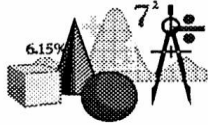




# SPARKS

Daytona Section Newsletter  
January 2018



## JANUARY SECTION MEETING

Thursday January 25th at the Halifax River Yacht Club, 6:00 PM  
331 South Beach Street, Daytona Beach, Florida 32114

### PRESENTATION TOPIC

#### ARTIFICIAL INTELLIGENCE

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### CHAIR'S REPORT



Happy New Year to all section members. I hope everyone had an enjoyable and restful holiday season, or are those competing design goals? Now, remember to renew your memberships! If you have renewed, it doesn't hurt to double check.

Our section members were not completely idle over our short break. The Florida Council meeting was held on December 9. The SRT was moved to its new location at Embry-Riddle's new research building. Installation will take time, but getting it there is a big milestone.

The Volusia County Schools and Tomoka Regional Science & Engineering Fair is being held on Saturday, January 27, this year at Bethune Cookman University. If you are interested in serving as a judge for this event, you can do so at the following link:

<https://www.surveymonkey.com/r/2018TRSEF> .

This is an early reminder that Engineers Week will be held from 18 - 24 February this year. This is a good time to reach out to a local school and arrange a visit to introduce young people to the engineering profession, and share your experiences and expertise.

*Keith*

## **THE PE CORNER**

2017 was a busy year for the Florida Board of Professional Engineers. A comprehensive review would be impossible in this space so I'll just hit a few highlights.

This year was a renewal year and the FBPE staff ably handled some 60-odd thousand renewals. This monumental task was made all-the-more challenging since more than half of these came in during the last few weeks prior to the February 28 deadline. The Board has discussed ways to incentivize PEs not to wait until the last minute to renew. The Board's options in this regard are limited by statute and the scope of possible incentives is still unclear. Several possibilities have been floated including a sliding payment scale like is done for property taxes. Stay tuned.

Just over a thousand PE's were audited as part of this renewal for verification of continuing education completion. Those being audited received a request to send in evidence of completing their continuing education last spring (assuming that they met their obligation to keep their contact information up-to-date with the Board). About ten percent of those audited either didn't have the required continuing education hours, or didn't respond at all (a small group). The Board's next step, for those that have not rectified their deficiency, is to begin proceedings that could ultimately result in license revocation for non-compliance.

As of this writing, the Board has one open Board Member position and two others whose terms are ending. Board positions do turn over periodically. If you are interested in serving on the Board, contact the Board office for information on how to apply. For 2018, Kenneth Todd was elected Chair and C. Kevin Fleming will continue as Vice-Chair.

Several of the Board's rules came up for review this year. IEEE participated in the review and modification of both the rules for Electrical Practice and those regarding Continuing Education. These revisions are both now in the process of being published for comment prior to final adoption by the Board. As I noted in a previous column, the Electrical rules were revised for clarity and consistency between topics. The Continuing Education rules were also clarified, an additional means of becoming certified as a provider was added, and an obligation was placed on providers to be sure that their course descriptions allow the student to understand the level of the course's content; i.e. whether it's a basic or advanced treatment of the topic.

Whether you are a PE looking to attain required CEHs, or an engineer looking to learn something new or keep current with the latest trends in the profession, IEEE has seminars that will meet your needs. With renewal only 13 months away demand for our seminars is high. Sign up now!

## **NOVEMBER'S PRESENTATION**

The November presentation described a unique culture of hands-on learning, kindness, and involved parents and community. The Burns Science & Technology Charter School in Oak Hill has developed a "High Performing", STEM (Science, Technology, Engineering, Math) driven education experience for Kindergarten through 8th grade.

Throughout the grades, the school uses levels of software, hardware, CNC machines, laser cutters, 3D printers, robots, drones, basic electronics and a dedicated faculty, to inspire creativity to their students.



November's speakers Luis Zengotta and Dana Greatrex

## **JANUARY'S PRESENTATION**

### **ARTIFICIAL INTELLIGENCE**

Artificial Intelligence (AI) and autonomy are becoming a major component of our day-to-day life. In this talk, we will first look at how intentionally or unintentionally we are interacting with the different applications of AI, then we briefly look at some of the different techniques and methods that are used in different AI applications. Finally, we take a look at some of the myths and aspirations of what AI can do for us now or in the future.

### **OUR SPEAKER**

Dr. Masood Towhidnejad is a Professor of Software Engineering at Embry-Riddle Aeronautical University. Dr. Towhidnejad received his Ph.D. in Computer Engineering from the University of Central Florida in 1990. His teaching and research interests include STEM education, software engineering, software quality assurance and testing, autonomous systems, and Air Traffic Management. He has also served as a Faculty Fellow at the NASA Goddard Space Flight Center, and a Visiting Research Associate at the Federal Aviation Administration.

