	13 Cloud-Based Software Containers See P. 1	14	15 Substation Engineering Seminar See P. 4	16
17	18	19	20	21 E-Week Banquet <i>http://www.tbewb.com/</i>	22	23
24	25	26 Machine Learning Meeting See P. 6	27	28		