### **SRT UPDATE**

Progress with the SRT! Or at least movement. On the morning of December 8th a group of IEEE members convened on a hangar at the Deland airport where Hugh Ward had been graciously storing the SRT's components since its removal from MOAS. With a few young & strong members of the ERAU branch in tow, the telescope was quickly loaded into a U-Haul for the trip back to Embry-Riddle, where it is destined to be installed as one of the first radio instruments at the new engineering research building - part of the ERAU's research park going up near the airport on Clyde Morris.

The parts are now stored in the Circuits, Sensors, and Instrumentation Laboratory in the building, where they will be assembled and tested before being moved to the roof. Initial spectral surveys of the site are promising, but if interference becomes a problem, the new labs have all of the capabilities necessary to design, build, and test new front-end filters. The building as a whole has about 30,000 square feet of new research labs spanning the gamut of the college's disciplines. Move-in began last semester, with all labs expected to come fully on line during the next year.

## ANOTHER TALE FROM THE OLD PROFESSOR

### HAS ENGINEERING STIFLED FUTURE ENGINEERS?

It wasn't too long ago the world was a much simpler place. Do you remember when a radio had 5 tubes? And if you opened the hood of your car you could identify all the parts of the engine and knew what they did? Remember typewriters? If you rolled one over on its back to view its insides and pressed a key you could see how it worked. Its operation was simple but very clever. A wind-up clock was full of gears, springs and an escapement. It wasn't too hard to figure out it was the escapement with its spring and balance wheel that was the actual time keeper. The rest of the clock was to convert the motion of the oscillating escapement to the hands. As a young child I used to get great pleasure in removing the escapement and the clock would whirl around at warp speed until the spring wound down covering 24 hours in a matter of seconds.

It was these simple things, yet beautifully crafted inventions that we marveled at and contemplated what engineering could do. It was the simplicity of these inventions that allowed us to learn from them.

There were things that were simple but how they worked wasn't evident by looking at them. Take the crystal radio. To make a crystal radio you wound wire around a cylindrical oatmeal box and then added some other components including a piece of rock; a galena crystal. You hooked this contraption to a long wire antenna and a pair of headphones. You touched a very fine wire, called a cat's whisker to the surface of galena rock in just the right place that you had to find by trial and error, you could hear radio stations. You can look at the crystal radio from all angles there is nothing that can be seen that reveals how it works. But it did work, and this was the insight to the mysteries of radio and electronics for many youngsters.

So many children, my own and yours truly, took toys apart to see how they worked rather than play with them. But in today's highly engineered world can you even take toys apart? And, if you did, what would you see? A large integrated circuit that can't be disassembled in any way?



What about putting toys together? It's been but a month since the Christmas season and the Old Professor gave his grandson the 21<sup>st</sup> century version of a toy that I had over 60 years ago; an Erector Set.

It's not the same Erector Set that I had so long ago. It's oriented more towards a theme such as making construction equipment or race cars or other items. There is less left up to the child's imagination and more an exercise in following instructions. There is nothing wrong with following instructions but the 21<sup>st</sup> century Erector Set parts were designed to make specific items and aren't really suited for creativity.

The modern Erector screws are plastic and don't have standard threads and heads. With the "vintage" erector set a youngster could easily identify the 8-32 UNC slotted round head machine screw that was used for everything. The screws used in the modern Erector are cap screws with a triangular socket. How is a young person going to learn about real cap head machine screws with a hex key socket? Fortunately, they are right hand threads so the modern youth will at least learn "righty tighty; lefty loosey".



<1920's Erector

2017 Erector>



The world has become so complex there is a murky path from simple concepts to modern systems. During the middle of the last century when your humble correspondent was a child, there was a path from Erector sets to making, for example, a "soap box racer" which was later fitted with an old gasoline motor from a reel-type lawn mower. Of course, that was the "gateway drug" for my decline to making hot rods later with engines that could propel several hundred lawn mowers.

The crystal radio led me to ham radio and building transmitters and receivers using parts from old TVs, radios and the ample supply of "War Surplus". Then it was building Heathkit test equipment to fix TVs to make money to fund my hot rod habit. Modern TVs can't be fixed. They are disposable items. By the time they need repair they are obsolete anyhow.

I am really glad to see the "Maker Faire" movement and new sources of parts and information from such outlets as Spark Fun and Adafruit. Even the large industrial suppliers such as Newark Electronics and Digikey will sell anything in their catalog in small quantities to individuals, including parts from Spark Fun and Adafruit. Even your humble correspondent has obtained parts from Adafruit and Spark Fun.

Hopefully this complex world created by engineers won't hide the basic science that ultimately makes things work and young people can see and travel the path to become an engineer.

*All Helfrick, a.k.a. The Old Professor*

## DAYTONA SECTION SHIRTS



We are pleased to offer Daytona Section polo shirts for our Section members. The shirts are embroidered with the IEEE Logo and DAYTONA SECTION on the left and your name and grade, if desired, on the right. The shirt is a high quality 5 oz, 65/35 poly/cotton pique in Royal Blue with white embroidery. Available in S - 2XL in men's as well as ladies sizes. Price is \$30, including tax, for S-XL size's, 2XL size is \$3 additional. For more information or to order shirts contact: Allan Jusko 386-671-3706 or [a.jusko@ieee.org](mailto:a.jusko@ieee.org).



## IEEE MEMBERSHIP PINS

We have IEEE Membership pins available for years of IEEE membership. See Richard Kent or Allan Jusko if you're interested

## FUTURE MEETING DATES:

The dates for the spring sessions are: Feb 22, Mar 22, Apr 26

## EDITORS NOTES

The **SPARKS** newsletter is also available on our website <http://www.ieee.org/go/daytona>

Other web sites of note  
**Region 3 website** <http://www.ewh.ieee.org/reg/3/>  
**Melbourne Section website** [www.ieeemelbourne.org](http://www.ieeemelbourne.org)  
**Orlando Section website** [www.ieee.org/orlando](http://www.ieee.org/orlando)

### 2018 SECTION OFFICERS

**Chair – Dr. Keith Garfield**  
386-226-7081 [garfielk@erau.edu](mailto:garfielk@erau.edu)

**Vice Chair – Richard Kent**  
206-369-1965 [rtkentjr@msn.com](mailto:rtkentjr@msn.com)

**Treasurer - Dr. Jianhua Liu**  
386-226-7713 [liu620@erau.edu](mailto:liu620@erau.edu)

**Secretary – Ron Gedney**  
386-478-1204 [r.gedney@ieee.org](mailto:r.gedney@ieee.org)

**Membership Development –**

**Publicity/Media – Ron Gedney**  
386-478-1204 [r.gedney@ieee.org](mailto:r.gedney@ieee.org)

**PACE Representative –  
Dr. William Barott**  
386-226-8973 [barottw@erau.edu](mailto:barottw@erau.edu)

**Life Member Chair – Ron Gedney**  
386-478-1204 [r.gedney@ieee.org](mailto:r.gedney@ieee.org)

**Computer Society Chair – Dr. Keith Garfield**  
386-226-7081 [garfielk@erau.edu](mailto:garfielk@erau.edu)

**Student Activities, (Co-Chairs)**  
**ERAU - Dr. William Barott**  
386-226-8973 [barottw@erau.edu](mailto:barottw@erau.edu)

**B-CU - Dr. Ahmed Badi**  
386-481-2671 [badia@cookman.edu](mailto:badia@cookman.edu)

**ERAU Student Chapter Chair- Dean Laga**  
[lagad@my.erau.edu](mailto:lagad@my.erau.edu)

**ERAU WIE Student Chair –**

**Webmaster – Charlie Husbands**  
386-760-7163 [chusbands@ieee.org](mailto:chusbands@ieee.org)

**SRT Project Coordinator - Charlie Husbands**  
386-760-7163 [chusbands@ieee.org](mailto:chusbands@ieee.org)

**SPARKS Editor - Allan Jusko**  
386-671-3706 [a.jusko@ieee.org](mailto:a.jusko@ieee.org)

## ENGINEERING HUMOR



# JANUARY 2018 MEETING

**Thursday January 25<sup>TH</sup>** at the Halifax River Yacht Club  
331 South Beach Street, Daytona Beach, Florida 32114  
Just south of the Fire Station at the corner of Beach and Orange Streets

**TOPIC**– Artificial Intelligence

**SPEAKER** – Dr. Masood Towhidnejad  
Professor of Software Engineering, ERAU

## **AGENDA**

5:30 PM Greetings & Cocktails

6:00 PM Dinner

7:00 PM Presentation

## **Dinner Menu**

**Flounder Almondine** – sautéed flounder, brown butter, lemon and almonds. Served with rice pilaf and baby carrots.

**Chicken Piccata** – egg battered and sautéed with fresh mushrooms, capers and lemon butter. Served with rice pilaf and baby carrots.

**New York style Baked Ziti** – tender ziti noodles, Ricotta cheese and zesty tomato meat sauce. Oven baked with melted mozzarella cheese

**Members and guests \$20.00 each. Students \$10.00 each**

**Please contact Allan Jusko by Wednesday January 24th at noon  
to give us a count for dinner or for further information**

**If you make reservations and are unable to attend, call prior to the event to cancel.**

**The Section is charged for all dinners ordered, please let us know if your plans change**

Allan Jusko Editor

386-671-3706

a.jusko@ieee.org